



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10**

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OFFICE OF REGIONAL  
ADMINISTRATOR

**DRAFT, DELIBERATIVE**

Shane McCoy, Program Manager  
U.S. Army Corps of Engineers, Alaska District  
645 G Street, Suite 100-921  
Anchorage, AK 99501

Dear Mr. McCoy:

In accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' February 2019 Draft Environmental Impact Statement for the Pebble Project (CEQ Number 20190018; EPA Region 10 Project Number 18-0002-COE). The EPA is also supporting the Corps in development of specific sections of the EIS as a cooperating agency in accordance with the cooperating agency agreement. As a cooperating agency, we have participated in meetings and provided comments on early drafts of EIS material, including on sections of the Preliminary DEIS in December 2018. We also provided scoping comments to the Corps on June 29, 2018.

**Project Background**

The Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper, gold, and molybdenum ore deposit in southwest Alaska. The Pebble deposit lies within the Nushagak and Kvichak watersheds, which together account for more than half of the land area in the Bristol Bay watershed.

The proposed project includes an open-pit mine, tailings storage facilities (TSFs), water management ponds, a mill facility, a natural gas-fired power plant, and other mine site facilities. Approximately 1.3 billion tons of ore would be processed at a rate of 180,000 tons of ore per day, over the proposed mine operating life of 20 years. The initial surface disturbance footprint is approximately 8,086 acres and the 608-acre pit would have a maximum pit depth of 1,970 feet. Potentially acid generating (PAG) tailings and non-PAG bulk tailings would be disposed in two tailings facilities that would cover a total of approximately 3,867 acres. Water discharges from the pit lake following mine closure would require water treatment in perpetuity.

The proposed project also includes development of a 188-mile natural gas pipeline across Cook Inlet and Lake Iliamna and two compressor stations used to transport natural gas from the Kenai Peninsula to the mine site. The proposed transportation network would include construction of: 77 miles of new roads, including mine and port access roads and spur roads to communities; ferry terminals on the north and south shores of Lake Iliamna for use by an ice-breaking ferry; and the Amakdedori Port on Cook Inlet.

In addition to the no action alternative and the proposed action (Alternative 1), the DEIS analyzes two additional alternatives and includes variants to the alternatives.

## Overview of Comments and Recommendations

We appreciate the progress that the Corps has made and the improvement to the analysis resulting from engagement with the EPA early in the NEPA process. The EPA remains concerned that the DEIS lacks critical information about the proposed project and mitigation and contains deficiencies associated with aspects of the environmental modeling and impact analysis. Further, as summarized below and described in our enclosed detailed comments, due to the lack of key critical information and deficiencies in aspects of the analysis, the DEIS likely underestimates impacts and risks to groundwater and surface water flows, water quality, wetlands, aquatic resources, and air quality from the Pebble Project. While we support timely completion of the NEPA process for the Pebble Project, information we have identified is essential to adequately evaluate and disclose the potential project impacts and to develop practicable measures to mitigate those impacts. The EPA is committed to working with the Corps to provide our expertise where it can be of assistance.

Our critical concerns are summarized below. We have enclosed detailed comments further describing these concerns and offering recommendations. Our detailed comments also address other issues identified in the EPA's review of the DEIS, including geohazards, environmental justice, subsistence, and geology.

### *Key Information Missing in the DEIS*

The DEIS and supporting reference information acknowledges that critical aspects of the Pebble Project are at a conceptual level (i.e., early or initial stage) of design and development. Critical but conceptually developed project components include: the open pit mine dewatering system; the dams retaining the mine's tailings and main water management pond; the collection, pumpback, and monitoring systems for managing seepage from the TSFs and main water management pond; and the closure water treatment plant. Critical plans that are missing from or only conceptually described in the DEIS include plans for: mine reclamation and closure; environmental monitoring; adaptive management; tailings and waste rock characterization and management; fugitive dust control; and strategic timing of water discharges.

The DEIS states that these designs and plans will be developed during the state of Alaska permitting process and, because PLP has not started the state permitting process, the detailed designs and plans are not currently available. These project components and plans are critical aspects of the project and are relevant to the evaluation of minimization and mitigation of environmental impacts. Currently, it is not possible to meaningfully, accurately, and independently assess the effectiveness of these conceptual components and plans and evaluate potential adverse effects. As such, the EPA is concerned that many of the predictions associated with these systems or plans in the DEIS are not supported based on the current level of documentation. Therefore, we recommend further developing the current conceptual project components and plans to provide a reasonable level of detail to determine effectiveness and residual risks and impacts that would result from plan implementation.

### *Range of Alternatives*

We have several concerns related to the range of alternatives evaluated in the DEIS. We have had past discussions with the Corps regarding a potential alternative that would include a liner under the bulk TSF. The DEIS predicts that groundwater contamination would occur under the bulk TSF, and we therefore continue to recommend that the EIS evaluate, as an alternative, variant, or mitigation, construction of a liner (with appropriate overdrains to ensure stability) to reduce groundwater contamination. In addition, we recommend that the EIS include an alternative or variant that includes all infrastructure elements that would be anticipated under the Pebble Mine Expanded Development

Scenario (diesel pipeline, port site at Iniskin Bay) in order to avoid and minimize cumulative impacts that would occur as result of redundant infrastructure associated with reasonably foreseeable future development. The EPA recommends that these alternatives or variants be further analyzed in the NEPA analysis as they may be components for the least environmentally damaging practicable alternative (LEDPA) under Section 404 of the Clean Water Act. We recommend that the alternatives analysis provide the information necessary to support an evaluation of alternatives under the Clean Water Act Section 404(b)(1) Guidelines, including information to support identification of the LEDPA. This issue is further discussed in the EPA's separate comments to the Corps on the Clean Water Act Section 404 Public Notice.

The EPA is concerned that Alternative 3 includes a port site variant that would include a water treatment plant at the port to treat and discharge process wastewater from the concentrate pipeline to Cook Inlet. Please note that the discharge of process wastewater is not allowed under the Clean Water Act and the National Pollutant Discharge Elimination System (NPDES) regulations (see 40 CFR 440 Subparts J and L). Process wastewater discharges are not allowed unless they are combined for treatment and discharge with allowable discharges.

#### *Groundwater and Streamflow Impacts*

The DEIS uses a groundwater model to predict how mine site activities will change groundwater conditions. The DEIS relies on the model results to inform the mine site water balance and to predict how changing groundwater conditions impact surface water and aquatic resources. The DEIS's uncertainty analysis, however, concludes that the model may significantly underpredict the amount of water produced during mine open pit dewatering and therefore the groundwater zone of influence could be larger. The DEIS discloses that the model uncertainty could result in North Fork Koktuli, South Fork Koktuli, Upper Talarik Creek, and tributary stream flows being reduced to a greater extent than is currently predicted in the DEIS. Significant adverse environmental impacts to wetlands and to streams with documented anadromous fish occurrence may result from underpredicted stream flow reductions. We recommend that the groundwater model be revised to reduce the significant level of uncertainty and provide more accurate predictions associated with open pit dewatering. Further, we recommend that the EIS fully analyze the potential adverse impacts to groundwater, wetlands, and streams with documented anadromous fish occurrence based on the results of the revised groundwater modeling, so that the extent and magnitude of potential environmental impacts is adequately characterized.

#### *Water Quality Impacts*

We are concerned that the DEIS may substantially underpredict potential significant impacts to water quality. Our key concerns are:

- Inadequate support for several assumptions regarding the behavior of leachate and poor sample representativeness for prediction of acid rock drainage and metal leaching, which may result in unanticipated leaching of metals/metalloids at elevated concentrations;
- Lack of critical details regarding the design and operation of the water treatment plants, particularly at closure. The DEIS reference material identifies that there is insufficient information to evaluate the effectiveness of the closure water treatment plant to meet water quality criteria, which prevents meaningful analysis and disclosure of potential water quality impacts related to water treatment;
- As a result of groundwater model uncertainty, the DEIS states that the water treatment plants may need to treat and discharge more mining process water than that for which the plants are

- currently designed. Significant impacts to water quality could occur if the water treatment plants' designs are based on an underestimate of the volume of water that will need to be treated; and
- Use of conceptual drainage and seepage containment systems for the TSFs and water management pond, which are inadequate to support the DEIS assumption that 100% of the seepage would be captured.

In addition, the DEIS fails to include: a data quality assessment for background water quality data; a modeling sensitivity analysis of the water quality modeling and inputs; a reasonably complete analysis of water quality impacts in the closure and post-closure phases; and monitoring and adaptive management plans. We recommend that the EIS include a water quality analysis that accurately identifies potential significant adverse impacts to water quality, and that appropriate monitoring and adaptive management plans be developed to detect and prevent unanticipated impacts to water quality.

#### *Wetlands Impacts and Compensatory Mitigation*

The Pebble Project would result in the permanent loss of approximately 3,560 acres of jurisdictional wetlands and other aquatic resources, including 3,443 acres of wetlands, 55 acres of lakes and ponds, 81 miles of stream channels, and 11 acres of marine waters. An additional 510 acres of streams, wetlands, lakes, ponds, and marine waters would be temporarily filled for construction access, and 2,345 acres would experience secondary impacts due to groundwater drawdown (449 acres) and fugitive dust (1,896 acres). The DEIS does not adequately identify and characterize existing aquatic resources and wetland functions to establish the environmental baseline for the analysis, because the analysis area is limited and the DEIS does not use salient available site-specific data. In addition, the analysis does not adequately assess secondary/indirect effects, which is important to compare alternatives and analyze project impacts. We recommend that the analysis in the EIS be revised to include this information to adequately assess the potential impacts to wetlands and aquatic resources.

The draft Compensatory Mitigation Plan included as an appendix to the DEIS contains only a conceptual discussion of compensatory mitigation, even though the magnitude of potential impacts to wetlands and aquatic resources is substantial. Further, it does not sufficiently address types of direct and indirect impacts to waters of the U.S. that may occur and does not identify any specific mitigation projects. Therefore, the availability, practicability, and effectiveness of compensatory mitigation to offset unavoidable impacts is unknown. To ensure disclosure of practicable means to mitigate the direct, indirect, and cumulative impacts of the Pebble Project during the NEPA process, the EPA recommends the EIS include a reasonably detailed draft Compensatory Mitigation Plan. This recommendation is further discussed in the EPA's separate comments to the Corps on the CWA Section 404 Public Notice.

#### *Impacts to Fish and Fish Habitat*

Our review finds that the physical, chemical, and biological impacts on ecologically important streams, wetlands, lakes, and ponds and the fishery areas they support are not adequately addressed by the DEIS. Major deficiencies include a lack of: habitat characterization, assessment, quantification, and spatial referencing; assessment of mechanistic linkages between the loss and/or degradation of habitat and impacts to fish species and life stages (i.e., incubating eggs, spawning fish, and rearing juveniles); groundwater and surface water flow characterization at a scale that is relevant to fish and fish habitat; and analysis of the potential population-level effects and effects on genetic diversity within the context of the Bristol Bay salmon portfolio. We recommend that the analysis in the DEIS be revised to address these issues and analyze potential significant adverse impacts to aquatic resources.

### *Air Quality Impacts*

The air quality analysis in the DEIS contains errors and deficiencies, in both preparation of the emissions inventory and the modeling analysis, which render it inadequate for use in predicting the potential impacts of the Pebble Project in comparison to National Ambient Air Quality Standards for criteria pollutants. For example, based on the modeling parameters used to predict particulate matter impacts from the mine pit, we anticipate that those impacts have been underpredicted. Our detailed comments provide recommendations to improve the accuracy of the modeling.

In addition, our review finds several deficiencies in the air quality modeling assessment for the port facilities. The results of the assessment indicate annual NO<sub>2</sub> values at 90% of the NAAQS and do not include an assessment of impacts to the 1-hour NO<sub>2</sub> standard. However, the DEIS does not evaluate substantial mobile emissions from vessel traffic or differences in meteorological conditions at the Diamond Point port site, which would be anticipated to lead to impacts greater than those modeled for the Amakdedori port site and potential exceedances of the NAAQS for 1-hour or annual NO<sub>2</sub>. We recommend that the analysis of impacts to air quality be revised.

### *Tailings Containment and Spill Risk*

The DEIS, based on conclusions of a Failure Modes Effects Analysis (FMEA), does not evaluate the potential release of tailings from the bulk TSF due to a dam breach or failure. The bulk TSF would be approximately 2,796 acres in size with two dams having a maximum height of 545 feet. The FMEA risk register identifies a number of “adverse factors” that could occur during engineering, construction, and operations, but assumes that all of these challenges would be overcome. It is not clear how this determination was made given the simplified conceptual dam designs and lack of operational, monitoring, and closure plans for the bulk TSF. We recommend that a bulk TSF breach scenario be developed, and potential impacts be evaluated and disclosed.

In addition, our review finds that the spill risk analysis does not adequately discuss the environmental fate and behavior of spilled concentrate and tailings. The analysis does not accurately consider the role of oxygen in aquatic environments, timing for release of mineral components, or reactivity in porewater, and, as a result, may significantly underpredict the potential impacts of spills of concentrate and tailings. We recommend revising the analysis to address these issues, so that potential adverse impacts to water and sediment quality from leaching of metals, and subsequent impacts on benthic organisms and localized fish populations are fully disclosed.

### *Indirect Effects and Cumulative Impacts*

Our review of the DEIS finds that the evaluation of indirect effects from the project and its cumulative impact when added to reasonably foreseeable future actions is insufficient. The DEIS summarizes potential indirect effects and cumulative impacts in very general terms, with little or no quantitative evaluation of large-scale additional impacts resulting from reasonably foreseeable future actions. We recommend a more robust evaluation of indirect impacts and cumulative effects, particularly in terms of the Pebble Mine Expanded Development Scenario.

## **Conclusion**

The enclosure includes a detailed discussion and recommendations regarding the key issues summarized above and other issues identified in the EPA’s review of the DEIS. Given the substantial disclosed potential impacts of the proposed project and based on numerous data, analytic, and information deficiencies, our review finds that the DEIS does not adequately analyze the potentially significant

environmental impacts of, and practicable mitigation options for PLP's Pebble Project. The DEIS likely underestimates adverse impacts to groundwater and surface water flows, water quality, wetlands, fish resources, and air quality; therefore, conclusions that the project will not violate applicable water quality and air quality standards are not reasonably supported. Our comments include recommendations to provide significant additional information about key project components and plans, consider additional alternatives, and significantly revise environmental modeling and many aspects of the impact assessment.

[Option 1: Recommend revised or supplemental EIS – Recommended Option]

Further developing the underlying information is important to ensure that the EIS is adequate to fully inform decision-makers and the public. Further developing this information is relevant to environmental concerns and bearing on the proposed action and its impacts. To ensure a meaningful public review, we recommend that the Corps circulate this information for public comment in a revised or supplemental EIS.

[Option 2: Make no process recommendations]

Effective October 22, 2018, the EPA no longer includes ratings in our comment letters. Information about this change is explained in the Memorandum on Changes to EPA's Environmental Review Rating Process, available at <https://www.epa.gov/nepa/policy-and-procedures-review-federal-actions-impacting-environment-under-section-309-clean-air>.

We will continue to work constructively with the Corps as a cooperating agency, providing special expertise in specific areas requested by the Corps, including: alternatives; recreation; aesthetics and visual resources; soils; surface- and groundwater hydrology; water and sediment quality; wetlands and special aquatic sites; vegetation; and mitigation. We also continue to request the ability to assist the Corps in additional areas of the Pebble Project EIS, including fisheries and air quality, where we have special expertise and jurisdiction. In addition, we recommend that resource-specific interagency technical workgroups be developed to work through significant issues. We look forward to working with you and the other cooperating agencies on the next steps in the NEPA process.

If you have questions concerning our comments, please contact Patty McGrath, Mining Advisor and lead for the Pebble Project NEPA/Permitting Team, at [mcgrath.patricia@epa.gov](mailto:mcgrath.patricia@epa.gov) or 206-553-6113, or Molly Vaughan, NEPA Reviewer, at [vaughan.molly@epa.gov](mailto:vaughan.molly@epa.gov) or 907-271-1215.

Sincerely,

Chris Hladick  
Regional Administrator

Enclosure: U.S. Environmental Protection Agency Detailed Comments for the Pebble Project Draft Environmental Impact Statement

Cc: Colonel Phillip Borders, USACE Alaska District