UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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REGIONAL
ADMINISTRATOR'S
DIVISION

November 7, 2019

Mr. Matthew Reece, Minerals Program Manager
Tongass National Forest
Kensington Gold Mine POA1 SEIS
8510 Mendenhall Loop Road
Juneau, Alaska 99801

Dear Mr. Reece:

The U.S. Environmental Protection Agency has reviewed the U.S. Department of Agriculture, Forest Service's September 23, 2019, Notice of Intent initiating the scoping process for the proposed Kensington Gold Mine Plan of Operations Amendment 1 Supplemental Environmental Impact Statement (EPA Project No. 02-064-AFS). We have also reviewed the Plan of Operations Amendment 1 prepared by Coeur Alaska, Inc. We are providing scoping comments pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 C.F.R. §§ 1500 - 1508), and Section 309 of the Clean Air Act. As a cooperating agency, the EPA is supporting the Forest Service in the development of the SEIS. We appreciate the opportunity to provide early input during the scoping period regarding topics to consider for analysis and disclosure in the Kensington Gold Mine POA 1 SEIS.

Coeur Alaska, Inc. plans to amend the existing Plan of Operations for the Kensington Gold Mine, located in the Tongass National Forest on a peninsula formed between Berners Bay and Lynn Canal in Southeast Alaska, within the boundary of the City and Borough of Juneau. The existing Plan of Operations was approved by the Forest Service based on the 2004 Final Supplemental SEIS. The proposed POA 1 would expand the existing mine facility by 150 acres, increase mill production from 2,000 tons per day to 3,000 tons per day, and extend the active mine life ten years. The proposed amendments include: construction of a Stage 4 dam raise of the existing Tailings Treatment Facility (Lower Slate Lake) and a causeway between the TTF and Upper Slate Lake; relocation of ancillary facilities, including the water treatment plants at the TTF area; seepage collection sumps, access road, power line, pipelines, and storm water diversion channels; and expansion of three existing waste rock stockpiles and construction of one additional stockpile. In addition, the amendment includes mitigation for the loss of Slate Creek resident fish spawning habitat, by constructing deltas, rerouting Fat Rat Creek into South Creek and replacing culverts to promote fish passage.

Our scoping comments are provided to inform the Forest Service of issues that the EPA believes are significant and warrant consideration in the SEIS. Overall, we encourage the development of a SEIS that evaluates and compares a full range of reasonable alternatives and evaluates the reasonably foreseeable direct, indirect, and cumulative impacts of the proposed action.

Our detailed comments and recommendations include the following topics:

- Scope of the NEPA Analysis
- Impacts to Environmental Resources
- Water Quality and Quantity
- Air Quality
- Fish, Wildlife, and Historic Properties
- Impacts to Communities and Human Health
- Failure Risks, Structural Stability, and Hazardous Materials Management
- Analysis Tools and Methodologies
- Mitigation, Monitoring and Adaptive Management

The EPA appreciates the opportunity to provide scoping comments for the Kensington Gold Mine POA 1 SEIS and we look forward to working with the Forest Service on this Project. Should you have any questions regarding our comments, please contact me at (907) 271-3411 or jen.mark@epa.gov.

Sincerely,

Mark S. Jen
NEPA Project Reviewer

Enclosure

EPA Region 10 Scoping Comments for the
Kensington Gold Project Plan of Operations Amendment 1
Supplemental Environmental Impact Statement

Scope of the NEPA Analysis

Purpose and Need

The EPA recommends that the SEIS include a clear and concise statement of the underlying purpose and need for the proposed Project, consistent with the implementing regulations for NEPA[1] and the Clean Water Act Section 404(b)(1) Guidelines for the discharge of dredged or fill material to waters of the United States.[2] In presenting the purpose and need for the proposed action, the SEIS should reflect not only the Forest Service's purpose in responding to the POA 1, but also the broader public interest and need for this Project. An appropriately defined purpose and need statement is important in developing the analysis of a range of reasonable and practicable alternatives in the SEIS that will meet the requirements of both NEPA and the CWA § 404(b)(1) Guidelines.

Range of Reasonable Alternatives

We recommend that the SEIS identify and evaluate a range of reasonable alternatives that address the purpose and need for the proposed Project, are responsive to the issues identified during the scoping process and through tribal consultation and coordination, and include options for avoiding and minimizing significant environmental impacts. This will ensure that the NEPA analysis provides agency decision makers and the public with information that defines the issues and identifies a clear basis for the choices made among the range of reasonable alternatives, as required by NEPA.

The SEIS should "rigorously explore and objectively evaluate all reasonable alternatives"[3] even if some of them are outside the capability or the jurisdiction of the agency preparing the SEIS for the proposed action.[4] This includes identifying the specific criteria that were used to (l) develop the range of reasonable alternatives, (2) eliminate certain alternatives, and (3) identify the agency preferred alternative, as appropriate, in the Draft SEIS. In addition, we recommend the SEIS provide a clear discussion and the reasons to eliminate certain alternatives from further detailed evaluation.

While NEPA requires the evaluation of *reasonable* alternatives to the proposed action, the CWA Section 404(b)(1) Guidelines require the analysis of *practicable*[5] alternatives in order to identify the least environmentally damaging practicable alternative, which is the only alternative that can be permitted by the U.S. Army Corps of Engineers.[6] The analysis of alternatives for NEPA can provide the information for evaluation of alternatives under the Guidelines.[7] Since a CWA § 404 permit will be needed for some components of the POA 1 Project, we recommend that the SEIS evaluate a range of reasonable alternatives, including the practicable alternatives for any CWA § 404 permit(s) that would need to be evaluated under the Guidelines.

We recommend that the following alternatives be carried forward for detailed analysis in the SEIS in order to compare their environmental impacts to the proposed action:

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[1] 40 C.F.R. §1502.13.
[2] Within the context of the Guidelines, practicable alternatives to the proposed discharge of fill or dredged material are identified "in light of overall project purposes," which is also termed "the basic purpose of the proposed activity." 40 C.F.R. § 230.10(a)(2).
[3] 40 C.F.R. § 1502.14(a).
[4] 40 C.F.R. § 1502.14(c).
[5] An alternative is *practicable* if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. 40 C.F.R. § 230.10(a)(2).
[6] 40 C.F.R. § 230.10(a).
[7] 40 C.F.R. § 230.10(a)(4).

Filtered Dry Stack Tailings
We recommend that the SEIS evaluate a filtered tailings (dry stack) alternative located within the Sherman Creek Watershed (where a dry stack facility was previously permitted) and/or other locations. A tailings dry stack would be more geotechnically stable, particularly over the long term, and may accommodate additional tailings resulting from future mine expansion. We also recommend that the SEIS consider whether the volume of tailings currently backfilled in the underground mine can be increased.

Dry Closure of the TTF
POA 1 includes a nine foot surface water cover over the tailings during operations and a 28-ft surface water cover at closure. We recommend that the SEIS evaluate both reduction of the tailings water cover during operation and dry closure of the tailings treatment facility. Elimination of surface water from tailings impoundments is one component of Best Available Technology[8] meant to promote impoundment and dam stability. In addition, the reduction or elimination of surface water cover over the tailings could accommodate the additional tailings storage capacity in Lower Slate Lake during the ten year extension of the active mine life without the additional construction costs and impacts entailed with raising the TTF dam (Stage 4) as proposed.

Closure Plan that Does Not Impact Upper Slate Lake
The TTF closure plan would result in combining Upper Slate Lake and Lower Slate Lake. We recommend that the SEIS also evaluate a potential closure plan that would not impact Upper Slate Lake and therefore retain the integrity of Upper Slate Lake and Lower Slate Lake as separate lakes. During initial Project planning and development of the 2004 SEIS, protection of Upper Slate Lake was a major consideration.

Waste Rock Storage Areas
We recommend that the SEIS evaluate (1) upland sites that avoid impacting wetland areas, (2) expanding existing waste rock storage areas to avoid impacting new wetland areas, and (3) reducing the proposed WRS footprint to minimize impacting wetland areas.

In-Kind Restoration
We recommend that the SEIS evaluate forested/riverine restoration efforts to improve fish and aquatic habitat.

In evaluating the proposed Project and reasonable alternatives, the analysis should consider the performance and effectiveness of proposed Project components, design features, environmental protection measures, monitoring, and mitigation.[9]

Regarding mitigation for purposes of NEPA, we recommend that the alternatives analysis include any additional appropriate mitigation measures and best management practices not already included in the proposed action or alternatives.[10] We recommend that the SEIS evaluate reasonable alternatives, including mitigation measures and best management practices, to reduce or minimize adverse impacts to environmental resources. We recommend that the Forest Service consider the following:

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[8] Independent Expert Engineering Investigation and Review Panel Report on Mount Polley Tailings Storage Facility Breach, January 30, 2015.
[9] The term mitigation included in this "Range of Alternatives" section is referring to the general term as it applies to NEPA. Compensatory mitigation under CWA Section 404 cannot be used to reduce environmental impacts in evaluating the least environmentally damaging practicable alternatives under Section 40 C.F.R. § 230.10(a). *See* 1990 Memorandum of Agreement between Army and EPA concerning the determination of mitigation under CWA Section 404(b)(1) Guidelines.
[10] 40 C.F.R. §1502.14(f).

- The disturbance footprint;
- Habitat value, and impacts from siting project components;
- Source control measures and best management practices (effective management and treatment of tailings, waste rock, and graphitic phyllite sources to prevent or minimize potential acid generation and metal leaching) and containment (impermeable liners and covers);
- Measures to reduce contact between mine waste materials and surface water and groundwater (such as surface water diversions, liners, and covers as recommended above);
- Treatment to ensure compliance with water quality standards;
- The physical stability of structures (e.g., ore storage, WRS areas, TTF dam) during operations and closure;
- Air pollutant emissions; and
- Impacts to historical, traditional and cultural uses and resources.

We also recommend that the range of alternatives and mitigation be developed in coordination with the cooperating agencies.

No Action Alternative

The NEPA implementing regulations require that the alternatives analysis include the alternative of no action, which provides a benchmark to compare the magnitude of the environmental effects of the action alternatives, including the proposed action. This NEPA requirement ensures that the EIS sharply defines the issues and provides "a clear basis for choice among options by the decision-maker and the public."[11] Therefore, we recommend that the SEIS evaluate the alternative of no action and compare it with the environmental impacts from a range of action alternatives, including the proposed action.

Direct and Indirect Impacts

The scope of the environmental analysis in the SEIS should evaluate both direct and indirect impacts. We recommend that the SEIS include consideration of all reasonably foreseeable indirect effects caused by the action but that may occur later in time or be farther removed in distance.[12] While NEPA does not require agencies to engage in speculation, "[t]he SEIS must identify all of the indirect effects that are known, and make a good faith effort to explain the effects that are not known but are reasonably foreseeable."[13]

Indirect Project impacts under NEPA can include secondary effects, defined by the Guidelines as "effects on the aquatic ecosystem that are associated with the discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material."[14] The consideration of secondary effects is necessary for analysis regarding compliance with the Guidelines analysis and examples of potential secondary effects are discussed below.

Cumulative Effects

In accordance with NEPA, the cumulative impacts analysis should identify how resources, ecosystems, and communities in the vicinity of the Project have already been, or will be affected by, past, present, or reasonably foreseeable future activities in the Project area, "regardless of what agency (federal or non-federal) or person undertakes such other actions."[15]

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[11] 40 C.F.R. §§ 1502.14, 1508.25(b)(1).
[12] 40 C.F.R. § 1508.8(b).
[13] Forty Most Asked Questions Concerning CEQ's NEPA Regulations, Question 18 (CEQ 1981).
[14] 40 C.F.R. § 230.11(h).
[15] 40 C.F.R. §1508.7.

The Guidelines also fundamentally require consideration of reasonably foreseeable cumulative effects in determining whether a project complies with the significant degradation prohibition and to ensure that discharges of dredged or fill material will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.[16]

For the cumulative impact assessment, we recommend that the SEIS delineate appropriate geographic boundaries, including natural ecological boundaries whenever possible, as well as consider an appropriate time period for the project's effects. Data results, monitoring and resource reports developed after the 2004 SEIS should be used to evaluate the significance of any changes or degradation that has occurred due to construction and mining activities.

Past, present, and reasonably foreseeable future activities that should be considered in the cumulative impact assessment will vary across the geographic scope of the various mine-site and infrastructure components. Please refer to CEQ's "Considering Cumulative Effects Under the National Environmental Policy Act"[17] and the EPA's "Consideration of Cumulative Impacts in EPA Review of NEPA Documents"[18] for assistance with identifying appropriate boundaries and identifying appropriate past, present, and reasonably foreseeable future projects to include in the analysis.

In particular, we recommend that the cumulative effects analysis consider, but not be limited to:

- Past and current exploration and mining activities conducted by the applicant at the mine site area, including, Kensington, Comet, Jualin, etc.;
- Current activities occurring in the Lynn Canal and Berners Bay watersheds and Southeast Alaska;
- Reasonably foreseeable future use of project infrastructure; and
- Reasonably foreseeable future expansion of the mine beyond the timeframe that is currently proposed in the POA 1 (beyond the proposed ten years active mine life) and how that coincides with the currently proposed closure plan, as well as influence current alternatives.

Impacts to Environmental Resources

Tongass National Forest

The Kensington Gold Mine is located in the Tongass National Forest. As the nation's largest national forest, the Tongass contains the greatest area of remaining old growth temperate rainforest in North America. The Tongass National Forest provides important habitat for fish and wildlife, including all five species of Pacific salmon, and other species uniquely adapted to the rainforest ecosystem, such as the Alexander Archipelago Wolf, and the Queen Charlotte Goshawk. In addition, the Tongass supports healthy tourism, recreation, and commercial and sportfishing, as well as subsistence use by local residents and Native Alaskan tribes for fishing, hunting, berry picking, harvesting of native plants and other cultural activities. The Tongass National Forest also supports carbon sequestration and storage, which helps moderate changes in climate. We recommend that the SEIS fully evaluate the potential impacts from the proposed Project on the important biological, ecological, and physical resources that comprise the Tongass.

[16] 40 C.F.R. § 230.10(c).
[17] http://ceq.hss.doe.gov/nepa/ccenepa/ccenepa.htm.
[18] http://www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf.

The Berners Bay Marine Ecosystem

The Kensington Gold Mine is located within three watersheds on a peninsula formed between Berners Bay and Lynn Canal: Slate Creek and Johnson Creek drain into Berners Bay and Sherman Creek drains into Lynn Canal. The TTF (Lower Slate Lake) is constructed in the Slate Creek watershed, which forms the headwaters of Slate Creek and discharges into Berners Bay.

Berners Bay is an estuary fed by four glacial rivers, which serves as an ecologically diverse and productive marine ecosystem for fish and marine mammals. In spring, millions of eulachon smelt (hooligan) and Pacific herring enter the bay to spawn, which attracts Steller sea lions to feed prior to their pupping season. Humpback whales migrate into Berner Bay to feed on herring and other small fish. The Berners Bay estuary also provides important rearing habitat for Pacific salmon as adults prepare to migrate upstream to freshwater spawning rivers and as juveniles prepare to migrate out into the open ocean. In addition, the Bay is economically important for tourism and recreation for locals, as well as visitors.

We recommend that the SEIS discuss proposed activities that would result in potential impacts on the marine environment of Berners Bay and evaluate any impacts differing from those analyzed in the 2004 SEIS. Continued transportation across Berners Bay is directly connected to existing and future mine operations. For this reason, and because extension of the mine life would result in extension of transportation across Berners Bay for a longer period than described in the 2004 SEIS, we recommend that the SEIS for POA 1 describe impacts to Berners Bay from mining transportation or other project related activities that have occurred since the 2004 SEIS, discuss any differences in actual impacts from those predicted in 2004 and analyze future impacts due to extending the mine life and consequent ongoing transportation and use of Berners Bay.

In addition, we recommend that the SEIS discuss past and current long-term monitoring of the marine habitat, water quality, cultural and/or subsistence activities. This includes discussing any impacts that are different than predicted in the 2004 SEIS and potential future impacts to the fisheries and marine mammals. For example, NOAA Fisheries has conducted monitoring of Berners Bay associated with the Kensington Gold Mine since 2005. We recommend that the information from the monitoring studies conducted in Berners Bay be included in the SEIS. In addition, we recommend that the results of these studies be used to develop specific mitigation measures and BMPs to ensure adequate protection of the important resources and habitat in Berners Bay, as well as identify any additional opportunities for monitoring.

The ecosystem productivity of the Berners Bay estuary is closely tied to the health of four species of forage fish - Pacific herring, eulachon, capelin, and sand lance.[19] We recommend that the SEIS include past and current research and studies to help analyze and disclose the impacts to these species from the Project, including potential changes in phytoplankton abundance, water quality, etc. and disclose potential changes in spawning biomass for these four fish species. We recommend that the SEIS include Berners Bay fisheries information that could be used to evaluate potential impacts to the marine environment and identify appropriate mitigation and monitoring.

Aquatic Resources, including Wetlands, Lakes, Riparian Areas, and Estuaries

The Clean Water Act § 404(b)(1) Guidelines are the substantive environmental criteria for the evaluation of proposed discharges of dredged and/or fill material, and applicants must demonstrate

[19] Kurland, Connelly, Elliot, Steedle, and Rasher (2013). Comparative Ecosystem-Based Management of Several Forage Fishes in the Changing Berners Bay Estuary. Paper prepared for the Alaska Tsunami National Ocean Sciences Bowl.

compliance with the Guidelines.[20] Because aspects of the POA 1 activities would require a CWA § 404 permit, we recommend that the organization of the SEIS facilitate the Corps' evaluation of the proposed Project's compliance with the Guidelines. We recommend that issues relevant to compliance with the Guidelines be addressed explicitly in the SEIS or a stand-alone Section 404(b)(1) analysis be included as an appendix. As mentioned above, we recommend that the range of reasonable alternatives be evaluated in the SEIS to adequately identify the LEDPA in the Final SEIS.

The Guidelines prohibit any proposed discharge of dredged or fill material that does not include all appropriate and practicable measures to avoid and minimize potential harm to the aquatic ecosystem.[21] Subpart H of the Guidelines identifies numerous possible steps to minimize impacts, including, but not limited, to:

- Reducing the footprint of the project, using co-location of facilities whenever practicable;
- Implementation of best management practices and mitigation measures to reduce environmental impacts; and
- Configuring the project footprint to reduce or eliminate impacts to higher functioning aquatic resources and other appropriate and practicable measures.

In addition, the Guidelines prohibit, for example, the authorization of a proposed discharge of dredged or fill material that would cause or contribute to the violation of an applicable water quality or toxic effluent standard, jeopardize a listed threatened or endangered species, or impact a marine sanctuary.[22] We recommend that these criteria be included in the evaluation of the reasonable alternatives to the proposed action.

Characterizing Aquatic Resources and Wetlands

We recommend that the SEIS describe the wetlands and aquatic habitats in the affected environment by resource type using the data sources and classification approaches that provide the greatest resolution possible. For example, if wetlands are identified and characterized using a Cowardin classification and/or the Hydrogeomorphic approach, that mapping should be to the smallest identifiable map unit. Likewise, we recommend that streams be classified and mapped accordingly. The baseline information for aquatic resources should include their functional condition and integrity. We also recommend that the SEIS evaluate the characteristics of the potentially affected aquatic resources, how those characteristics provide fish habitat, and how such habitat could be adversely impacted by the proposed Project. Wetlands and streams perform different functions at different rates, and characterizing this information is critical for evaluating the potential environmental impacts of the proposed action, alternatives, and reasonably foreseeable actions on these resources.

Characterizing the distribution of resident and anadromous fish in potentially affected streams and other aquatic resources is also important, and we recommend that the SEIS include the use of data sources, such as aquatic resource monitoring conducted by the Project Proponent, the Anadromous Waters Catalog[23] and the Alaska Freshwater Fish Inventory.[24] We recommend that the SEIS update the information on Dolly Varden tissue metal levels reported in the 2004 Final SEIS (Section 4.9.1 page 4-36) with information from current reports and studies, including information to determine whether fish tissue metal concentrations have changed.

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[20] 40 C.F.R. § 230.12(a)(3)(iv).
[21] 40 C.F.R. § 230.10(d).
[22] 40 C.F.R. § 230.10(b).
[23] See https://www.adfg.alaska.gov/sf/SARR/AWC/.
[24] See http://www.adfg.alaska.gov/index.cfm?adfg=ffinventory.main.

Aquatic Resource Impacts Analysis

We recommend that the areal extent (i.e., acreage) of impacts to aquatic resources be quantified in the SEIS for both direct and indirect impacts. The acreage values for the direct and indirect impact footprints should include the acreage for streams as well as for wetlands, ponds, lakes, and other waters. For streams, the loss of channel length should also be quantified by linear feet and/or miles since channel length is a more intuitive metric than the acreage values. In addition to the areal or linear extent, impacts to aquatic resources should also be quantified by the expected change in the function these resources perform, including fishery support functions, or change in the condition of the resource.

Direct effects are impacts on aquatic resources within the footprint of the discharge of dredged or fill material. Direct effects at the mine site would include wetland, stream, and other aquatic resource losses within the footprints of the TTF, the ore storage and WRS areas, and other mine site facilities described in the POA 1.

Indirect effects on aquatic resources are those associated with the discharge of dredged or fill material, but do not result from actual placement of this material. These effects are also considered secondary effects under the Guidelines. Examples of indirect effects that should be evaluated in the SEIS include:

- Elimination of streams and wetlands due to expansion of the TTF, waste rock storage facilities and other components;
- Fragmentation of aquatic resources due to construction and expansion of project components;
- Degradation of downstream fish habitat due to streamflow alterations resulting from water capture, withdrawal, storage, treatment, or release at the mine site;
- Degradation of downstream fish habitat due to water quality impacts associated with mine construction and operation;
- Degradation of downstream fish habitat due to the loss of important inputs such as nutrients and groundwater from upstream sources; and
- Degradation of aquatic resources due to fugitive dust deposition from mining and transportation activities.

Functional Assessments

We recommend that the SEIS include discussion of the functions performed by the wetlands that would be impacted by the Project. Information about the functions performed by wetlands impacted by the Project is important to quantify the extent of Project-related changes and identify the likely environmental consequences of those changes in the SEIS. In addition, functional assessment is relevant to support the CWA § 404(b)(1) analysis and compensatory mitigation. The joint EPA/Corps Final Rule regarding *Compensatory Mitigation for Losses of Aquatic Resources*[25] states that functional or condition assessment methods should be used where practicable to determine how much compensatory mitigation is required to offset project impacts. Wetland function assessment method developed by the Alaska Department of Environmental Conservation is available for the Coastal Southeast and Southcentral Ecoregion.[26] In addition, the Wetland Ecosystem Services Protocol for Southeast Alaska (WESPAK-SE)[27] has been used to assess wetland functions within the City and Borough of Juneau.

[25] 40 C.F.R. § 230.93(a)(1).
[26] Alaska Department of Environmental Conservation. (2003). *Wetland Functional Assessment Operational Draft Guidebook for Assessing the Functions of Riverine and Slope River Proximal Wetlands in Southeast and Southcentral Alaska, Using the HGM Approach.*
[27] Adamus, P.R. (2015). *Manual for Wetland Ecosystem Services Protocol for Southeast Alaska (WESTPAK-SE).*

Water Quality and Quantity

Evaluating Impacts to Surface and Groundwater

We recommend the SEIS: (1) characterize baseline surface water and groundwater quality, quantity, and interactions; (2) evaluate whether impacts of Kensington mine operations have resulted in impacts that are different than those predicted in the 2004 SEIS; and (3) upon the updated baseline conditions, evaluate the water quality and quantity impacts of all aspects of the proposed operations and alternatives. We recommend this include potential surface water impacts from mine facilities due to the potential for acid generation and metal-leaching resulting from mining activities and mine waste management, as well as the potential for road construction and operational activities to contribute to sediment loading into streams.

EPA recommends that the SEIS specifically include the following information in the water resource analysis for the Project and alternatives (see also our recommendations for Analysis Tools and Methodologies):

- Characterization of existing groundwater, surface water, springs, and wetland resources, including acreages and channel lengths; groundwater levels, flow direction and gradients; chemistry; habitat types, values and functions of wetlands and surface waters;
- A detailed water balance model identifying the water sources and volumes and discharge locations;
- Development of a hydrogeologic conceptual site model, including: maps of groundwater, surface water, springs, and wetland resources in the area to be developed or affected;
- Information on the quantity and location of aquifers, including Underground Sources of Drinking Water, recharge zones and source water protection areas;
- Identification of any CWA § 303(d) listed waterbodies and any existing restoration efforts for these waters;
- Identification and description of hydrologic pathways (e.g., the connectivity of springs or groundwater to surface waters; the connectivity of all streams to each other and to wetlands);
- Assessment of which waters may be impacted, the sources and nature of potential impacts (both quality and quantity), and a comparison to applicable environmental standards (e.g., surface water and drinking water quality standards);
- Consideration of downstream impacts and potential for changes in metal speciation and bioavailability;
- Evaluation of surface water and groundwater use, including maps and source identification of agricultural, domestic, and public water supply wells or intakes; and
- Consideration of effects of seasonality on water quantity and quality impact assessment, including predictions for all phases of the project (construction, operations, and closure).

Anti-degradation

The anti-degradation provisions of the CWA apply to those waterbodies where water quality standards are currently being met. In certain state-designated high-quality waters, the anti-degradation provisions of the CWA require that the level of water quality necessary to protect existing uses of a waterbody be maintained and protected.[28] We recommend that the SEIS discuss whether and how the CWA anti-degradation requirements would be met.

[28] 40 C.F.R. § 131.12.

Water Management and Treatment

We recommend that the SEIS describe the plans for water management, treatment, and discharge associated with POA 1 during operations and closure. Specifically, we recommend that the SEIS:

- Evaluate the adequacy, reliability, effectiveness, and uncertainty associated with ongoing and closure water management and treatment, accounting for seasonality and potential changes associated with future climate scenarios;
- Characterize current and predicted chemical compositions, mass loadings, and quantities of process waters, mine drainage, storm water, and treated and untreated effluent and disclose any chemistry and mass loading differences and any changes to the water management and treatment processes that were identified in the 2004 SEIS;
- Include modeling of predicted stream concentrations of contaminants of concern to evaluate the potential impacts to water quality; and
- Identify the Alaska Pollutant Discharge Elimination System discharge locations and applicable water quality standards and analyze the likelihood and ability of discharges to meet applicable standards. We also recommend that any planned or potential requests for water quality standard revisions be disclosed in the SEIS.

Sediment Management and Stormwater Runoff

We recommend the SEIS evaluate construction design and operation practices that will be used to minimize erosion and control storm water runoff and sediment loading to surface waters. We recommend that the SEIS discuss specific mitigation measures that may be necessary to prevent and minimize adverse impacts to water quality and disclose their effectiveness. We suggest that the Forest Service consider the industrial stormwater best management practices identified by the EPA for mineral mining and processing facilities[29] and specify those that would be suitable for the Project. We also recommend that the SEIS document the Project's consistency with applicable APDES stormwater permitting requirements.

Geochemical Characterization, Acid Rock Drainage and Metal Leaching

To provide reliable predictions of water quality and impacts to surface water and groundwater due to wastewater and mine waste discharges, we recommend that the physical and chemical characteristics of the ore, waste rock, tailings, and other bulk material (such as materials that may contain graphitic phyllite) be identified in the SEIS. We recommend that the SEIS document the representativeness of samples used to support projections and that projections represent a range of conditions that currently occur and could occur in the future, including under potentially altered climate conditions. We recommend that physical and chemical characterization be conducted in a manner that provides environmentally conservative estimates of impacts.

The EPA Region 10's *Hardrock Mining Source Book for Industry* may be a useful resource for recommendations related to the NEPA analyses of mining projects.[30] We recommend that the following information be utilized to characterize geologic and mineralogy setting/aqueous geochemistry in the baseline environment and impact prediction sections of the SEIS: whole rock analysis, mineralogy, drill core descriptions, block or similar models, acid-base accounting, long-term kinetic testing, and hydrogeochemical models for prediction of water quality with sufficient inputs. Graphitic phyllite material is naturally occuring in the area of the TTF dam, and has the potential to generate acid rock

[29] https://www3.epa.gov/npdes/pubs/sector_j_metalmining.pdf

[30] U.S. Environmental Protection Agency Region 10 (2003). EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska.

drainage, resulting in metals leaching. The activities proposed in the POA 1 may result in exposure of additional graphitic phyllite material and potential acid rock drainage and metals leaching to the TTF and the surrounding environment. Since the presence of graphitic phyllite was not predicted in the 2004 SEIS, we recommend that this SEIS describe the geology of the area around the TTF, whether additional graphitic phyllite could be encountered, and how the bulk materials would be tested to determine the presence of graphitic phyllite and other potentially acid generating materials. We also recommend discussion of how graphitic phyllite is currently being managed and treated and the effectiveness of the control and management measures.

We recommend that the SEIS evaluate the potential for acid rock drainage and metals leaching from ore, waste rock, tailings, construction materials and road cuts, which may affect water quality and the future efficacy of the existing water treatment plants. We recommend that the SEIS include the plans for testing and monitoring of these materials for potential acid generation and metals leaching.

Air Quality

The EPA recommends that the SEIS evaluate the impacts from construction and operation of the Project and alternatives on air quality. We recommend identifying the measures and/or BMPs that may be needed to mitigate potential significant impacts. Such an evaluation is necessary to ensure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary and/or cumulative degradation of air quality.

Sources of Emissions

Potential air pollutant sources of concern for the proposed Project may include:

- Operation of heavy machinery and equipment during construction that results in the emission of fossil fuel combustion exhausts;
- Fugitive dust emissions from the construction and operations associated with material movement, storage and transportation;
- Criteria and hazardous air pollutant emissions related to increased mill and facility processing and output, including emissions from electricity generation;
- Hazardous Air Pollutants may result from fuel combustion and ore processing. The *National Air Toxics Assessment* asserts that a large number of human epidemiology studies show increased lung cancer associated with diesel exhaust and significant potential for non-cancer health effects.[31] Also, the Control of Emissions of Hazardous Air Pollutants from Mobile Sources Final Rule[32] lists 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects. We recommend that the SEIS disclose whether hazardous air pollutant emissions would result from the Project construction and operations, discuss the health effects associated with air toxics and diesel particulate matter and identify sensitive receptor populations and individuals likely to be exposed to these emissions.

Air Quality Analysis

We recommend following these steps for the air quality analysis:

1. Characterize the existing conditions to set the context for evaluating project impacts and disclose whether there are differences from the characterization in the 2004 SEIS, including:
    - Regional climate and meteorology;

[31] https://www.epa.gov/technical-air-pollution-resources
[32] 66 Fed. Reg. 17,230, March 29, 2001

- Air quality and any relevant air quality related values (e.g., visibility, dust deposition),
- Identification of sensitive receptors in the vicinity (such as communities and any sensitive wilderness areas identified by state or federal land managers);

2. Review air quality regulations and any air permitting requirements that apply to the new and modified air pollutant sources associated with the Project;
3. Develop a comprehensive inventory of current and project-related increases of criteria pollutant emissions (in tons per year), greenhouse gas emissions (in metric tons CO_2-equivalents per year) and hazardous air pollutant emissions; and
4. If the projected emission increases are significant, then near-field air quality modeling should be conducted to assess project-related air quality and/or dust deposition impacts.

Fugitive Dust

We recommend that the SEIS include a comprehensive Fugitive Dust Control Management Plan that outlines the procedures, BMPs, mitigation and monitoring measures and contingencies to address the suppression of fugitive dust emissions. Sources of fugitive dust may include unpaved gravel roads, ore storage and WRS areas other bulk material stockpiles, and new construction disturbance areas, as well as other areas of the existing and/or expanded facilities where fugitive dust emissions may be generated. We recommend that the SEIS evaluate the effectiveness of the proposed Fugitive Dust Plan and include additional measures if warranted.

Fish, Wildlife, and Historic Properties

Endangered Species Act, Marine Mammal Protection Act, and Essential Fish Habitat Requirements

The EPA recommends that the SEIS evaluate impacts to fish and wildlife from the proposed Project and alternatives. Special consideration should be given to listed and proposed species under the Endangered Species Act, Marine Mammal Protection Act, and to Essential Fish Habitat identified under the Magnuson Stevens Fishery Conservation and Management Act. NEPA regulations require that, to the fullest extent possible, the SEIS be prepared concurrently with environmental analyses required by the ESA and other environmental laws.[33] The Magnuson Stevens Act, ESA, and MMPA implementing regulations also encourage coordination with other environmental reviews.[34, 35]

We recommend that the SEIS identify the species listed and proposed as "threatened" or "endangered" under the ESA, as "depleted" under MMPA and also identify essential fish habitat within and around the Project area (including Berners Bay and Lynn Canal). We recommend that the SEIS describe impacts to these species and to EFH and discuss the mitigation measures proposed to avoid, minimize, mitigate and monitor such impacts. We understand that the Forest Service would develop a biological assessment to evaluate impacts to listed and proposed species and EFH, and recommend that it be included as an appendix to the SEIS.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to consider the effects of their actions on historic properties, including those of traditional religious and cultural importance, following regulations in 36 C.F.R. Part 800. The NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, to consult with the appropriate state or tribal Historic Preservation Officer. We recommend that the SEIS discuss potential

[33] 40 C.F.R. § 1502.25.
[34] 50 C.F.R. § 600.92(c), (f).
[35] 50 C.F.R. § 402.06

impacts to historic properties, including any tribal, cultural, or other treaty resources that are historic or traditional cultural properties and identify alternatives and mitigation measures that would minimize these impacts.

Impacts to Communities and Human Health

Sociocultural Impacts

It is anticipated that the proposed Project will maintain employment opportunities for Alaska Native residents and continue to generate local revenues. While employment opportunities and local revenues generally increase a community's standard of living, they can also impact families, communities and cultures, especially in areas where residents are participating in traditional cultural practices. We recommend that the SEIS identify the specific communities, federally recognized Alaskan Tribal Governments and the Alaska Native Claims Settlement Act Corporations that could be impacted by the Project, both positively and negatively.

We recommend that the sociocultural impacts associated with all project alternatives be evaluated and disclosed in the SEIS, which could include, but not be limited to:

Socioeconomic Impacts

- Evaluating changes to the local and regional economy that have occurred as a result of operation of the Kensington Mine since the 2004 SEIS and whether any additional changes could occur as a result of POA 1;
- Evaluating impacts associated with economic changes to families, communities, and cultures, including potential changes to aspects of the local and regional economy that are currently subsistence-based and evaluating replacement costs of traditional foods if access is impacted; and
- Evaluating the potential decline in the local and regional economy following temporary and/or permanent mine closure.

Accessibility and Compatibility of Traditional Use Areas

- Identify and integrate traditional ecological knowledge into the SEIS analysis, as appropriate. TEK can include the collection of local and traditional knowledge concerning the affected environment, and anticipated impacts from the Project to community and Tribal traditional use areas, such as for subsistence, harvesting, hunting and trapping, fishing, travelling, berry picking, and other uses;
- Conduct additional TEK studies to clearly identify concerns and potential impacts, including cumulative impacts, from the proposed Project and alternatives.
- Identify changes that have occurred to traditional use areas as a result of mine operation since the 2004 SEIS and whether additional Project activities may conflict with traditional and accustomed uses including potential access limitations to traditional use areas; and
- Coordinate with communities and Tribes to identify mitigation options for avoiding and minimizing conflicts or impacts to traditional and accustomed subsistence uses.

Consultation and Coordination with Alaskan Tribal Governments and Native Corporations

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued to establish regular and meaningful consultation and collaboration with Tribes in the development of federal policies that have tribal implications, and to strengthen the United States' government-to-government relationships with Indian tribes. In addition, pursuant to Public Law I 08-

119, 118 Stat. 452, as amended by Public Law 108-4217, 188 Stat. 3267, federal agencies are required to consult with Alaska Native Claims Settlement Act Corporations on the same basis as Indian Tribes. We recommend that the Forest Service develop and implement a *Tribal Government-to-Government Consultation and Coordination Plan* that provides a framework for meaningful engagement with tribal governments and corporations as necessary for this Project. We recommend that the Plan describe the process and outcome of any government-to-government and/or government-to-corporation consultations regarding the POA 1 SEIS, issues raised during the consultations and how those issues were addressed. In addition, we recommend that direct outreach be provided to tribes by sharing the proposed Kensington Gold Mine POA 1 in whatever manner would best reach each tribal community.

Tribal Cooperating Agencies

We recommend that Native Alaskan Tribal governments be invited to participate as cooperating agencies on the SEIS. Cooperating agency involvement establishes a mechanism for addressing intergovernmental issues throughout the SEIS development process. We recommend that the Forest Service invite potentially affected tribal governments that have the resources and interest in serving as cooperating agencies for the SEIS development, consistent with CEQ Memorandum.[36] Alaska Tribal Governments that currently and/or traditionally utilize land and resources that could be impacted by the Project may offer special expertise through traditional knowledge, and cultural and subsistence activities may support baseline information and prediction of impacts to environmental, cultural and other resources.

We note that there is precedent for tribal government participation as cooperating agencies for mining project EISs in Alaska, such as the Red Dog Aqqaluk Expansion SEIS, Chuitna SEIS, Donlin Gold EIS and Pebble Project EIS.

Environmental Justice and Potentially Impacted Communities

In compliance with NEPA and Executive Order 12898 on Environmental Justice, actions should be taken to identify and address disproportionately high and adverse human health or environmental effects of each federal agency's programs, policies, and activities on minority and low-income populations and Native American tribes.[37] Agencies must conduct adequate public outreach and allow for participation that ensures that low income and minority populations, including tribes, understand the potential impacts to their communities and resources.

The CEQ has developed guidance on how to address Environmental Justice in the environmental review process under NEPA.[38] In accordance with this guidance, the EPA recommends that the SEIS address the following points:

- Identify low income, minority and Alaska Native communities that may be impacted by the project;
- Describe the efforts that have been or will be taken to meaningfully involve and inform affected communities about project decisions and impacts and disclose results of those efforts;
- Evaluate identified project impacts for potential to disproportionately impact low income, minority or Alaska Native communities relative to a reference community;
- Disclose how potential disproportionate impacts and environmental justice issues have been or

[36] Council on Environmental Quality Memorandum for Heads of Federal Agencies: Designation of Non-Federal Agencies to be Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act. (July 28, 1999)
[37] E.O. 12898 (February 11, 1994); Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations.
[38] Council on Environmental Quality (December 10, 1997). Environmental Justice; Guidance under the National Environmental Policy Act. http://ceq.hss.doe.gov/nepa/regs/ej/justice.pdf

will be addressed by the Forest Service's decision making process;
- Propose mitigation for unavoidable impacts that will or are likely to occur; and
- Include a summary conclusion, sometimes referred to as an "environmental justice determination" that concisely expresses how environmental justice impacts have been appropriately avoided, minimized, or mitigated.

We also recommend that particular attention be given to consideration of the dependence of local communities on local and regional subsistence resources, access to those resources, and perception of the quality of those resources. Additional information and tools for environmental justice analysis can be found on the EPA's website.[39]

Health Risk or Impact Analysis

Health impact analysis has been used more frequently to assess potential health effects of resource extraction projects since the 2004 SEIS was completed. HIA methodology became available for Alaska in 2015 (*Technical Guidance for Health Impact Assessment*[40]). We recommend that the Forest Service consider whether a HIA or other type of evaluation of impacts to health would be warranted. This may depend upon whether health impacts have occurred due to implementation of the Kensington Project since the 2004 SEIS and on input received during scoping related to health concerns.

Failure Risks, Structural Stability, and Hazardous Materials Management

Unanticipated Incidents

Unanticipated spills, accidents, and failures are potential risks to health and safety, and the environment at mining facilities. We recommend disclosing whether such incidents have occurred since the 2004 SEIS. We recommend that the POA 1 SEIS describe the control measures and contingency plans that will be in place to prevent these incidents from occurring during implementation, including evaluation of the proposed design and management of the TTF, dam, and other structures and evaluation of wastewater management and reclamation plans to determine the project-specific likelihood of different types of accidents and failures. For those incidents that are determined to be of low probability but high consequence, we recommend that the SEIS evaluate the potential effects of such events on aquatic ecosystems, fishery resources, and other resources. We recommend that the SEIS also discuss mitigation measures and BMPs that could minimize the risk or damages from such incidents.

One of EPA's concerns with POA1 is the risk and environmental impacts of a failure or breach of the a TTF dam, which would result in the release of large volumes of contaminated tailings slurry and water into Slate Creek and Berners Bay. We recommend that the SEIS evaluate a failure scenario for the TTF and dam at the Stage 4 height proposed in POA 1 and consider including modelling results of hypothetical breaches of the TTF dam resulting in discharges associated with both a low and a high catastrophic incident. The modelling information should predict the magnitude, direction, and depth of the tailings slurry and water discharge into Slate Creek and the marine environment. We recommend that the modelling results be used to guide the development of management, mitigation, and monitoring measures to minimize the potential for a catastrophic TTF dam breach. We also recommend the SEIS include an Emergency Action Plan to demonstrate that there is sufficient capacity to respond to a potential catastrophic incident.

[39] https://www.epa.gov/environmentaljustice
[40] See http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf.

Physical Stability of Structures

The EPA recommends that the SEIS assess the likelihood of earthquakes and landslides in the region and describe the geotechnical stability of the TTF, dam, and WRS areas during operations and closure. We recommend including a description of how these facilities are designed and how they would be operated, closed, and monitored to ensure stability. In addition, we recommend that a risk assessment, such as a Failure Modes Effects Analysis, be conducted for the TTF dam with the results summarized in the SEIS. An FMEA considers potential failure modes and identifies the relative likelihood and consequences of the failure modes, which are key considerations for impact assessment and developing alternatives and mitigation. We can provide examples of the use of FMEAs in other mining EISs if requested.

We recommend that the SEIS update the static and seismic stability analyses of the TTF dam to account for the maximum surface water elevation at the full capacity of the dam (Stage 4) and compare results to State of Alaska and industry standard stability criteria and requirements. We also recommend that the SEIS evaluate the impacts of increasing the TTF dam footprint and thickness. At closure, the design concept would result in a significant volume of water permanently covering and submerging the tailings, which may have potential drawbacks.

We recommend that the SEIS include the results and analysis from the following evaluation methods:

1. The contractive versus dilative properties of the existing tailings at the Kensington Mine TTF can be evaluated by cone penetrometer testing.[41] The results of this test may inform the stability analysis of the proposed increase in the TTF dam;
2. The potential for seismic response to be magnified by the valley wall configuration can be evaluated using a relatively new method for determining an appropriate factor for increasing the design peak ground acceleration;[42]
3. The relative factor of safety for the TTF, with and without water cover, can be compared by conventional methods (SLOPE/W or equivalent with the site-specific peak ground acceleration of 0.396;[43] and
4. The relative factor of safety for the TTF embankment dam with a slope of 1.5H:1V and 2H:1V (SLOPE/W or equivalent).

In addition, we recommend consideration of the TTF dam geometries that are stable under short-term or temporary conditions, such as flooding, and under design-earthquake stresses. The Stage 3 dam design did not complete static stability analyses on the maximum pool elevation.[44] Current tailings embankment design recognizes that short-term stresses from extreme flood events can result in stability and piping conditions that are of concern. The Stage 3 dam design evaluations reported that deformations on the slopes (upstream, downstream and upstream rock berm) were likely with design-earthquake stresses under post-closure and degraded liner scenarios.

Given the proposed size of the TTF dam associated with the Project and the downstream marine resources of Berners Bay, we recommend that the Forest Service require the TTF impoundment and

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[41] Robertson, P.K., 2016, Cone penetration test (CPT)-based soil behavior type (SBT) classification system — an update, Can. Geotech. J. 53: 1910–1927 (2016) dx.doi.org/10.1139/cgj-2016-0044.

[42] Katebi, M., et al., 2018, A Numerical Study on the Seismic Site Response of Rocky Valleys with Irregular Topographic Conditions, Journal of Multiscale Modelling, September 2018, DOI: 10.1142/S1756973718500117

[43] Refer to https://hazards.atcouncil.org/#/seismic?lat=58.91832966&lng=-135.048499806&address=

[44] Golder, 2017, Stage 3 Dam Crest Raise Detailed Design Package, Kensington Mine Lower Slate Lake Tailings Dam (AK00308), report to Coeur Alaska Inc.

dam, and the design for increasing the dam's height, be independently reviewed by an expert third party professional engineer given the proposed size of the TTF dam associated with the Project and the downstream marine resources of Berners Bay. We recommend that the results of the independent review be documented in the SEIS in order to support the assessment of geotechnical stability.

As mentioned above, we recommend that the Forest Service consider alternatives to improve physical stability of the tailings, including consideration of filtered tailings (dry stack). We note that consideration of a filtered tailings alternative, assessment of safety and stability via a FMEA and independent review are consistent with the recommendations from the Mount Polley Engineering Investigation and Review Panel.[45] We recommend that the Forest Service consider the Review Panel Report and the recommendations related to best available technology, design commitments to support permit applications, and actions to validate the safety of tailings storage facilities.

Hazardous Materials Management

We recommend that the SEIS address the potential direct, indirect, and cumulative impacts of hazardous materials/wastes management and storage from the construction and operation of the proposed Project and alternatives. We recommend that the SEIS disclose the types and quantities of materials that will be used during implementation of POA 1, describe the measures that will be taken to minimize the risks associated with an unanticipated accidental release, include the emergency measures that will be implemented should such an event occur and discuss how potential adverse impacts from spills may be mitigated by effective containment and cleanup operations.

Analysis Tools and Methodologies

Baseline Data Adequacy

We suggest categorizing and synthesizing existing data to ensure information is available for use in the SEIS analysis. We understand that the Forest Service intends to establish focused workgroups during development of the SEIS. We support this approach and recommend that the workgroups include cooperating agency subject matter experts for key areas (air, water, wetlands, fisheries, etc.) to review baseline data for completeness, identify data gaps, and recommend approaches toward resolving those gaps in a timely manner.

Predictive Modeling

We recommend that predictive modeling be based on site-specific conceptual models that describe the system boundaries, spatial and temporal scales, hydraulic (for water modeling) and chemical characteristics, sources of data and data gaps, and the mathematical relationships used to describe processes. In particular, water quality models should be capable of predicting both whole water and dissolved fractions of metals/metalloids and should provide temporal predictions that are consistent with the time-steps in applicable water quality criteria. We recommend that any modeling documentation include:

- Tables of parameter values used in the model;
- Tables and graphs of results;
- Uncertainty and sensitivity analyses;
- Errors associated with both measured and assumed data; and
- Recommendations for further analysis, if applicable.

[45] Independent Expert Engineering Investigation and Review Panel (IEEIRP), 2015. Report on Mount Polley Tailings Storage Facility Breach, report to the Government of British Columbia, through the Minister of Energy and Mines.

We recommend that discussions on modeling include a clear statement of the management objectives intended to be achieved, the level of analysis required to meet the objectives and uncertainties associated with modeled outcomes. We recommend review of the EPA's guidance for the effective development, evaluation, and use of models in environmental decision making.[46]

We recommend that the SEIS use caution in describing absolute outcomes based on modeling. Mathematical modeling used for describing the physical and chemical characteristics of the Project site and potential impacts includes a level of uncertainty; understanding these uncertainties and associated risks is necessary for informed decision making. We also strongly recommend an appropriately conservative approach be taken with modeling and a range of predictive outcomes be discussed (e.g., most likely case, reasonable worst-case, and reasonable best-case scenarios) that reflect a range of climatic settings and critical input values. Inclusion of a reasonable range of outcomes allows the agencies to make better informed plans for mitigation, adaptive management, and contingencies to respond to reasonably foreseeable adverse impacts.

Mitigation, Monitoring and Adaptive Management

Mitigation

NEPA regulations at 40 C.F.R. § 1508.20 define mitigation to include five categories of actions to address impacts. Briefly stated, these are: avoiding, minimizing, rectifying, reducing, and compensating. The regulations at 40 C.F.R. § 1502.14(t), 1502.16(h), and 1508.25 indicate that appropriate mitigation measures should be addressed in an SEIS both as part of the analysis of alternatives and in discussions of environmental consequences.

We recommend that the SEIS identify the type of activities that would require mitigation measures during the construction, operation, and closure phases of this Project. In addition, we recommend identifying whether implementation of these measures would be required by the Forest Service or any other governmental entity and which entity would be responsible for implementation. To the extent possible, we recommend that mitigation goals and measurable performance standards be identified to reduce impacts to a particular level or adopted to achieve an environmentally preferable outcome. CEQ guidance on the Appropriate Use of Mitigation and Monitoring seeks to enable agencies to create successful mitigation planning and implementation procedures with robust public involvement and monitoring programs.[47]

Mitigation is also relevant to evaluating compliance with the CWA § 404(b)(1)Guidelines, which prohibit discharges of dredged or fill material that cause or contribute to significant degradation to waters of the United States and all discharges "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."[48] Avoidance, minimization, and compensation form a "mitigation sequence" that must be followed in order to comply with the Guidelines' requirement that all appropriate and practicable steps be taken to mitigate impacts to aquatic resources.[49] To ensure the NEPA analysis sufficiently addresses the direct, indirect, and cumulative adverse impacts to wetlands and aquatic resources from the Project and supports the Guidelines analysis, we recommend that a Wetlands Compensatory Mitigation Plan be included in the SEIS as an appendix. We recommend that the Compensatory Mitigation Plan include a wetlands

[46] Guidance Document on the Development, Evaluation and Application of Environmental Models (PDFt EP All 00/K-09/003. March 2009. http://www.epa.gov/crem/cremlib.html.

[47] https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

[48] 40 C.F.R. § 230.10(d).

[49] 40 C.F.R. § 230.10(a), (d); See Memorandum of Agreement between U.S. Department of Army and the Environmental Protection Agency on the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines.

functional assessment using the methods mentioned above and contain all the required elements described in Subpart J of the Guidelines and identified in the joint EPA/Corps Final Rule regarding *Compensatory Mitigation for Losses of Aquatic Resources*.[50]

The Corps, Alaska District has developed a Credit Debit Methodology[51] as a tool to determine the sufficiency of compensatory mitigation to offset specific unavoidable losses to aquatic resources. We recommend that the Credit Debit Methodology be used to calculate (1) the mitigation debits resulting from this Project's specific unavoidable impacts to wetlands and aquatic resources, and (2) the mitigation credits that would be required to compensate for the Project wetland impacts by purchase of credits from an approved mitigation bank and/or an approved In-Lieu Fee program within the Southeast Alaska service area. As required by the joint EPA/Corps Final Rule regarding compensatory mitigation, "the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions." The EPA is available to work with the Corps, the Forest Service, and the applicant to review the Draft Compensatory Mitigation Plan.

Monitoring

Environmental monitoring programs should be designed to assess project impacts and effectiveness of implemented mitigation measures. We recommend that the monitoring programs:

- Define the monitoring goals and objectives;
- Provide details to demonstrate that goals and objectives will be achieved such as the parameters to be monitored, monitoring locations and frequency, data analysis, and reporting;
- Discuss actions (contingencies, triggers, adaptive management, corrective actions, etc.) that will be taken based on monitoring results;
- Identify and incorporate controls and pre-project data to enable detection of impacts, success of BMPs, and ability to distinguish these from natural variation; and
- Require regular analysis and reporting of data to oversight agencies.

We recommend that the monitoring programs be described and that the SEIS also discuss public participation and how the public can access information on monitoring results and mitigation effectiveness.

Adaptive Management Planning

We recommend that the SEIS utilize adaptive management and contingency planning to describe the strategy for responding to unforeseen circumstances at the site. The strategy could include "trigger levels" (e.g., exceedance of ecological benchmarks) or observations (e.g., statistically significant trends in indicators, permit violations, water balance problems, changes in discharge or chemistry of springs/seeps) that would set follow-up actions into motion. We recommend that this strategy or plan be described in the SEIS so that reviewers may comment. This type of plan, when coupled with the monitoring program, is necessary to mitigate for uncertainties and risks associated with predictions of environmental outcomes, and will provide an early warning system of unexpected outcomes.

Climate Adaptation

The EPA recommends that the SEIS include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed Project and the surrounding area, including long term stability of the infrastructure, such as the TTF impoundment and dam, WRS, underground stopes and portal,

[50] 33 C.F.R. § 332.4(c)(2)-(14)/40 C.F.R. § 230.94(c)(2)-(14).
[51] U.S. Army Corps of Engineers, Alaska District. (2016). *Alaska District: Credit Debit Methodology, Version 1.0.*

water treatment facilities, etc. and whether there would be changes to environmental impact predictions. This analysis would inform the development of measures to improve the resilience of the proposed Project. If anticipated changes could notably exacerbate the environmental impacts of the Project, the EPA recommends these impacts also be considered as part of the NEPA analysis and mitigation, monitoring, and adaptive management be included to address impacts.

In 2011, the Forest Service released the *National Roadmap for Responding to Climate Change.* (FS-9576), which was based on a *Strategic Framework for Responding to Climate Change* (October 2008). We support the management actions identified in the National Roadmap to facilitate adaptation and mitigation to address both immediate and long-term changes to climate and that the SEIS evaluate changes in climate consistent with the Forest Services' National Roadmap.

For planning and analysis to address climate change, the Forest Service would incorporate climate-related vulnerabilities and uncertainties into land management and project-level environmental analysis and discuss how a range of uncertainties in future climate conditions might affect the expected consequences of proposed activities. We also support the Forest Service in their commitment to implement effectiveness monitoring of management actions designed to facilitate adaptation and mitigation.

Financial Assurance

NEPA provides for the disclosure of information concerning the environmental consequences of a proposed action to agency decision makers and the public before decisions are made and actions are taken. A key component in determining the environmental impacts of a mining project is the effectiveness of the post-closure and reclamation activities, including long-term management, maintenance, and monitoring. In turn, disclosure of information regarding whether necessary closure and reclamation activities will be adequately funded is key to determining whether those activities will be effective. We therefore recommend that the applicant's ability to self-fund, and/or any third-party financial assurance mechanisms, be disclosed in the SEIS.

We recommend that the SEIS disclose the estimated costs to reclaim and close the site in a manner that achieves water quality goals and post-mining land use objectives. The EPA can be available for further conversations about the level of detail to include in the document.

Since the Forest Service approved the current Plan of Operations under the 2004 SEIS, financial assurance cost estimates and mechanisms have been developed. Our understanding is that there are currently a number of surety bonds totaling over $30 million to support reclamation and closure, post closure monitoring and maintenance and long-term care for inspections, maintenance, and monitoring of the TTF dam and roads in perpetuity.[52] We recommend that the SEIS include current cost estimates, as well as the financial assurance cost estimates projected out ten years, to account for inflation and Project changes associated with POA 1, including the TTF expansion.

[52] Source: http://dnr.alaska.gov/mlw/mining/largemine/kensington/