UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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REGIONAL
ADMINISTRATOR'S
DIVISION

January 4, 2021

Mr. Matthew Reece, Project Manager
Kensington Mine POA1 Draft SEIS
Juneau Ranger District
8510 Mendenhall Loop Road
Juneau, Alaska 99801

Dear Mr. Reece:

The U.S. Environmental Protection Agency has reviewed the Draft Supplemental Environmental Impact Statement for the Kensington Mine Plan of Operations Amendment 1, Juneau Borough, Alaska, prepared by the U.S. Department of Agriculture, Forest Service (CEQ Number 20200212; EPA Project Number 02-064-AFS). We are providing 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, EPA has been supporting the Forest Service in the development of the DSEIS by reviewing and providing comments on earlier preliminary administrative draft documents. In November 2019, we provided scoping comments to the Forest Service in response to the Notice of Intent to prepare a SEIS published in the Federal Register.

On July 16, 2020, CEQ published the final rule to Update the Regulations Implementing the Procedural Provisions of NEPA. The updated Regulations are applicable to federal actions commencing after the September 14, 2020 effective date. The Forest Service completed major NEPA analysis for the Kensington Mine in 1992, 1997, and 2004. Environmental Assessments were also conducted in 2014 and 2018. The Forest Service plans to incorporate the 2004 Final SEIS and the 2014 and 2018 EAs by reference and to apply the NEPA implementing regulations promulgated in 1978 to this SEIS.

The Kensington Mine is located in Southeast, Alaska, in the Tongass National Forest on a peninsula above Berners Bay and Lynn Canal within the Juneau Borough. Coeur Alaska, Inc. POA-1 for the Kensington Mine would expand the existing mine facility by 150 acres, extend the active mine life an additional 10 years, and increase mill production from 2,000 tons to 3,000 tons per day. The Proposed Action includes the following project components: (1) construction of a Lower Slate Lake Tailings Treatment Facility (Stage 4) dam raise (36-ft) of the existing TTF (Stage 3) dam (88-ft) to provide for an additional 4 million tons of tailings, which would increase the overall TTF tailings capacity to 8.5 million tons; (2) expansion of three existing Waste Rock Storage Facilities (Kensington, Pit #4, and Comet) and construction of one new WRS Facility (Pipeline Road) to provide an additional 5 million tons of waste rock storage, which would increase the overall WRS Facilities capacity to 34 million tons; (3) a Back Dam (40-ft high) to separate the TTF and Upper Slate Lake; (4) relocation of some ancillary facilities, including TTF area water treatment plants, seepage collection sumps, access road, power line, pipelines, and storm water diversion channels; and (5) construction of a road, river deltas for Dolly Varden spawning habitat, a new stream channel to reroute Fat Rat Creek into South Creek and replacement of culverts for fish passage to mitigate Slate Creek resident fish spawning habitat losses.

EPA appreciates that the DSEIS addressed certain comments and recommendations that were provided during the scoping process and our review of the preliminary administrative draft documents. However, our review of the DSEIS identified that some of our earlier comments were not addressed and the enclosed comments reiterate key comments from earlier reviews. We recommend that the following key concerns be addressed in the FSEIS:

- Provide an adequate level of project detail and NEPA analysis for the Proposed Action and Action Alternatives in order to evaluate and compare alternatives and their consequences;
- Disclose changes to water quality in Ophir Creek, Sherman Creek, and East Fork Slate Creek due to mining activities and include mitigation to avoid and reduce water quality impacts.
- Include a section that meaningfully evaluates impacts to groundwater.
- Avoid and minimize impacts to water quality and wetlands at the Comet WRS Facility and the proposed expansion by evaluating other options or mitigation measures, such as disposal of the sludge from the Comet WTPs with the paste backfill underground (instead of in the unlined WRS facility) and/or improved seepage collection measures.
- Defer the decision regarding the TTF tailings cap at closure until further monitoring and testing are conducted closer to the end of the active life of the TTF.
- Remove the addition of dilution water (from the Slate Creek clean water diversion) to the TTF water treatment plant or demonstrate how this practice complies with the Clean Water Act.
- Avoid or minimize graphitic phyllite excavation or disturbance until appropriate treatments are confirmed to minimize acid rock drainage/metal leaching to surface and groundwater.
- Provide wetlands compensatory mitigation concurrent or prior to construction activities to offset spatial and temporal losses and cumulative impacts to wetlands and their functions rather than delaying mitigation until post-closure of the mine.
- Identify the Environmentally Preferable Alternative based on criteria that address the significant issues of tailings dam geotechnical stability and protection of surface water and aquatic resources. EPA recommends that the environmentally preferable alternative includes components of the Filtered Tailings Facility Alternative and the Reduced Water at Closure Alternative since, compared to the Proposed Action and other alternatives, this combination alternative would best comply with best available technology for tailings facilities, have the lowest geotechnical risk, release the lowest volume of tailings and process water in the event of a TTF dam failure, and would have the least adverse impacts on wetlands and aquatic resources.

Our enclosed detailed comments and recommendations provide additional information regarding these key issues, as well as comments and recommendations that warrant further evaluation by the Forest Service in the FSEIS. We look forward to working with the Forest Service to finalize the SEIS for this project and would appreciate the opportunity to meet with the Forest Service and other cooperating agencies to discuss these comments and recommendations. Should you have any questions, please contact Mark Jen in the Alaska Office at (907) 271-3411 or jen.mark@epa.gov or you may contact me at (206) 553-1778 or pepple.karl@epa.gov.

Sincerely,

KARL PEPPLE Digitally signed by KARL PEPPLE
Date: 2021.01.04 15:52:14 -08'00'

Karl Pepple, Acting Chief
Policy and Environmental Review Branch

U.S. Environmental Protection Agency, Region 10
Detailed Comments on the Kensington Mine Plan of Operations Amendment 1
Draft Supplemental Environmental Impact Statement

Purpose and Need

The DSEIS (pp. S-1 and 2-1) indicates that the purpose and need for the proposed action is for additional tailings disposal and waste rock storage. Coeur Alaska Inc. plans to increase the mill rate to facilitate uninterrupted economic production of ore. The Kensington Mine is currently milling a maximum of 2,000 tons per day of ore (730,000 tons per year), which results in the generation of approximately 800 tpd of waste rock (300,000 tpy) or less. The Proposed Action would increase the mill throughput rate by 1,000 tpd[1] to an overall rate of 3,000 tpd.[2] The DSEIS does not provide production volume estimates for the tailings and waste rock to support the project purpose and need.

Recommendations for the FSEIS:

(1) Provide estimates of the volume of tailings and waste rock that would be generated from the increase in mill throughput of 1,000 tons per day. This information would support the purpose and need to raise the TTF (Stage 4) dam, expand the TTF capacity by an additional 4 M tons of tailings, and expand WRS capacities to accommodate an additional 5 M tons of waste rock; and

(2) Evaluate the capacity for the underground mine workings to accommodate this additional volume of tailings and waste rock as paste backfill.

Level of NEPA Analysis – Proposed Action and Action Alternatives

CEQ specifies that the degree of analysis devoted to each alternative in the EIS is to be substantially similar to that devoted to the proposed action.[3] Section 1502.14(b) does not specify the amount of information to be provided, but rather, prescribes a level of treatment, which may in turn require varying amounts of information to enable a reviewer to evaluate and compare alternatives.

Recommendations for the FSEIS: The Forest Service should prepare a more robust comparison and analysis of alternatives for the tailings disposal features. Specifically, include in Table S-1 (p. 2-50) and Table 2.7-1 (p. 2-53) the comparison of the "tailings disposal features" for the No Action, Proposed Action, and Action Alternatives. Include in the comparison: additional project features/components, such as the dam heights/dimensions for the TTF (Stage 3 and 4), Back Dam and toe buttress, hazard potential class, factor of safety, results of the geotechnical and stability analysis, dam breach analysis and run out distances, reclamation and closure actions, water cover during operations/closure, etc. This information would provide a more meaningful side-by-side comparative summary related to the DSEIS significant issues.

Alternative: Filtered Tailings Facility (No Stage 4 Dam)

Alternative Locations

The DSEIS (p. 2-39) indicates that the FTF would be located immediately northwest of the existing TTF and southwest of Upper Slate Lake and the Filter Plant would be constructed northeast of the existing TTF. We have concerns regarding the proposed location of the FTF, which is immediately upslope of

[1] An increase in the mill throughput rate of 1,000 tpd (365,000 tpy) ore would result in the production of 400 tpd (150,000 tpy) of waste rock.
[2] A total mill throughput rate of 3,000 tpd (1.1 M tpy) of ore would result in the production of 1,200 tpd (450,000 tpy) of waste rock. Over 10 years, this would be 4.5 M tons, which is below the proposed 5 M ton capacity.
[3] Council on Environmental Quality (March 23, 1981, as amended 1986). *Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*. Accessible at https://www.energy.gov/sites/prod/files/2018/06/f53/G-CEQ-40Questions.pdf.

the TTF since the DSEIS (p. 3-29) indicates that a failure of the FTF could potentially cause a failure of the TTF Dam. In addition, alternative FTF locations not adjacent to the TTF would eliminate the need for a toe buttress separating the FTF from the TTF.

> *Recommendations for the FSEIS:* Evaluate alternative locations for the FTF and the Filter Plant that would avoid potential impacts to the existing TTF (Stage 3) dam, such as (a) upslope above the TTF water level; (b) on uplands, which avoids and/or minimizes impacts to wetlands and other aquatic resources; and (c) other reasonable locations within the same watershed or a different watershed as the TTF.

Design and Construction

EPA has concerns that the DSEIS does not provide a level of detail and analysis regarding aspects of the FTF Alternative to adequately evaluate the potential direct, indirect, and cumulative impacts to environmental resources.

> *Recommendations for the FSEIS:*
>
> (1) Provide a preliminary drawing (overview and cross-section) of the FTF design, including the proposed toe buttress;
>
> (2) Refine the geotechnical stability/seismic analysis based on the preliminary drawings, as needed;
>
> (3) Describe the construction methods, including the removal of productive old growth trees and overburden, site preparation of the FTF foundation by incorporating a compacted base layer, impermeable geomembrane liner, and/or other techniques and methods;
>
> (4) The DSEIS mentions the presence of graphitic phyllite (pg. 2-40), but should also evaluate the extent and volume of graphitic phyllite and describe treatment options to address ARD/ML by covering with concrete in place, and removal, storage, and disposal as paste backfill underground, etc.; and
>
> (5) Describe the details regarding the seepage collection system, including drains and ditches. For an example on the level of detail and analysis regarding the FTF Alternative design, construction, and evaluation, refer to the 2013 Greens Creek Mine FEIS/ROD.[4]

Co-Disposal Options

The DSEIS (p. 2-40) indicates that the slopes of the FTF would be covered with a 15-foot armoring layer of coarse mine waste concurrently with tailings placement to reduce erosion. At closure, the entire surface of the FTF would be armored with waste rock. We recommend that co-disposal of the filtered tailings and waste rock within the FTF be evaluated as an option to potentially improve FTF stability and reduce impacts associated with the proposed WRS expansion and new WRS facilities.

> *Recommendations for the FSEIS:* Evaluate co-disposal options for the FTF Alternative, including:
>
> (1) Co-mingling, where filtered tailings and waste rock material are mixed together within the FTF. (The mixing would promote filling of the voids (mingling) to maximize density of the material);
>
> (2) Co-placement, where filtered tailings and waste rock material are not mixed. (Waste rock is end dumped or used to create internal berms or retaining walls in the FTF); and

[4] United States Department of Agriculture, Forest Service (2013). Greens Creek Mine Tailings Disposal Facility Expansion Final Environmental Impact Statement and Record of Decision Volume I Tongass National Forest Admiralty Island National Monument, Juneau, Alaska (R10-MB-744c).

(3) Co-deposition, similar to co-placement, but the tailing and waste rock are generally placed in independent layers allowing the deposited tailings to naturally enter the voids in the underlying waste rock. (Subsequent layers of waste rock followed by filtered tailings are repeated throughout the FTF process).[5]

Seepage and Groundwater

The DSEIS (p. 3-28) indicates that the FTF would require an underdrain and geomembrane liner system to capture and control seepage and drainage through the tailings to protect groundwater. However, the DSEIS does not provide any analysis related to the type of liner that would be used and its effectiveness and, therefore, does not include adequate information to meaningfully analyze potential impacts to groundwater from the FTF Alternative.

Recommendations for the FSEIS:

(1) Include a new section specific to evaluating Groundwater Quality and its environmental consequences (see also groundwater comments below);

(2) Evaluate impacts of seepage to groundwater by providing: (a) the conceptual design of the underdrain and seepage management system and, based on that design, evaluate the effectiveness of the system (e.g., percentage of seepage would be collected); (b) an estimate of the amount and quality of seepage and runoff that would occur during operations and closure to support evaluation of water treatment needs;

(3) Evaluate whether the current WTP process would be sufficient to treat seepage and meet water quality standards; and

(4) Evaluate the potential impacts of graphitic phyllite encountered during FTF construction on groundwater resources.

Alternative: Tailings Treatment Facility (Stage 4) Dam with Reduced Water at Closure

Subaerial Tailings Discharge

The DSEIS (p. 2-42) proposes a tailings disposal method using a subaerial spigot or series of spigots to create a tailings beach behind the dam that pushes a water pool to the north away from the TTF dam. The DSEIS indicates that this method of tailings deposition is proven technology that has been successfully implemented at mines throughout the world for the last 50 years, including climatic conditions similar to Southeast Alaska. EPA believes that the subaerial tailings disposal using a series of spigots to create a tailings beach behind the TTF dam and along the perimeter of the TTF is a promising approach to reduce the volume of water behind the TTF dam. However, we recommend additional information related to this alternative and options for tailings thickening to further promote water reduction be provided to support the impact analysis.

Recommendations for the FSEIS:

(1) Provide examples of other active mines in climatic conditions similar to Southeast Alaska where the subaerial tailings disposal method using a spigot to create a tailings beach has been successfully implemented;

(2) Evaluate the logistical, technological, and economical effectiveness of this method under Southeast Alaska climatic conditions;

(3) Evaluate thickened tailings disposal to the TTF to further reduce water;

[5] Accessible at: https://www.tailings.info/disposal/codisposal.htm

(4) Evaluate potential issues with the tailings beach as a source of fugitive dust resulting in secondary impacts to adjacent waterbodies and wetlands, which may impact fish habitat and water quality; and

(5) For the tailings beach at closure, evaluate (a) compaction of the tailings, (b) application of an impermeable liner and growth medium cover, and (c) seeding and/or active planting with local native herbaceous, shrub, and/or woody vegetation.

Alternative: Waste Rock Storage Facilities

Comet WRS Facility

The current Comet WRS occupies 9.5 acres and the proposed action would expand it by 27.6 acres to a total of 37.1 acres, which would directly impact 7.2 acres of wetlands and five historic properties. The DSEIS (p 3-24) indicates that sludges generated at the Comet WTPs are placed in the Comet WRS pile and that this practice would continue under the Proposed Action and alternatives. We note that other sludges from the TTF WTP and the Seep WTP are placed underground with the paste backfill. Disposal of Comet WTP sludges in the underground mine could avoid and minimize impacts to the 7.2 acres of wetlands associated with expansion of the Comet WRS facility.

Recommendations for the FSEIS:

(1) Identify the volume of sludge generated from the Comet, TTF and Seep WTPs;

(2) Evaluate (as an alternative, option, or mitigation) disposal of all sludges with paste backfill in the underground workings and/or co-disposed with the filtered tailings under the FTF Alternative; and

(3) Describe whether these sludge disposal options would reduce the 27.6 acre area proposed for the Comet WRS expansion, which could avoid and/or minimize direct impacts to wetlands and potentially improve WRS seepage water quality.

Pit #4 WRS Facility

The DSEIS (p. 2-26) describes the Pit #4 WRS expansion as an expansion of an existing WRS area. However, the 2004 SEIS and subsequent EAs did not evaluate the Pit #4 WRS location.

Recommendations for the FSEIS:

(1) Disclose why the Pit #4 WRS was not subject to past NEPA evaluation; and

(2) Because it is a connected action and was not evaluated previously under NEPA, analyze the impacts of the existing Pit #4 WRS, as well as the proposed expansion, and in particular, discuss the graphitic phyllite storage cell and potential impacts from seepage of ARD/ML to surface and groundwater.

The Proposed Action (Plan of Operations Amendment 1)

Comparison of Alternatives

The current TTF (Stage 3) dam is 88-ft high (740 AMSL) and has a capacity of 4.5 M tons. The Proposed Action would raise the TTF (Stage 4) dam by 36 feet (124-ft final height). This is compared to the Alternative for the TTF with Reduced Water at Closure, which proposes to raise the TTF dam (Stage 4) by 17-ft (105 ft final height). Raising the height and expanding the downstream base of the TTF (Stage 4) dam would expand the tailings and wastewater storage capacity by 4.0 M tons (total capacity of 8.5 M tons). EPA has concerns that the Proposed Action could significantly increase the risk and consequences of a failure or breach of the TTF (Stage 4) dam resulting in the release of tailings/water slurry into Slate Creek, Slate Cove and Berners Bay, a sensitive marine resource and habitat.

Comparison of Impacts

The Dam Breach Analysis (Section 3.2.1.2) indicates that a TTF (Stage 4) dam breach under the Proposed Action could result in a tailings release volume of approximately 4.6 M tons at the 75th percentile confidence interval due to the large volume of water present at closure (2,194 acre-feet) and high ratio of water to tailings in the impoundment. This represents a two-fold increase of 2.2 M tons that could be released under the No Action Alternative (p. 3-11) and is also greater than the amount of tailings released as compared to the FTF Alternative and the TTF (Stage 4) Dam with Reduced Water at Closure Alternative. In addition, tailings and process water released under the Proposed Action would extend farther into Berners Bay, as compared to other alternatives.

Irreversible and Irretrievable Commitment of Resources

The Proposed Action would result in significant impacts to environmental resources when compared to the other Action Alternatives. In particular, over 50 acres of wetlands would be eliminated, which represents over two times the direct impacts when compared to the FTF Alternative and the Reduced Water at Closure Alternative. We note that Coeur Alaska, Inc. has not proposed compensatory mitigation to offset the temporal and spatial loss of wetlands functions and values, as required pursuant to the CWA Section 404(b)(1) Guidelines and the Compensatory Mitigation Rule.[6] The Proposed Action would also result in the greatest impacts to soils, riparian management areas, and productive old growth forests, as well as fish habitat and stream crossings. CEQ regulations require that environmental consequences should evaluate the relationship between short-term uses of the resources and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments[7] to public trust resources of the Tongass National Forest.

Recommendations for the FSEIS:

(1) Evaluate the environmental consequences of the Proposed Action and Action Alternatives by considering the relationship between short-term uses of the resources and the maintenance and enhancement of long-term productivity;

(2) Evaluate any irreversible and irretrievable commitments of resources held in public trust by the Forest Service, as federal land managers for the Tongass National Forest;

(3) Evaluate an environmentally preferable alternative that would meet the Purpose and Need, while avoiding and minimizing significant adverse impacts to sensitive environmental resources held in public trust.

Environmentally Preferable Alternative

Criteria for Determining the Environmentally Preferable Alternative

The environmentally preferable alternative should fulfill the Purpose and Need and address the significant issues identified in the DSEIS which includes the potential for, and consequences of, dam failure, and impacts to water quality and aquatic resources. The DSEIS identifies geotechnical factors of safety and achievement of water quality standards as indicators. EPA concurs that these are important indicators. However, in order to compare alternatives and identify the environmentally preferable alternative, additional specific criteria can be developed that address the significant issue identified in the DSEIS. In regard to tailings dam stability, utilization of industry best available technology (BAT) is appropriate for evaluating the TTF alternatives. The independent review panel of geotechnical experts that investigated and reported on the Mount Polley Mine tailings facility breach in British Columbia, Canada recommended BAT include filtered, unsaturated, compacted tailings and reduction in the use of

[6] 33 C.F.R. § 332.4(c)(2)-(14)/40 C.F.R. § 230.94(c)(2)-(14).
[7] 40 C.F.R. § 1502.16

water covers in a closure setting.[8] In regards to water quality and aquatic resources, additional criteria based on pollution prevention (keeping clean water clean) and avoidance and minimization of impacts are appropriate.

> *Recommendations for the FSEIS:* We recommend that the following specific criteria be identified and applied to compare alternatives and objectively evaluate the environmentally preferable alternative, which should also be considered by the agency decision-makers in identifying the Preferred Alternative in the FSEIS/ROD:
>
> (1) Tailings dam safety criteria. The criteria related to geotechnical dam safety and potential for, and consequences of, failure, should include factors of safety (which are already identified in the DSEIS) and also components of BAT for tailings facilities as identified in the Mount Polley Independent Review Panel report and recommendations. Specifically, include filtered tailings and reduced water as components of BAT that are structurally preferable to other technologies and evaluate the extent to which the alternatives are consistent with BAT; and
>
> (2) Water quality and aquatic resources protection criteria. These criteria should include water quality standards (which are already identified in the DSEIS), compliance with the Clean Water Act, pollution prevention, and avoidance and minimization of impacts. Specifically, the following criteria should be identified (in addition to achievement of water quality standards): (a) pollution prevention by avoiding commingling clean and polluted waters; (b) minimize potential ARD/ML by minimizing disturbance and exposure of graphitic phyllite and other potentially acid generating materials; (c) preserve the natural fish habitat in Upper Slate Lake; and (d) avoid and minimize impacts and disturbance to high functioning wetlands and aquatic resources, stream crossings, fish habitat, productive old growth, historic/cultural resources, etc.

<u>EPA's Recommendation</u>

The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101, and causes the least damage to the biological and physical environment and protects, preserves, and enhances historic, cultural, and natural resources.[9] Based on the criteria identified above and our review of the DSEIS, we recommend that the environmentally preferable alternative incorporate aspects of the FTF Alternative and the TTF with Reduced Water at Closure Alternative. This combination alternative would entail disposing filtered dry stack tailings in a lined FTF during operations and closure of the existing TTF (Stage 3) dam with a reduced water cover. This combination alternative would result in the highest geotechnical factors of safety, reduced geotechnical risk, greatest consistency with tailings BAT, least dam failure consequences, and least impacts to wetlands and aquatic resources as compared to the Proposed Action and other alternatives.

> *Recommendations for the FSEIS:* The environmentally preferable alternative should include:
>
> (1) A FTF sited, designed, and constructed in a manner that would not impact the current TTF (Stage 3) dam;
>
> (2) Closure of the existing TTF by implementation of the subaerial tailings disposal method using a series of spigots to create an extended tailings beach behind the existing TTF (Stage 3) dam (while draining and/or pumping, treating and discharging remaining TTF water to reduce water);

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[8] Independent Expert Engineering Investigation and Review Panel (January 30, 2015). Report on Mount Polley Tailings Storage Facility Breach. Accessible at: https://www.mountpolleyreviewpanel.ca/sites/default/files/report/ReportonMountPolleyTailingsStorageFacilityBreach.pdf.

[9] CEQ's 40 Most Asked Questions.

(3) Elimination of the dilution stream added to the TTF WTP to avoid using dilution to augment water treatment;

(4) Maintain the hydrological separation between the TTF and Upper Slate Lake and not commingle clean lake waters with the TTF to preserve the biological and ecological integrity of Upper Slate Lake in its natural state;

(5) Elimination of the Back Dam separating the TTF from Upper Slate Lake since Upper Slate Lake would remain intact;

(6) Improvements to the Comet WRS facility to minimize impacts to Ophir Creek, including disposal of Comet WTPs sludge in the underground mine and improved seepage control, collection, and treatment;

(7) Monitor groundwater that could be impacted by seepage from the TTF, FTF, and WRS facilities and continue surface water and aquatic resources monitoring; and

(8) At closure, (a) reclaim the FTF, the TTF tailings beach, WRS areas, and other mine facilities by applying appropriate covers and growth media, broadcasting seeds and/or actively planting with local native herbaceous, shrub, and woody vegetation; (b) maintain reduced water conditions in the TTF and maintain the hydrological separation between the TTF and Upper Slate Lake; (c) continue water treatment as needed to ensure that water quality standards are met; and (d) continue environmental monitoring as needed.

Consistency with CWA Section 404(b)(1) Guidelines

EPA reviewed the U.S. Army Corps of Engineers Public Notice for the Kensington Mine POA-1 CWA Section 404 permit application and provided comments to the Corps in a letter dated December 9, 2020. In our comments, we identified the least environmentally damaging practicable alternative, which is consistent with our recommended environmentally preferable alternative under NEPA, as discussed above. Since the FSEIS would also support the U.S. Army Corps of Engineers decision pursuant to the CWA Section 404, as well as decisions by the Forest Service, there should be consistency between the LEDPA and the environmentally preferable alternative.

Recommendations for the FSEIS:

(1) Identify the environmentally preferable alternative in the FSEIS/ROD to be consistent with the requirements of NEPA and the CWA Section 404(b)(1) Guidelines. The NEPA environmentally preferable alternative may be equivalent to the LEDPA under the CWA; and

(2) The Forest Service should coordinate with the Corps and cooperating agencies to identify the environmentally preferable alternative.

Other Mine Facilities and Operations

Section 2.2.6 of the DSEIS identifies and discusses other facilities and operations at the Kensington Mine but does not describe the expansion of the underground mine workings associated with the Kensington, Jualin, and Comet ore bodies. Absent this information on underground mining, it is not clear whether mining activities, such as blasting, haul truck traffic, rock crushing, etc. could result in groundwater impacts and/or geotechnical instability of underground workings contributing to caving and surface subsidence, which in turn, could impact structural stability of aboveground facilities and infrastructure.

Recommendations for the FSEIS:

(1) Provide a map or schematic depicting the cross-section of the underground mine workings, such as the tunnels, shafts, portals, adits, ore bodies, paste backfill areas, etc. for the Kensington, Jualin, and Comet ore bodies;

(2) Identify the locations and additional capacity for paste backfill material placement in the underground workings;

(3) Describe potential impacts of expanded mining activities on the historic, current, and proposed underground mine workings, such as potential for instability, caving, and subsidence of underground workings on surface resources and proposed project facilities and activities;

(4) Identify the depth of the groundwater table and discuss the need to pump, treat, test, and monitor the groundwater, and evaluate potential impacts to groundwater during operations and closure;

(5) Evaluate the geotechnical/seismic stability analysis conducted for the underground mine workings, and the potential for subsidence and risks to worker safety;

(6) Identify and discuss past accidents, incidents, spills, and/or releases occurring in the underground workings;

(7) Discuss any emergency response planning efforts to address potential geotechnical and seismic failures and safety hazards associated with the underground mine workings;

(8) Identify mitigation measures to minimize the risk of potential failures, caving, and/or subsidence associated with the underground mine workings; and

(9) Discuss how the underground mine workings would be reclaimed at closure, and any planned post-closure, long-term monitoring of groundwater and stability.

Reclamation and Closure

Action Alternatives

The 2013 Reclamation and Closure Plan represents the No Action Alternative. The DSEIS includes a revised Reclamation and Closure Plan (Appendix E)[10] to reflect operations under the Proposed Action, but does not provide a similar level of detail for other alternatives.

Recommendation for the FSEIS: Provide a table that summarizes the reclamation and closure actions and timeframes for each project component (WRS, tailings, etc.) for the No Action, Proposed Action, and Action Alternatives, including the WRS Alternatives/Options so that the differences between alternatives/options are easily comparable.

Tailings Cover

The revised Reclamation and Closure Plan (Appendix E) indicates that a four- to six-inch tailings cover/amendment was a contingency for reclamation of the TTF. The DSEIS (p. 3-59) indicates that recent tests of the tailings sediment has determined that the tailings would be able to support development of benthic organisms, but possibly at lower densities than native substrate. The ADFG study[11] also indicated the tailings to be non-acid generating, similar water quality in the TTF to Upper Slate Lake and to baseline conditions of Lower Slate Lake, and inhabitation of aquatic macroinvertebrates in the TTF. Based on the results of the ADFG study, the tailings cover is no longer included as a contingency during final closure of the TTF.

Recommendations for the FSEIS:

(1) Discuss the Corps' CWA Section 404 permit special condition requiring that a determination of the suitability of the tailings to support benthic populations be conducted upon closure of the TTF; and

[10] Coeur Alaska, Inc. (2018) *Revised Plan of Operations Amendment 1 (POA1) for the Kensington Gold Mine, City and Borough of Juneau, Alaska.*

[11] Willson-Naranjo, G. R. & Kanouse, K. M. (2016). *Technical Report No. 16-02. Kensington Gold Mine Tailings Treatment Facility Studies.*

(2) Because tailings deposited over the existing tailings may not be homogeneous (e.g., different composition, density, etc.), include a mitigation measure that entails testing and monitoring the tailings during operations and at closure to evaluate the benthic population. The results of the tailings sediment testing and monitoring could serve as the suitability determination to support the Corps' permit condition at mine closure.

TTF Water Treatment Plant

The DSEIS (p 2-12) indicates that after the WTP influent meets water quality standards for four weeks and upon agency approval, operation of the WTP would be discontinued and the WTP would remain on operational standby for 18 months until the Forest Service and ADEC concur that treatment is no longer required. However, the DSEIS does not provide predicted water quality data or other information to support the four-week time frame.

Recommendations for the FSEIS:

(1) Provide information on the predicted temporal and seasonal variability of influent concentrations to support the utilization of the four-week time period;

(2) Provide information that shows that variability between weeks is more significant than seasonal variability and that any given four-week period in the year should be representative of annual conditions; (3) Clarify how the determination will be made regarding decommissioning and closure of the water treatment plant, and ensure that water quality standards would be met over the long term; and (4) Describe where and how WTP sludges will be disposed post-closure.

TTF Seep WTP

The DSEIS does not describe reclamation and closure associated with the TTF Seep WTP, which is needed to understand how long water treatment will occur beyond closure and the duration of potential impacts to water quality.

Recommendations for the FSEIS: Describe reclamation and closure for the TTF Seep WTP for all alternatives, including:

(1) How long water treatment will be needed after mining activities cease, including a basis for the time estimate;

(2) Whether the WTP process would need to be adjusted to reflect potential changes in water quality at closure; and

(3) If the WTP will be operated after mine closure, where and how the sludges will be disposed.

Comet WTP

The DSEIS does not describe reclamation and closure associated with the two Comet WTPs, which is needed to understand how long water treatment will occur beyond closure and the duration of potential impacts to water quality.

Recommendations for the FSEIS: Describe reclamation and closure for the Comet WTPs for all alternatives, including:

(1) How long water treatment and discharge through Outfall 001 will be needed after mining activities cease, including a basis for the time estimate;

(2) Whether the WTP processes would need to be adjusted to reflect potential changes in water quality at closure; and,

(3) If the WTPs will be operated after mine closure, where and how would the sludge be disposed.

Surface Hydrological Connection (Upper and Lower Slate Lakes)

The DSEIS provides information on post-closure TTF/lake surface areas for the Proposed Action and Alternatives. The Proposed Action TTF reclamation and closure would result in hydrologically connecting Lower Slate Lake (a tailings storage facility) with Upper Slate Lake (a freshwater lake) to create one large Slate Lake at closure. This would significantly increase the total volume of water behind the TTF (Stage 4) dam. As discussed in comments above, EPA's preference for the TTF closure is to maintain the Upper Slate Lake in its natural state as a freshwater lake. We have concerns regarding significant impacts that would occur in the event of a TTF breach or failure. Additional information is needed to understand how TTF closure would be accomplished and the resulting environmental consequences.

> *Recommendations for the FSEIS*: Provide the following information related to closure of the TTF:
>
> (1) Include estimates of the final surface area, depth, and volume of water behind the TTF (Stage 3) and (Stage 4) dams;
>
> (2) Identify the source of freshwater and method for increasing the water level above the tailings by 28-ft;
>
> (3) Describe how the reestablishment of flow between Upper and Lower Slate Lakes would be managed and controlled to maintain the 28-ft water cover; and
>
> (4) Evaluate the effects of raising the water level in Upper Slate Lake on the macroinvertebrate and benthic populations. The 2004 SEIS indicated that filling Lower Slate Lake with tailings "provided a much larger area of shallow native material to support macroinvertebrate recolonization."

Revegetation

The DSEIS (p. 2-13) indicates that revegetation monitoring study was conducted to evaluate successful reclamation methods. Three revegetation test plots were constructed in 2013 applying different revegetation methods. Vegetation establishment and erosion were monitored for five growing seasons following establishment. We have concerns that revegetation would include broadcasting of a seed mix and passive natural regeneration observation and success monitoring of native trees and shrubs on disturbed areas.

> *Recommendations for the FSEIS:*
>
> (1) Describe the different types of revegetation treatments implemented at the three revegetation test plots;
>
> (2) Identify the source(s), volume and depth of growing media to be applied over the disturbed areas, such as the WRS areas, gravel roads and pads, borrow areas, and the TTF margin areas; and
>
> (3) Evaluate revegetation treatments that include active planting with local native herbaceous, shrub, and woody species, including sedges, bluejoint reedgrass, Sitka alder, shore pine in wetland areas, and western hemlock, Sitka Spruce, Yellow Cedar in uplands. For specific revegetation techniques and seed options, refer to *A Revegetation Manual for Alaska*.[12] In Southeast Alaska, EPA has been successful in revegetating uplands by taking intact portions of local native overburden material comprised of young saplings and herbaceous/shrub vegetation

[12] Wright, Stoney J. (2008). *A Revegetation Manual for Alaska*. Alaska Plant Material Center, Alaska Department of Natural Resources.
Accessible at: http://dnr.alaska.gov/ag/akpmc/pdf/RevegManual.pdf.

and placing them on the gravel fill areas. This type of treatment would require watering and monitoring to ensure the substrate is well hydrated until it can be self-sustaining.

The DSEIS (p. 2-23) indicates that at reclamation, 4-feet of diorite rock and fine-grained fill salvaged during removal of the graphitic phyllite material would be used for soil cover on the Stage 4 dam but does not describe the characteristics of this material.

Recommendation for the FSEIS: Provide information and/or a reference regarding the metal concentrations and potential for ARD/ML of the diorite rock.

Financial Assurance

The DSEIS (2-18) indicates that the current estimate for direct, indirect, and inflated costs, including reclamation, monitoring, and long-term care and maintenance is over $30 M.[13] The modified amount to cover updated operations and new disturbance is estimated at over $36 million (Appendix E).[14]

Recommendations for the FSEIS:

(1) Include a revised FA cost estimate for each of the Action Alternatives (FTF and TTF with reduced water at closure);

(2) Identify the FA mechanisms and instruments, such as surety bonds, letters of credit, trust agreements, etc.; and

(3) Include a table summarizing the FA cost estimates for all alternatives for comparison to determine the adequacy of the FA cost estimates for post-closure monitoring and maintenance, as well as long term care and maintenance.

Geotechnical Stability and Safety

Evaluation of Major Dam Failures

Since the 2004 FSEIS was issued for the Kensington Mine, there have been over 45 reported major tailings dam failures globally.[15] In particular, on August 4, 2014, the Mount Polley gold and copper mine located in British Columbia, Canada, experienced a dam breach of its tailing storage facility resulting in a catastrophic release of tailings (7.3 M m^3), water (10.6 M m^3), and slurry (6.5 M m^3). There have been more recent incidents and failures of modern tailings dams.

Recommendations for the FSEIS:

(1) Summarize the recent major tailings dam failures and the lessons learned from each incident, including the Mount Polley Mine and other mines; and

(2) Apply the lessons learned from these dam failures to the evaluation of the proposed project, operation of the TTF and dam, and reclamation and closure of the TTF.

Evaluating Impacts to Berners Bay

The TTF dam failure breach analysis for the Proposed Action indicates that 4.6 M tons of tailings/water slurry would travel 50-miles downstream of the TTF to the East Fork of Slate Creek, Slate Creek, Slate Cove, and Berners Bay. EPA has concerns that a catastrophic dam failure scenario under the Proposed Action would have significant adverse impacts resulting in irreversible and irretrievable commitments to sensitive marine resources of Berners Bay. In particular, during March to May a catastrophic TTF dam breach could result in significant direct, indirect, and cumulative impacts and consequences to eulachon

[13] KC Harvey Environmental, LLC (2013). *2013 Reclamation and closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska.*

[14] Coeur Alaska, Inc. (2018) *Revised Plan of Operations Amendment 1 (POA1) for the Kensington Gold Mine, City and Borough of Juneau, Alaska.*

[15] Accessible at https://www.wise-uranium.org/mdaf.html

and Pacific herring spawning in Berners Bay, which could eliminate an entire population or future generations of this species. Steller sea lions haul out and time their pupping season during this seasonal spawning event. Other marine mammals, such as humpback whales migrate into Berners Bay during different seasons in the summer months, as well as Pacific salmon.

Recommendations for the FSEIS:

(1) Evaluate the irreversible and irretrievable commitments to sensitive marine resources of Berners Bay associated with the Proposed Action, including the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, as required by NEPA[16];

(2) Evaluate the tailings/water plume interaction with marine waters, including dispersion rates and processes, and the migration pattern and direction the plume would travel in the nearshore and offshore areas (toward Berners Bay or Lynn Canal). We believe this analysis would also be useful for purposes of planning, training, and identifying response capabilities that would be implemented in the event of a catastrophic tailings/water release resulting from the TTF dam breach; and

(3) Evaluate impacts on marine transportation, which include potential interruptions to the daily ferry schedule of mine workers, delivery of supply, fuel, and equipment to the mine site and ore concentrates from the mine site.

Inundation maps

The TTF dam failure analysis provides estimates of the volumes and run out distances associated with the Proposed Action. This analysis could be supported by depiction on inundation maps[17] to show the extent of tailings travel and deposition in Slate Creek, Slate Cove, and Berners Bay.

Recommendations for the FSEIS: Provide inundations maps using aerial imagery to depict (a) the run out distances (extent of flooding below the dam after failure) in East Fork Slate Creek, Slate Creek, Slate Cove, and Berners Bay for the No Action, Proposed Action, and Action Alternatives, (b) downstream structures or other development potentially at risk (Slate Cove Marine Terminal), (c) flood wave depth and arrival times, and (d) pre-deployment of response equipment in the area.

TTF Dam Mitigation

The DSEIS (pg. 3-11) states that the design for the TTF (Stage 4) dam may need to be modified to ensure stability of the riprap layer placed on top of the geomembrane liner during an earthquake. Liner damage could result if slippage of the riprap on top of the geomembrane becomes too great. This seems like an appropriate mitigation measure to enhance containment and stability.

Recommendation for the FSEIS: Include mitigation measures for the Proposed Action and the TTF with Reduced Water Alternative, which incorporates design modifications for the Stage 4 dam raise to ensure stability of the riprap layer on top of the geomembrane liner.

Independent Engineering Review

The DSEIS (2-14) indicates that long-term care and maintenance would consist of dam safety inspections and annual inspection and maintenance of the Stage 3 Dam and spillway in perpetuity. However, the DSEIS does not describe whether the current TTF dam or the design of the proposed dam raise (Stage 4) under the Proposed Action or TTF with Reduced Water Alternative would be subject to

[16] 40 CFR 1502.16.

[17] Alaska Department of Natural Resources (July 2017). *Guidelines for cooperation with the Alaska Dam Safety Program*. (Draft Revision).

independent engineering review. Regular independent reviews are a best practice for tailings dam design and management – refer to Global Industry Standard on Tailings Management,[18] Independent Expert Engineering Investigation and Review Panel Report on Mount Polley Tailings Storage Facility Breach,[19] Guidelines for Cooperation with the Alaska Dam Safety Program, Draft Revision,[20] and Federal Guidelines for Dam Safety.[21] The results of independent reviews can also provide meaningful information to support NEPA evaluations of dam stability and we believe this is warranted for the TTF dam since it would represent a significant hazard potential (Class I) dam with important aquatic resources downstream.

Recommendations for the FSEIS:

(1) Disclose whether the current TTF dam and designs of the proposed Stage 4 dam raise and Back Dam have been subject to independent engineering reviews;

(2) Summarize the results of these reviews (or provide a reference where readers can access the reviews). If the independent review noted deficiencies, then describe whether they have been corrected; and

(3) If an independent review has not been conducted, then this requirement should be included as a mitigation measure in the FSEIS/ROD. This independent review should occur at regular intervals to ensure that the dam continues to function as designed. We believe that the Forest Service can require regular independent engineering reviews per the FEMA Federal Guidelines for Dam Safety and to protect surface resources.

Graphitic Phyllite and ARD/Metal Leaching

Extent and Characterization of Source Materials

Geochemical testing performed on select samples[22] indicated some of the bedrock encountered in the area of the proposed TTF and Stage 4 Dam is potentially acid forming from graphitic phyllite (p. 3-24). These samples were collected from borings around the TTF and FTF areas although no maps or estimates are provided that identify the exact locations and amounts of the graphitic phyllite material. Given that graphitic phyllite was not predicted in the 2004 FSEIS, EPA believes that additional information and analysis is warranted in this SEIS in order to determine the extent and significance of graphitic phyllite as a source of ARD/ML under the Proposed Action and alternatives.

Recommendations for the FSEIS:

(1) Identify on a map the location of the sample borings and boreholes around the TTF and FTF, and other areas at the mine site where graphitic phyllite was encountered;

(2) Identify all potential graphic phyllite areas that would require management;

(3) Provide volume estimates for the potential new areas where graphitic phyllite material would require removal under all alternatives;

(4) Provide specific details of how the geochemistry and potential for acid generation will be further evaluated during implementation of the proposed action and alternatives, particularly in regard to potential impacts to surface and groundwater;

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[18] ICMM, UN, PRI (2020). *Global Industry Standard on Tailings Management.*

[19] Independent Expert Engineering Investigation and Review Panel (2015). *Report on Mount Polley Tailings Storage Facility Breach.*

[20] Alaska Department of Natural Resources (2017). *Guidelines for cooperation with the Alaska Dam Safety Program.(Draft Revision).*

[21] Federal Emergency Management Agency (2015). *Federal Guidelines for Dam Safety Risk Management (FEMA P-1025).*

[22] Golder Associates (2016). *Stage 3 Dam Crest Raise Detailed Design Package, Kensington Mine, Lower Slate Lake Tailings Dam, Coeur Alaska Inc. Juneau, AK*.

(5) Provide information on how it was determined that the material was acid generating and a table that shows the water quality results of the testing (e.g. Humidity Cell Test results/chemical release rates).

Temporal Dynamics of ARD/ML

The time period over which acid generation occurs is dependent on the neutralizing potential of the material. For some materials, acid generation may occur immediately following exposure to wet and dry conditions. Whereas, other materials may take decades before the neutralizing potential is reached and acid generation results is metal mobility. The time period over which acid generation occurs is important to evaluating the effectiveness of mitigation and monitoring measures.

Recommendation for the FSEIS: Provide information that addresses the temporal dynamics of acid generation resulting from exposed graphitic phyllite material and factor this information into the evaluation of mitigation measures.

Mobilization of Metals

Specific metals/metalloids of concern may be mobilized from the graphitic phyllite material under acidic conditions. The impact of acid generation is often concomitant with the mobilization of metals. For example, the DSEIS (p. 3-23) indicates that a total of four exceedances of effluent limitation for cadmium were reported in May, June, and July of 2013 at Outfall 002.[23] The source of the cadmium was the graphitic phyllite encountered during construction of the TTF (Stage 3) dam. Additional information on other metals would help identify if existing WTPs are capable of reducing the specific metal concentrations to the level where water quality standards are met.

Recommendations for the FSEIS:

(1) Identify and evaluate the primary metals that are elevated in the graphitic phyllite material that are leachable under acidic conditions; and

(2) Discuss graphitic phyllite in the context of the other mine materials by including a summary of recent Humidity Cell Test data for the other mine materials or a reference regarding where this information is publicly available.

Effectiveness of Treatments

All of the alternatives entail encapsulating graphitic phyllite (that is not removed) with concrete in the TTF spillway. However, the DSEIS indicates that there is uncertainty that encapsulation would be an effective mitigation measure and that seepage from the graphitic phyllite may continue and need to be captured and treated prior to discharge. Furthermore, the DSEIS (p. 3-27) indicates that without successful mitigation, treatment would be required for an extensive period post-closure or potentially in perpetuity to prevent long-term impacts on downstream water quality. We are concerned with the level of uncertainty associated with the effectiveness of encapsulation. The Reclamation and Closure Plan and financial assurance cost estimates do not currently include long-term water treatment. Different or additional mitigation measures and/or treatments may be required to prevent long-term impacts on downstream surface and groundwater quality.

Recommendations for the FSEIS:

(1) Evaluate mitigation measures to more effectively reduce the potential for ARD/ML from graphitic phyllite, such as including improved encapsulation techniques, avoiding disturbance of additional graphitic phyllite, and removing/excavating all the graphitic phyllite material;

[23] Alaska Department of Environmental Conservation (2017). *Alaska Pollutant Discharge Elimination System Permit Fact Sheet - Final. Permit Number: AK0050571 Kensington Gold Project.*

(2) Include the most effective mitigation measures as new mitigation required for the project in the FSEIS/ROD; and

(3) Update the Reclamation and Closure Plan and financial assurance cost estimate information in the FSEIS to include realistic time frames for post-closure water treatment of seepage associated with graphitic phyllite.

Groundwater Quality Analysis

Affected Environment and Environmental Consequences

According to the DSEIS (p. 3-2), analysis of impacts to groundwater quality would not differ from those presented in the 2004 FSEIS. However, the DSEIS (p. 3-17) also indicates that potential impacts to shallow groundwater could result from seepage of proposed mine facilities, such as tailings, waste rock, graphitic phyllite, and potential interactions with surface water. Although there is some limited discussion of waste rock and tailings seepage characteristics in the surface water quality section, the DSEIS does not include a meaningful evaluation of the extent to which seepage impacts groundwater. In addition, the DSEIS (p. 3-18) indicates that ambient shallow groundwater monitoring was not required under the Freshwater Quality Monitoring Plan.[24] The lack of information presented in the DSEIS does not fully support the conclusion that there are no impacts to groundwater.

As noted in comments below that there are increasing trends of some pollutants in Ophir, Sherman, and East Fork Slate Creeks, we have concerns that the DSEIS does not address whether this is due to APDES outfalls or seepage that flows into groundwater from the project facilities. In some areas, groundwater is hydrologically connected to wetlands and surface waters. In addition, there are new facilities associated with the proposed mine expansion and alternatives that were not analyzed in the 2004 FSEIS, as well as the presence of graphitic phyllite. We are concerned that the absence of analysis regarding the new and expanding facilities, and graphitic phyllite on groundwater resources represents a significant data gap.

Recommendations for the FSEIS: Develop a section on groundwater that includes the following:

(1) Provide results of any recent groundwater monitoring related to the existing TTF and WRS facilities in comparison to baseline groundwater data presented in the 2004 FSEIS to evaluate changes to groundwater or to support a conclusion of no changes;

(2) For proposed and alternative WRS facilities, TTF (Stage 4) dam, and the FTF, provide current groundwater quality data from the areas of these facilities to characterize the affected environment and describe potential effects on groundwater from these new facilities;

(3) Describe groundwater protection and mitigation measures, such as seepage systems, liners, treatment, testing, and monitoring associated with the TTF and WRS facilities with sufficient detail to meaningfully evaluate the effectiveness of the protection measures and support groundwater impact predictions;

(4) Include summary tables that provide results of TTF and WRS seepage water quality monitoring. This is particularly relevant for seepage due to graphitic phyllite and seepage from the Comet WRS; and

(5) If groundwater is not being monitored, then we recommend that monitoring be required by the Forest Service since seepage/shallow groundwater can have impacts on surface resources, such as wetlands, rivers, and other aquatic resources.

[24] KC Harvey Environmental, LLC (2005). *Freshwater Monitoring Plan for the Kensington Gold Project.*

Surface Water Quality Analysis

Water Quality Data

The DSEIS (Section 3.3.2) states that baseline surface water quality remains unchanged from the 2004 FSEIS and that review of the most recent annual water quality monitoring reports did not identify any significant trends or impacts to surface water quality. However, the DSEIS does not provide any water quality data tables as evidence to support this conclusion. Our review of the APDES Annual Report (2019)[25] indicates that there have been some changes from baseline conditions and some surface water quality standard exceedances due to mine operations, including the following: Johnson Creek (copper concentrations increased in 2019 relative to baseline concentrations and previous years); Slate Creek (TDS, sulphate, ammonia and nitrate concentrations increased compared to baseline conditions, and selenium and manganese concentrations increased in 2019; Sherman Creek (nitrate concentrations increased from baseline concentrations since 2011); and Ophir Creek (exceedances of water quality standards for nitrate, sulphate, and TDS).

> *Recommendations for the FSEIS:* Improve the accuracy of the discussion of surface water quality changes by providing the following: (a) summary data tables or trend figures that depict the changes in surface water concentrations over time to disclose where there have or have not been changes to the baseline conditions; and (b) where changes have occurred, describe what has caused these changes and identify mitigation measures that will be applied to reduce water quality impacts (this recommendation is discussed further below).

APDES Permit Exceedances

The DSEIS (Tables 3.3-1 and 3.3-2) identifies APDES permit exceedances between 2011 to 2016 and states that exceedances of effluent limitations have not been reported since 2018 (Section 3.3.3.1). However, based on review of the APDES Annual Report there appear to have been exceedances of the average monthly limits for cadmium, copper, iron, and mercury in Outfall 001 in 2019. We note that the APDES Annual Report compares monitoring data only to maximum daily limits, even though the APDES permit also establishes average monthly limits.

> *Recommendations for the FSEIS:*
>
> (1) Update the list of APDES permit limit exceedances to include more recent information from 2016 to the present since this is reflective of the most recent operations and water quality impacts; and
>
> (2) The Forest Service should consult with ADEC to update this list.

Impacts to Sherman Creek

The APDES Annual Report (2019) identified that nitrate concentrations have been increasing at Sherman Creek monitoring station (SH113) downstream of Outfall 001. Although nitrate concentrations are below the nitrate water quality standard, concentrations are greater than baseline conditions and the trend seems to be increasing. The DSEIS does not identify these impacts or describe whether concentrations are expected to continue to increase with implementation of the proposed action or alternatives.

> *Recommendations for the FSEIS:*
>
> (1) Disclose changes in Sherman Creek that vary from baseline conditions;
>
> (2) Describe the source of these impacts (presumably Outfall 001 or seepage);
>
> (3) Discuss whether nitrate concentrations are expected to continue or increase or otherwise change with implementation of the Proposed Action and alternatives; and

[25] Coeur Alaska (2020c). *Kensington Gold Project APDES Annual Report 2019, Volume 2: Water Quality*.

(4) If trends are predicted to increase above water quality standards, then identify mitigation measures that would be applied to prevent water quality standard exceedances.

Impacts to East Fork Slate Creek

The APDES Annual Report (2019) identified that nitrate, ammonia, sulfate, and TDS concentrations have increased from baseline conditions at East Fork Slate Creek monitoring stations (SMP-5, SLB, and SLC), all of which are downstream of the TTF. Trends appear to be increasing over time, particularly at SMP-5 which is directly below the TTF. The DSEIS does not identify this impact or describe whether concentrations are expected to continue to increase with implementation of the proposed action or alternatives.

Recommendations for the FSEIS:

(1) Disclose impacts to East Fork Slate Creek that vary from baseline conditions including ammonia, sulfate, and TDS;

(2) Describe the source of these contaminants and whether it is due to the Outfall 002 discharge and/or uncaptured TTF seepage;

(3) If seepage is the source, then describe the extent to which groundwater has also been affected;

(4) Discuss whether concentration trends for these contaminants are expected to continue or change with implementation of the Proposed Action and Action Alternatives; and

(5) If trends are predicted to increase above water quality standards, then identify mitigation measures that would be applied to prevent water quality standard exceedances.

Impacts to Ophir Creek

The APDES Annual Report (2019) shows spikes of increasing nitrate, sulphate, and TDS concentrations above baseline conditions and water quality standards at the Ophir Creek monitoring station (SH103), which is downgradient of the Comet WRS facility. The DSEIS does not identify these existing water quality impacts or describe whether the conditions could worsen with expansion of the Comet WRS facility under the WRS alternatives.

Recommendations for the Final SEIS:

(1) Disclose impacts to Ophir Creek that vary from baseline conditions;

(2) Identify the source of these pollutants (Comet WRS facility);

(3) Describe whether the impacts are due to runoff or seepage (or both) and the extent to which the Comet WTP sludges disposed in the WRS facility contribute to increased pollutants;

(4) If the source is from the Comet WRS facility seepage, then describe whether this seepage also impacts groundwater quality;

(5) Identify whether these impacts are expected to continue or worsen in groundwater, Ophir Creek, and Sherman Creek due to the proposed Comet WRS expansion associated with the Proposed Action and Action Alternatives;

(6) Identify mitigation measures to remedy the current sulfate, nitrate, and TDS water quality standard exceedances and avoid and minimize future water quality impacts associated with the Comet WRS facility expansion; and

(7) Identify groundwater monitoring and other effective seepage control and runoff management in order to capture and treat contaminated water before it enters surface and groundwater.

Exceedances of Effluent Limitations

The DSEIS (p. 3-23) indicates that Outfall 001 sulfate exceedances have been triggered by various reagents used in the water treatment process that contain sodium. The DSEIS notes that where possible, Coeur Alaska Inc. has been phasing out the use of sodium containing reagents and, as a result, sulfate has come back into compliance with permit limits.

> *Recommendation for the FSEIS:* Provide additional information (or a citation to a report) referencing that the sodium-based reagents were the source of the sulfate exceedance rather than ARD or leachate from sludges disposed in the Comet WRS facility.

The DSEIS (3-25) indicates that the TTF pond generally meets all Alaska WQS for metals and other constituents except for elevated levels of dissolved manganese. The average dissolved manganese concentration from 2013 through 2019 is 161 micrograms per liter (µg/L) which exceeds the WQS of 100 µg/L for the human consumption of fish[26, 27]

> *Recommendations for the FSEIS:*
>
> (1) Summarize the baseline water quality, including the TTF pond and seepage water quality; and
>
> (2) Identify the source(s) of the manganese.

Water Management and Treatment

Water Balance

The DSEIS (p. 2-9) includes a figure that shows the Water Balance and Management for the Kensington Mine which represents the No Action Alternative (Figure 2.2-6). This information would also be useful in evaluating and comparing the water management and treatment processes for the Proposed Action and other alternatives, and evaluating environmental consequences to surface and groundwater. In particular, the DSEIS briefly describes water management and treatment for the FTF and concludes that "…large differences in either the volume of water requiring treatment or the existing water treatment needs would be expected." (Section 3.3.3.4). The DSEIS does not provide an estimate of the magnitude of the water volume changes or whether the water treatment plant processes would need to be changed in order to accommodate increased capacity or different influent concentrations. Without this information it is not possible to fully assess the ability of the FTF Alternative to meet water quality standards. This information is also relevant to ensure an adequate and equivalent level of NEPA analysis for both the Proposed Action and Action alternatives in order to compare water management aspects of the alternatives, determine FTF water quality and changes to TTF water quality, and evaluate water treatment effectiveness.

> *Recommendations for the FSEIS:*
>
> (1) Develop a Water Balance and Management Model, similar to Figure 2.2-6, for the Proposed Action, the FTF Alternative, and the TTF (Stage 4 Dam) with Reduced Water at Closure Alternative;
>
> (2) Add tables that provide flow or quantity data (over the range of expected conditions) for all the water flows shown in Figure 2.2-6 and the new water balance figures for the other alternatives;
>
> (3) Estimate the amount of water that would need to be treated under the Proposed Action, FTF Alternative, and Reduced Water Alternative and estimate the influent water quality characteristics; and

[26] Coeur Alaska, 2020d. *Waste Management Permit No. 2013DB0002 2019 Annual Report.*
[27] Coeur Alaska, 2020e. *Waste Management Permit No. 2013DB0002 2019 4th Quarter Report.*

(4) Describe the specific water treatment process adjustments, if needed, to effectively treat water from the Proposed Action, FTF Alternative, and Reduce Water at Closure Alternative to meet water quality standards based on the predicted water quality and range of flow conditions.

Dilution Stream

The Water Balance and Management figure for the Kensington Mine (Figure 2.2-6) shows a dilution stream entering the TTF WTP. The use of dilution was not evaluated as part of the water treatment process in the 2004 FSEIS and may not comply with the CWA and the National Pollutant Discharge Elimination System regulations[28] which prohibit flow augmentation unless a specific analysis supporting its use has been completed. We have concerns that the dilution stream was not discussed in the 2004 FSEIS, which represents a significant change to project water management. Additional analysis is warranted in this SEIS to disclose why this change occurred, its environmental effects, and when it was authorized to ensure consistency with the CWA and to meaningfully analyze the water treatment process, which is key to maintaining water quality standards in Slate Creek.

Recommendations for the FSEIS:

(1) Identify the specific date when the dilution stream was added as an input to the water balance and water treatment process;

(2) Discuss the basis for this change;

(3) Identify the source of the dilution water;

(4) Identify where the dilution water is being added in the water treatment process either (a) before treatment, or (b) after treatment, or (c) in one of the treatment steps;

(5) Identify the volume of dilution water that is added in relation to the amount of TTF water being treated (in other words, discuss the extent to which dilution is being relied on versus water treatment to meet discharge limits); and

(6) Discuss how the use of a dilution stream complies with the flow augmentation prohibitions under Section 402 of CWA and the NPDES regulations cited above.

Water Quality Monitoring Locations

The DSEIS (Section 2.2.8) refers to freshwater quality monitoring as being defined by the APDES permit, the SWPPP, and the Forest Service freshwater monitoring program. The APDES and SWPPP monitoring was found in documents contained in the DSEIS reference list, but the reference list did not appear to include a reference to the Forest Service's monitoring program or requirements. The DSEIS does not provide a figure that shows monitoring locations in relation to current mine operation components and proposed components of the alternatives to demonstrate the sufficiency of the monitoring locations and conclusions of the impact assessment. It is unrealistic to expect readers to refer to multiple prior and current plans to understand the monitoring when this could easily be presented in a figure.

Recommendation for the FSEIS: Provide a figure that shows the surface water and groundwater monitoring locations in relation to current and proposed project components.

Waste Rock Storage Areas

The proposed action and action alternatives would include expanding the WRS areas at Kensington, Pit #4, and Comet and constructing a new one along Pipeline Road. Additional WRS options were evaluated in the DSEIS, including a WRS along Snowberm Road and Johnson Creek. We have concerns that there is limited information in the DSEIS regarding water management and treatment associated

[28] 40 CFR 125.3(f).

with stormwater runoff and seepage to surface and groundwater, and other aquatic resources during the construction and operation of these WRS areas.

Recommendations for the FSEIS:

(1) Describe the water management and treatment aspects of each WRS area in a similar level of detail and analysis that has been completed for other mine facilities;

(2) Identify on maps and/or figures the water management and treatment features, such as diversion berms, buttresses, and channels, treatment ponds, outfalls, etc. and identify the receiving water bodies for the Johnson Creek and Snowberm WRS options;

(3) Summarize the monitoring results from past studies and monitoring data from WRS areas, particularly the results of metals, TSS, and nitrate data from WRS seepage and runoff, and adjacent surface waters; and

(4) Discuss stormwater management for each WRS area with equivalent detail, including mitigation measures and best management practices to minimize erosion and sedimentation to downslope water bodies.

Wetlands and Riparian Management Areas

Temporal Losses

The DSEIS (p. 3-30) indicates that the following units of measure are used to analyze effects to wetlands and RMAs over short-term and long-term timelines for acres and functions of wetlands converted or lost, as well as impacts to RMAs. The DSEIS does not define "short-term" and "long-term" timelines and does not quantify the impacts (acres) to wetlands types and functions converted and/or permanently lost during these timelines.

Recommendations for the FSEIS:

(1) Define "short-term" and "long-term" effects (e.g., days, months, years, decades, perpetuity, etc.);

(2) Include the definition of other effects, such as "temporary" and "permanent;"

(3) Quantify the short-term, long-term, temporary, and permanent effects to wetlands types, classes, and functions (acres) and RMAs (linear feet) lost or converted for the Proposed Action and Action Alternatives; and

(4) Include the analysis regarding temporary, short-term, long-term, and permanent effects (acres) in Tables 3.4-1, 3.4-2, 3.4-3, and 3.4-4 for the Proposed Action and Action Alternatives.

Spatial Losses

On November 9, 2020, the Corps issued a Public Notice (PN) for the Proposed Project concurrent with the DSEIS. The estimates of wetland impacts (acres) and other Waters of the United States, are not consistent for the Proposed Action. For example, information in the PN indicates that the dam construction, WRS and topsoil stockpile sites, and the fish habitat mitigation would impact 32.68 acres of WOTUS. Whereas, the DSEIS (p. 3-36) indicates 52.9 acres.

Recommendation for the FSEIS: Correct the discrepancy in the estimates regarding spatial impacts (acres) to WOTUS for the Proposed Action in the FSEIS/ROD and the Corps permit issued under CWA Section 404.

Indirect Impacts

The DSEIS (p. 3-30) evaluates direct impacts to wetlands and their functions and RMAs for the Proposed Action and Action Alternatives, including the WRS options. The DSEIS does not evaluate indirect impacts to wetlands and RMAs associated with other mining facilities and activities. These

indirect effects are typically accounted for in mining EISs and are also relevant to the CWA 404(b)(1) analysis which would be informed by the SEIS.

Recommendations for the FSEIS:

(1) Evaluate indirect sources of wetland and RMA impacts, such as fugitive dust deposition from heavy equipment/trucks travelling on gravel roads and pads; WRS facilities; the FTF; the tailings beach; changes in surface and groundwater hydrology (e.g., flooding, diversions, and/or dewatering), water-body crossings, fragmentation, etc.;

(2) Quantify the indirect impacts to surface waters, wetlands (acres) and RMAs (linear feet) so that the full magnitude and extent of impacts are evaluated and disclosed; and

(3) Include this analysis in Tables 3.4-1, 3.4-2, 3.4-3, and 3.4-4 for the Proposed Action and action alternatives.

Fugitive Dust

Deposition of fugitive dust associated with heavy equipment and trucks travelling on gravel roads and pads, WRS facilities, and other sources at the mine site may smother aquatic vegetation, wetlands, and RMAs resulting in impairment of their functions and values. For example, the Alaska Stand Alone Pipeline Project Final Supplemental EIS estimated that fugitive dust could travel up to 50-ft from gravel roads and, depending on the prevailing wind direction, up to 350-ft from material sites.[29] We have concerns that fugitive dust may be deposited to the ground surface and indirectly degrade or impair important wetland and RMA functions, such as water quality, and fish and wildlife habitat. Fugitive dust may represent a significant indirect impact during periods of seasonally dry, cold, winter months with low precipitation.

Recommendations for the FSEIS:

(1) Provide estimates of the magnitude and extent (e.g., distance and area from the source of the fugitive dust) of the indirect impacts to wetlands and RMAs;

(2) Evaluate the potential for functional degradation and/or impairment to wetlands and RMAs for the Proposed Action and alternatives; and

(3) Include this indirect impacts analysis on Tables 3.4-1, 3.4-2, 3.4-3 for the Proposed Action and alternatives.

Reclamation Plan

The DSEIS (3-34) indicates that under the approved 2013 Reclamation and Closure Plan, approximately 113 acres of wetlands and wetland/upland mosaic would be reclaimed.[30]

Recommendations for the FSEIS:

(1) Include a summary of the 2013 wetland reclamation plan components, including quantification of the wetland types, classification, and functions (acres) to be reclaimed, and the reclamation/restoration options (e.g., in-kind or out-of-kind, on-site or off-site, one-for-one reclamation: acre-for-acre, function-for-function, permittee responsible, in-lieu fee, etc.). Conversion of wetlands to uplands does not compensate and does not offset the overall net loss of wetlands acres/functions;

[29] U.S. Army Corps of Engineers. (2018). *Alaska Stand Alone Pipeline Project, Final Supplemental Environmental Impact Statement*. Accessible at http://www.asapeis.com/docs.htrnl.

[30] KC Harvey Environmental, LLC (2013) *Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska.*

(2) Implement wetland reclamation/restoration projects concurrent with mine construction; and

(3) Include a mitigation measure to update/revise the 2013 Reclamation Plan to reflect the additional direct, indirect, and cumulative impacts to wetlands and RMAs resulting from the Forest Service's preferred alternative.

Compensatory Mitigation

CWA Section 404 Requirements

The FSEIS will be used to support the U.S. Army Corps of Engineers' ROD and permit under the Clean Water Act Section 404(b)(1) Guidelines. We have concerns that there is no discussion of the CWA regulatory requirements to provide compensatory mitigation to replace the unavoidable wetland impacts associated with the Proposed Action and action alternatives. The Guidelines require that compensatory mitigation shall, to the maximum extent practicable, occur in advance of or concurrent with the project impacts. To ensure that the NEPA analysis sufficiently addresses the direct, indirect, and cumulative adverse impacts to wetlands and aquatic resources from the Proposed Action and action alternatives and supports the Guidelines analysis, wetlands compensatory mitigation is required for this project.

Recommendations for the FSEIS:

(1) Discuss the CWA Section 404(b)(1) guidelines regulatory requirements for compensatory mitigation;

(2) Evaluate the mitigation sequence: avoidance, minimization, and compensatory mitigation for the Proposed Action and Action Alternatives; and

(3) Develop a Draft Wetlands Compensatory Mitigation Plan (CMP) and include as an Appendix and/or upload it to the Forest Service's Kensington Mine project website.

Spatial and Temporal Losses

EPA has concerns that reclamation/restoration of wetlands and aquatic resources would not commence until after mine closure, which would be extended beyond 2033. In addition to the spatial loss of wetlands functions and values, this deferral of reclamation/restoration would result in long-term temporal losses of wetlands functions and values that have not been adequately compensated to offset the unavoidable adverse impacts to wetlands and aquatic resources since the Kensington Mine started operations in 2010. This delay in compensating for the cumulative temporal and spatial loss of wetlands function and values would be extended over 20 years or longer.

Recommendations for the FSEIS:

(1) Evaluate the cumulative impacts to wetlands by considering spatial losses (e.g., unavoidable direct and indirect impacts) and the temporal losses (20 year +) to wetland functions and values; This analysis could be included as a comparison table that identifies the historic wetland losses (e.g., types, acres, etc.), the proposed wetlands impacts, and those proposed for reclamation and restoration to determine the overall net loss of wetlands;

(2) Evaluate off-site and in-kind compensatory mitigation;

(3) Evaluate permittee-responsible mitigation options;

(4) Evaluate approved third-party (a) mitigation banks and/or (b) in-lieu fee sponsors within Southeast Alaska service area; and

(5) Include a wetlands functional assessment that contains 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*.[31]

[31] 33 C.F.R. § 332.4(c)(2)-(14)/40 C.F.R. § 230.94(c)(2)-(14).

Credit-Debit Methodology

The Corps, Alaska District, has developed a Credit Debit Methodology as a tool to determine the sufficiency of compensatory mitigation to offset specific unavoidable losses to aquatic resources. 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." This would include consideration of the temporal and spatial loss of wetlands and aquatic resources.

Recommendations for the FSEIS: Using the Credit Debit Methodology:

(1) calculate the mitigation debits resulting from the proposed project and alternatives unavoidable impacts to wetlands and aquatic resources;

(2) calculate the mitigation credits that would be required to compensate for the unavoidable adverse wetland impacts resulting from the proposed project and alternatives unavoidable impacts to wetlands and aquatic resources; and

(3) evaluate the purchase of credits from an approved mitigation bank and/or an approved ILF program within the Southeast Alaska service area.

Permittee-Responsible Mitigation

The Proposed Action would include the construction of two river deltas adjacent to Upper Slate Lake to support Dolly Varden spawning habitat and a new stream channel to reroute Fat Rat Creek into South Creek, and replacing two culverts to promote fish passage. The DSEIS also indicates that wetlands would be created from the reclamation of the Comet WTP and pond. Wetland functions would be assessed and recorded to track progression of the wetland area to a functional system.

Recommendations for the FSEIS:

(1) Incorporate the proposed wetland restoration and creation projects as permittee-responsible mitigation options in the Wetlands CMP, such as the Dolly Varden spawning habitat along Upper Slate Lake, new stream channel along Fat Rat Creek, and the Comet WTP pond; and

(2) Identify the acreage and the wetland type, class, and functions that these proposed restoration projects would compensate for in terms of the direct, indirect, and cumulative impacts resulting from the Kensington Mine since operations commenced in 2010.

National Forest System Mitigation

We note that the Forest Service, and the Corps have entered into a Conservation Land Use Memorandum of Agreement for the purpose of establishing a mutual framework whereby projects providing compensatory mitigation requirements under the CWA Section 404 associated with Department of Army permits may be used to (1) preserve, protect, restore, enhance or establish aquatic resources on National Forest Systems (NFS) lands; and/or (2) contribute suitable lands or funding for suitable lands be incorporated in the NFS.

EPA would be available to work with the Forest Service, the Corps, and the applicant to evaluate options for compensatory mitigation and to review the draft Wetlands CMP.

Marine Transportation

The Slate Cove Marine Terminal near Berners Bay serves the daily ferry services for the employees, delivery of supplies, equipment, materials, and fuel to the mine, and ore concentrate shipment. The 2004 SEIS estimated 25 ore concentrate round trip shipments per day. However, the current number of concentrate shipments is approximately 12 loads per day from the mill to the port laydown facility with a tractor-trailer truck. An additional change from the 2004 FSEIS is that NOAA is in the process of designating Critical Habitat for the Humpback Whale (Mexico DPS).

Recommendations for the FSEIS:

(1) Identify the type/class, number, and frequency, designated routes, schedules of marine vessel port calls to Slate Lake Cove Marine Terminal and/or the Comet Beach Landing area;

(2) Evaluate potential changes to marine transportation routes, schedules, and activities due to changes to the level of barge traffic and potential impacts to humpback whales (Mexico DPS) and their critical habitat; and

(3) As a mitigation measure, develop a management plan to ensure that marine vessels avoid and minimize impacts to humpback whales, such as requiring onboard observers, maintaining vessel distances and reducing speeds when whales are observed, and reporting occurrences of whale observations and/or strikes.

Subsistence

An Alaska National Interest Lands Conservation Act (ANILCA) Section 810 subsistence evaluation was conducted in the 2004 FSEIS. The DSEIS (p. 3-2) indicated that there is very limited use of the area for subsistence. This conclusion was based on data from 1987 to 1994 that was analyzed in the 2004 FSEIS. Given that the population of nearby communities have changed, and many subsistence users may now have access to better technologies, the subsistence users and resources of the nearby communities may have also changed.

Recommendations for the FSEIS: Incorporate any post-2004 subsistence data compiled by the ADF&G, Subsistence Division - Community Subsistence Information System (CSIS)[32] to update the changes in community harvest information for the project area, and (a) confirm that the pattern of subsistence use in the area is consistent with the 2004 FSEIS, or (b) include current community subsistence resource information/analysis to supplement the 2004 FSEIS.

Environmental Justice

The DSEIS (p 3-95) indicates that the CEQ Guidance[33] and the EPA Guidance[34] define a minority population as either: (1) where the minority population of the analysis area comprises more than 50 percent of the total population; or (2) where the minority population is meaningfully greater than the minority population in the general population of an appropriate benchmark region used for comparison (State of Alaska).

Recommendations for the FSEIS:

(1) As indicated in the Guidance, the EJ analysis should not rely solely on the numeric measure, but incorporate best professional judgement in evaluating the potential for disproportionate and adverse impacts, considering both the circumstances of any groups residing within the affected area, as well as the percentage of the affected community that is composed of minority peoples;

(2) Include consideration that Alaska Natives/Tribes are minority and low income populations due to their ancestry, culture, history, and subsistence activities of Southeast Alaska, in addition to comparisons with the overall populations in the City and Borough of Juneau and the State of Alaska; and

(3) Under the "household income" convert a subsistence-based economy to U.S. dollars in order to make a more equitable comparison of the poverty level. Alaska Natives/Tribes rely

[32] Accessible at https://www.adfg.alaska.gov/sb/CSIS/

[33] Council on Environmental Quality (1997). *Environmental Justice Guidance under the National Environmental Policy Act*

[34] U.S. Environmental Protection Agency (1998). *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses.*

predominantly on a subsistence economy, which may not be easily quantifiable as household income.

The DSEIS (p. 3-102) indicates that larger and more populated geographic areas, such as the City and Borough of Juneau, may have the effect of "masking" or "diluting" the presence of concentrations of minority and/or low-income populations (CEQ, 1997; EPA, 1998). The EJ analysis (p 3-103) did not identify any residents within a 5-mile radius of mine operations and just 5 residents within 10 miles.

Recommendations for the FSEIS:

(1) Expand the EJ analysis beyond the 10-mile radial distance from the mine to include nearby Southeast communities, such as Haines, Skagway, Gustavus, Angoon, Hoonah, Pelican, Tenakee Springs, etc. in order to provide a more comprehensive analysis that includes Alaska Native/Tribal communities; and

(2) Incorporate a mitigation measure that would include the hiring of qualified local Alaskans and Alaska Natives to offset potential disproportionate impacts to minority and low income populations.

Climate Trends and Cumulative Effects

Climate Trends

The DSEIS (p. 3-1) mentions that there is uncertainty in the magnitude of changes to the climate but does not meaningfully evaluate potential climate impacts on the project, even though climate change impacts are already occurring in Alaska and are expected to continue to occur. In addition, reasonably foreseeable future actions and activities may contribute to significant climate trends, which may adversely impact the proposed project and the surrounding area, including long-term stability and resilience of the mine infrastructure and facilities, such as the TTF, water treatment ponds and facilities, WRS areas, underground workings, and water management and treatment facilities. Climate trends should be considered as past, present, and reasonably foreseeable future actions that warrant evaluation resulting in cumulative effects to sensitive resources. This analysis would inform the comparison of alternatives in regards to climate resilience and the development of measures to improve the resilience of the proposed project, particularly related to changes in water management.

Recommendations for the FSEIS:

(1) Evaluate and discuss potential changes in climate trends in Southeast Alaska, including temperature and precipitation, since the previous analysis was conducted in the 2004 FSEIS;

(2) Include climate change as an action in Table 3.12-1 (p. 3-116);

(3) Identify reasonably foreseeable future actions and activities in the project area and Southeast Alaska that may contribute to changes in climate trends;

(4) Evaluate how changes in climate has and may affect surface and groundwater quality and quantity, wetlands, vegetation, soils, fish and fish habitat, and geotechnical stability of the TTF dam and other mine facilities and activities; and

(5) Identify mitigation, monitoring, and adaptive management measures to address potential impacts due to climate trends.

Case Study

In Alaska, climate trends may be a significant impact to resources and project facilities, infrastructure, and operations and maintenance, which may result in additional costs to mitigate. For example, the Red Dog Mine, in Northwest Alaska has indicated that thawing permafrost linked to global warming forced an expenditure of nearly $20 million on water storage and discharge management, including

construction of a new WTP using reverse osmosis.[35] Permafrost thaw in the watershed surrounding the mine had been releasing higher natural levels of dissolved minerals and other particles into streams, which limited the mine's ability to discharge its treated wastewater into a nearby creek, and resulted in water backing up in its tailings reservoir.

In 30 years of Red Dog operations, this was the first time that background levels in the creeks reached a point where it precluded additional wastewater discharges. To reduce water in the reservoir, corrective actions were taken, which included pumping hundreds of millions of gallons of water out of the reservoir into the bottom of the mine's active mining pit, resulting in the company having to mine lower-grade ore toward the top of the pit rather than higher-grade ore below. This resulted in delays and lower production. The lessons learned from the Red Dog mine clearly indicate that climate trends are a significant impact that warrants further evaluation.

Recommendations for the FSEIS:

(1) Evaluate the potential impacts of climate change on the long-term stability and resilience of the Kensington Mine infrastructure and facilities, under the Proposed Action and action alternatives, in particular the TTF Dam, the FTF, Back Dam, and water balance;

(2) Consider climate trends (e.g., increases in temperature and precipitation) in dam designs and future Failure Modes Effects Analyses;

(3) Evaluate adaptive management planning to ensure that corrective actions are taken to address the unforeseen impacts that climate trends may have on the Kensington Mine.

Mitigation

The mitigation measures (and Conservation Measures - Sections 2.2.8 and 2.3.6) discussed in an SEIS must cover the range of impacts of the proposal and must be considered even for impacts that by themselves would not be considered "significant."[36] CEQ indicates that all relevant, reasonable mitigation measures that could improve the project are to be identified, even if they are outside the jurisdiction of the lead agency or the cooperating agencies.[37]

Recommendations for the FSEIS: Identify mitigation measures to address the range of impacts of the proposed project and significant issues for the environmental resources evaluated in the SEIS, which are not already included in the conservation measures. These mitigation measures may be incorporated into Federal permit conditions, BMPs, mitigation and monitoring, existing and/or additional plans, etc. Several mitigation measures are identified in our above comments.

The State of Alaska and the City and Borough of Juneau are cooperating agencies in the development of the Kensington Mine POA1 SEIS. In particular, the State of Alaska is responsible for multiple permits, certificates, authorizations, and approvals required by ADEC (e.g., wastewater/stormwater discharges, waste management, water quality certificate of reasonable assurance, etc.), ADNR (e.g., reclamation and closure, water withdrawal and diversion, dam safety, etc.), ADFG (e.g., fish habitat).

Recommendations for the FSEIS:

(1) Identify applicable State and Local permits, certificates, authorizations, and approvals for the Kensington Mine and include them on Table 1.4-1 (p 1-6);

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[35] Anchorage Daily News (September 2, 2020).

[36] Council on Environmental Quality (March 23, 1981, as amended 1986). *Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*. Accessible at https://www.energy.gov/sites/prod/files/2018/06/f53/G-CEQ-40Questions.pdf.

[37] 40 CFR Sections 1502.16(h), 1505.2(c).

(2) Discuss any proposed changes and/or modifications to the current permits, authorizations, and approvals that would be needed as a result of the proposed project;

(3) Provide a brief summary of the local and State permits, authorizations, and approvals, as well as the public websites to access information; and

(4) Provide a summary of the permit conditions, BMPs, and monitoring requirements included in State and Local permits, authorizations and requirements, which serve as additional mitigation measures to address the range of impacts of the proposed project and significant issues for the environmental resources.

Monitoring

Monitoring is critical to identifying and evaluating impacts and assessing the protectiveness of the proposed action and the effectiveness of mitigation and conservation measures. The DSEIS has identified monitoring activities for biological and ecological resources, surface water quality, facility and operations, closure and post-closure activities, as well as monitoring in compliance of federal, state, and local permits and authorizations.

Recommendations for the FSEIS:

(1) Identify and present all project monitoring activities into a summary table(s) and/or figure(s). Identify the purpose and types of monitoring, which could be organized by media, such as surface water, groundwater, wetlands, and aquatic resource monitoring under the proposed action and action alternatives;

(2) Identify the federal, state, and local permits and authorizations where the monitoring is or would be required;

(3) Evaluate whether the current monitoring is effective at documenting changes and trends and, if not, recommend additions or adjustments to the monitoring; and (4) Identify additional monitoring that would be implemented under the Proposed Action and alternatives.

Adaptive Management Planning

Adaptive management and contingency planning would describe the strategy for responding to unforeseen circumstances at the Kensington Mine. 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. This type of planning, when coupled with the monitoring program is frequently applicable to mining operations to mitigate for uncertainties and risks associated with predictions of environmental outcomes, to provide an early warning system of unexpected outcomes and incidents, and to enable timely action in response to unexpected incidents.

Recommendations for the FSEIS:

(1) Discuss whether the Kensington Mine has an adaptive management plan or whether adaptive management is a component of existing water management, reclamation and closure, and dam operations plans; or

(2) If adaptive management is not included in these plans or in a stand-alone plan, then we recommend that adaptive management planning be identified as a mitigation measure.