THE STATE of ALASKA
GOVERNOR BILL WALKER

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U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898
Submitted via email to Shane McCoy at poaspecialprojects@usace.army.mil

Dear Mr. McCoy:

The Office of Project Management and Permitting (OPMP) has coordinated with the Alaska Departments of Natural Resources (DNR), Environmental Conservation (DEC), Fish and Game (ADF&G), and Transportation and Public Facilities (DOT&PF), to develop the following consolidated scoping comments in response to the Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the Pebble Project published by the U.S. Army Corps of Engineers (USACE) in the Federal Register (Vol. 83, No. 61, P. 13483, March 29, 2018). Please consider these comments during preparation of the Draft EIS.

The purpose of scoping is to determine what should be included in an EIS ("scope" of the EIS). Key areas of information in scoping include potential impacts to be considered, alternatives, and potential mitigation. Scope includes "the range of actions, alternatives, and impacts to be considered in an environmental impact statement."[1] Impacts may be direct, indirect, and cumulative. Alternatives should include a "no action" alternative, reasonable alternatives, and mitigation measures. Therefore, these comments highlight issues that should be included or addressed in a Draft EIS (Draft EIS statements are put out to notice and comment before a final EIS).

ALASKA AS A COOPERATING AGENCY

On March 30, 2018, DNR Commissioner Mack accepted an invitation by USACE Colonel Brooks to participate as a cooperating agency, in accordance with Title 40 Chapter V Part 1501.6, for the review and evaluation of the Pebble Limited Partnership's (PLP or applicant) Department of the Army permit application (POA-2017-271) proposing discharge and fill material into waters of the United States in connection with the development of the Pebble copper-gold-molybdenum porphyry deposit as a surface mine. The State of Alaska's (State) participation in the National Environmental Policy Act (NEPA) process as a cooperating agency is not at all determinative or pre-determinative of any final positions that the State may take on the final EIS or any federal or state authorization that might be required for the proposed project. The State often participates in the NEPA process as a cooperating agency on resource development projects proposed in Alaska to provide special expertise to the lead federal agency based on the respective regulatory authorities of individual state agencies. As outlined in the

[1] 40 C.F.R. § 1508.25.

sections below, in addition to the Clean Water Act Section 404 Permit, which PLP has applied for from the USACE and which triggered the need for review under NEPA, there are numerous state statutory and regulatory requirements and authorizations that are also required for a proposed large mine project. The State's participation in this NEPA process is not pre-determinative of the outcome of those authorizations, which must be reviewed and assessed under relevant state laws.

SCOPE OF THE DRAFT EIS

The Draft EIS should evaluate the potential short and long-term effects to the human environment within the Nushagak and Kvichak watersheds and appropriate areas of Cook Inlet and Kenai Peninsula, with emphasis on potential impacts to fish and wildlife, their habitats, and human uses of fish and wildlife. All activities necessary for operating the proposed Pebble Mine should be considered in the Draft EIS, including the mine site and all associated facilities (including the mine pit; mineral processing facilities; tailings storage facility; low grade ore stock pile; waste rock usage; overburden stockpile; water supply, management, and treatment; personnel camps; and power generation), the Amakdedori Port site (including ore carrying vessels, access causeway, access channel and turning basin, shore-based facilities, and fuel storage), the transportation corridor (including the road system connecting Amakdedori Port to the south ferry terminal, the ferry crossing routes, and the road connecting the north ferry terminal to the mine site, and secondary roads to Iliamna and Kokhanok), and the natural gas pipeline system (including the pipeline, compressor stations and fiber optic cable). All phases of the project should be considered in the EIS, including pre-project activities, construction, operations, closure, and post-closure, with specific evaluations of water management during each project phase.

The project record should include "An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska"[2] published by the U.S. Environmental Protection Agency (Report 910-R-14-001, 2014), with appropriate references and considerations in the Draft EIS.

SECTION 401 WATER QUALITY CERTIFICATION

DEC conducts a review of the USACE application at the same time as federal agency review and issues a Clean Water Act Section 401 Water Quality Certification (401 Certification). The Draft EIS should recognize the 401 Certification requirement in its description of applicable laws. In this process, DEC will certify whether the activity complies with all applicable water quality standards, limitations, and restrictions. If DEC denies certification, the 404 Permit cannot be issued.

STATE AREA AND MANAGEMENT PLANS

DNR has primary management responsibilities for state lands (including land, water, tidelands, and shore lands of navigable waters within Alaska). This authority can include navigable waters, tidelands, and shore lands within and adjacent to the boundaries of federal lands, including conservation system units created under the Alaska National Interest Lands Conservation Act (ANILCA). There is no presumption of use of state lands without appropriate authorizations. All proposed activities are subject to public process for authorizations for activities on state lands (as well as any other state authorizations required). The Draft EIS should recognize DNR's regulatory and management authorities on state lands in the project area. The State is open to consultation on ANILCA and other matters.

[2] Also referred to as the "Bristol Bay Watershed Assessment"

The USACE should carefully review DNR area and management plans applicable to the proposed activities, as these plans are used by DNR to manage state lands and resources within a given area and to guide DNR regulatory decisions. All DNR area and management plans are available on the following DNR website: http://dnr.alaska.gov/mlw/planning/index.cfm

DNR has taken recent steps to reestablish the Bristol Bay Advisory Group, originally created to provide input on the 1984 Bristol Bay Area Plan. By reestablishing the group, DNR intends to foster dialogue on land use, resource management, and regulatory matters under state purview in the Bristol Bay region. DNR anticipates the Bristol Bay Advisory Group will review and may recommend changes to the Bristol Bay Area Plan.

BRISTOL BAY FISHERIES RESERVE

Alaska Statute (AS) 38.05.142(a) (added by Ballot Measure 4 in 2014) states that:

> In addition to permits and authorizations otherwise required by law, a final authorization must be obtained from the legislature for a large-scale metallic sulfide mining operation located within the watershed of the Bristol Bay Fisheries Reserve designated in AS 38.05.140(f). This authorization shall take the form of a duly enacted law finding that the proposed large-scale metallic sulfide mining operation[3] will not constitute danger to the fishery within the Bristol Bay Fisheries Reserve.

STATE PERMITTING

For activities on state lands that are not Generally Allowed Uses the applicant will require authorizations from DNR and other state regulatory agencies. For DNR, these will likely include easements for the transportation corridors, leases for the port facilities and pipeline components, and permits for activities that are more temporary in nature. The attached Fact Sheet summarizes regulations at 11 AAC 96.020 and 96.025 into a clear and practical format and can facilitate a better understanding of the "Generally Allowed Uses", if referenced in the Draft EIS.

For information on state management authorities, and language that can be incorporated into the Draft EIS, please see the enclosed "Select State Tools" document. This document summarizes many jurisdictional issues that are often overlooked and which may be relevant within the Draft EIS, such as: a) The Departments of Fish and Game and Natural Resources should both be consulted regarding management of all water bodies within the planning area for issues related to state authorities, including fish stream crossings, diversions, public use, placer mining, and dam construction; b) When lands are conveyed to private entities, under provisions of the Alaska Constitution, management of fish and wildlife are retained by the State for the common good of all residents; and c) DEC has numerous regulations used to monitor and mitigate impacts to resources within the state, including human waste disposal, air and water quality standards.

Construction of the pipeline is expected to result in discharges that may require Alaska Pollutant Discharge Elimination System Permits for the following: inadvertent releases of drilling fluids from Horizontal Directional Drilling (HDD), domestic wastewater from mobile camps, gravel pit dewatering, excavation dewatering, hydrostatic test water, construction storm water, and mobile spill response. DEC authorizes these discharges to freshwater under general permit AKG320000 – Statewide Oil and Gas Pipelines (Pipeline General Permit). The Pipeline General Permit is currently effective and terminates December 31, 2023. For discharges of excavation dewatering

[3] "large-scale metallic sulfide mining operation" means a specific mining proposal to extract metals, including gold and copper, from sulfide-bearing rock and that would directly disturb 640 or more acres of land (AS 38.05.142(c)).

and hydrostatic test water to marine water, existing general permit AKG002000 – Excavation Dewatering and AKG003000 – Hydrostatic Test and Aquifer Pump Test Water is available. In addition, the AKR060000 Multi-Sector General Permit and the AKR100000 Construction General Permit are available for storm water discharges for areas other than the pipeline construction; AKG003000 Hydrostatic and Aquifer Pump Testing General Permit provides discharge authorization to entities conducting aquifer pump testing in support of mineral mining development and exploration.

AS 27.19.020, Reclamation Standard, states "A mining operation shall be conducted in a manner that prevents unnecessary and undue degradation of land and water resources, and the mining operation shall be reclaimed as contemporaneously as practicable with the mining operation to leave the site in a stable condition." Large lode mine operations require DNR approval of a reclamation plan for the mining operation,[4] and individual financial assurance (i.e. bond) in an amount reasonably necessary to ensure the faithful performance of the requirements of the approved reclamation plan[5]. Other relevant authorities typically required for large mine operations include AS 46.15, 11 AAC 93, 11 AAC 86, 11 AAC 96, 11 AAC 97, and other authorities.

An Integrated Waste Management Permit is required under AS 46.03.100 for disposal of tailings, waste rock, and wastewater that are not discharged into waters of the United States. This permit is administered by DEC and usually requires pre-operational, operational and post-closure monitoring. It also requires proof of financial responsibility (i.e. bonding) to assure compliance with applicable closure standards and post-closure monitoring requirements.

Please ensure that state oversight is sufficiently referenced, particularly in the effects analysis in the Draft EIS. Oftentimes, the possible effects stated within an EIS may already be mitigated by regulations and/or permitting by state resource agencies, which can mischaracterize the overall extent of impacts from the alternatives.

BASELINE DATA

The proposed Pebble Project, specifically the mine pit, and associated ore processing and tailings storage areas straddle the headwaters[6] of two major drainages that support highly productive and valuable fishery resources. Upper Talarik Creek flows into Iliamna Lake, one of the most productive sockeye salmon nursery lakes in the world. The South and North Fork Koktuli Rivers flow into the Nushagak River, one of the largest Chinook salmon producing rivers in the world. There are sport fisheries for all five species of Pacific salmon, rainbow trout, Dolly Varden, Arctic grayling, and northern pike. Additionally, 18 communities depend on the fish and wildlife resources of the area for subsistence uses. The southern road corridor and Amakdedori Port are proposed near the McNeil River State Game Sanctuary and McNeil River State Game Refuge (MRSGSR), which hosts the largest known gathering of brown bears in the world.

Because the project has the potential to impact a biologically productive and sensitive part of Alaska, the scientific information used to evaluate the project should be of sufficient quality and detail to allow the USACE to assess project-related changes to the environment and inform their decisions.

Baseline studies conducted in the project area previously should be considered by the USACE in the Draft EIS; however, the current proposal being evaluated by the USACE includes a new road

[4] AS 27.19.030(a)
[5] AS 27.19.040(a)
[6] Headwaters are the upper reaches of tributaries in a drainage basin.

corridor, ferry terminals and ferry operations in Iliamna Lake, a proposed port at Amakdedori Creek/Kamishak Bay, and a natural gas pipeline extending from the Kenai Peninsula through Cook Inlet and along the proposed transportation corridor to the mine site. Additional baseline data is likely to be needed to further inform the USACE and the public about the entire project, and new data collection and reference sites should be established to fully evaluate any new project components.

MONITORING

The Draft EIS should discuss potential monitoring programs that may be required as a condition of federal permits. Please consider requiring comprehensive monitoring programs related to water quality, water quantity and aquatic resources that are implemented prior to construction and continued through mine development, operations, closure, and post-closure phases of the project.

Fish and wildlife populations fluctuate naturally over time due to dynamic environmental conditions. To distinguish between natural variability and project effects, the Draft EIS should consider the need to establish and monitor reference sites outside the influence of potentially impacted areas (e.g., Before-After, Control-Impact [BACI] studies) over a sufficient time period. Studies should be able to detect spatial and temporal interactions and include the spatial scale of potential environmental impacts. A monitoring program should be developed to address both pre- and post-development. The pre-development portion of the program should encompass a sufficient time period to present a reliable picture of the environment prior to potential project influence. As such, the monitoring program should be conducted over at least one life cycle of the longest-lived fish species present. Monitoring should continue throughout the duration of the project life and following closure to detect long-term direct, indirect, and cumulative impacts so that corrective actions can be taken.

MINE SITE AND FACILITIES

Dam Safety and Design

The Dam Safety and Construction Unit of DNR suggests that the scope of the pending EIS should include consideration of the hazard potential classification of all proposed tailings and water storage dams in accordance with 11 AAC 93.157, Hazard Potential Classification, and the requirements of 11 AAC 93.171(f)(1)(E), Dam Construction, Repair, or Modification, which reads “for new construction of Class I and II dams, an analysis of project alternatives including a feasibility study and a site study that justifies the location, type, and configuration of the proposed dam over other alternative locations, types, and configurations of dams or other projects.” The Draft EIS should include an alternative to whole tailings, such as a dry stack or paste dewatering method.

Water Quality

DEC administers the Alaska Pollutant Discharge Elimination System (APDES) Program, in compliance with the Clean Water Act (CWA), 33 U.S.C §1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, Alaska Statute (AS) 46.03, and the Alaska Administrative Code (AAC), as amended, and other applicable state laws and regulation, to authorize and set conditions on discharges of pollutants from facilities to waters of the United States. To ensure protection of water quality and human health, APDES permits place limits on the types and amounts of pollutants that can be discharged from a facility and outlines best management practices to which a facility must adhere. The Draft EIS should describe all point source

discharge locations and evaluate potential impacts from those discharges over appropriate spatial and temporal scales.

Air Quality

It is not clear from the project description whether there will be air emissions from laboratories located at the mine site. Similar mines have required mercury abatement systems and other specialized equipment to comply with the Clean Air Act maximum achievable control technology regulations at 40 C.F.R. 63. The Draft EIS should describe known baseline air quality data relevant to the project area and discuss potential impacts from all air emission sources associated with the proposed activities (e.g. laboratories, incinerator, power plant, etc.), as well as methods for minimizing and mitigating air quality impacts.

Fish and Habitat

Construction of the mine site and facilities propose removal and fill of wetlands, headwater streams, and ponds. Fish studies should be conducted to determine anadromous and resident fish presence or absence in all potentially affected streams, ponds, and connected wetlands. The fish bearing waters directly and indirectly affected should be quantified and mitigation options explored. Loss of connectivity and headwater contribution to larger streams within the system should be assessed; specifically, the impacts of habitat loss on productivity of the Koktuli River and Upper Talarik Creek should be evaluated in the Draft EIS. Headwater streams export considerable amounts of invertebrates and detritus downstream, and typically provide most of the primary nutrient processing in a given watershed. These are important factors in overall stream production.

Fish and Hydrology

Groundwater inputs to streams are critical to salmon life histories (e.g., maintaining base flows during winter when eggs are incubating in the gravels). Groundwater is an important component of river habitats and can influence the distribution, reproductive success, biomass and productivity, behavior and movements of fishes, and is important throughout the year.

Local geology and stream hydrographs in the area are indicative of systems that are largely driven by groundwater. Disruptions or changes to the groundwater flow paths, particularly in the mine footprint area, have the potential to impact aquatic resources. Clearing vegetation and hardening surfaces in headwater areas, large impoundments, roads, altered hydrographs, landscape modification, groundwater pumping, and other mine operations, all have potential to alter groundwater.

Surface and ground water studies in the project areas are needed to characterize hydrology. Characterization of baseline hydrologic conditions should be of a sufficient extent and density to estimate relative hydrologic contributions at scales relative to potential project changes. Studies and monitoring should include tributaries and the mainstems of rivers in potentially impacted areas. Stream flow characteristics can vary greatly in seasonal timing, intensity, and duration from year to year in a watershed. Therefore, continuous data should be collected for a duration sufficient enough to capture intra- and inter-annual stream flow variations. Potential changes should be assessed at a watershed scale to include potential changes downstream, upstream, and in habitats adjacent to proposed activities. An assessment of lateral hydrologic connectivity between river channels and floodplain waterbodies would assist in evaluating the degree to which lateral connectivity might be influenced by project development. This includes identifying areas of groundwater upwelling and sinks within the project affected areas.

To evaluate the effects of any proposed flow modification and subsequent changes to aquatic resources, instream flow relationships (i.e. the relationship between flows and fish habitat) should be considered for all fish species and life stages inhabiting potentially affected water bodies. The Draft EIS should include a description by reach and habitat type of the use by fish species and their life history stages (i.e. spawning, incubation, juvenile/adult rearing and over-wintering, and adult and smolt migration).

Habitat data should be collected from the wide variety of aquatic habitat types found within the lateral and longitudinal dimensions of each stream to account for the full distribution of fish and the full range of aquatic habitats available. Additional data should be collected from all major variables known to influence the distributions of fish at these latitudes. This not only includes surface water dynamics and substrate data but also groundwater characteristics, baseflow conditions (e.g. upwelling), and water temperature at a minimum.

The Instream Flow Incremental Methodology (IFIM) is one of the most commonly used frameworks for evaluating alternative water management options. An important component of the IFIM framework is often an analysis of the relationship between stream flows and fish habitat. This requires site-specific flow and habitat data to be collected and analyzed using a Physical Habitat Simulation System (PHABSIM) model to determine how fish habitat may be impacted. Environmental analysis should evaluate both the short and long-term effects on fish and their habitats. Habitat suitability criteria should be developed from site-specific data collected over a sufficient range of seasonal hydraulic conditions for each fish species and life stage.

Additionally, potential impacts from the use of explosives during mine construction and operations on ground water and aquatic resources should be examined and described (e.g., pathways altered by changes to bedrock fractures) in the Draft EIS.

Fish and Water Quality

The potential impacts to downstream water quantity and quality and aquatic resources from construction, mining, and closure should be addressed in the Draft EIS. Copper, even at relatively low concentrations, is toxic to many freshwater organisms and can affect the olfactory sense and predatory response of salmonids. In addition to copper, mining can generate potentially acid generating rock. Fugitive dust containing copper and other potential contaminants can enter the freshwater environment via air or waterborne transport, whereas impacts from acid generating rock are primarily waterborne. Given the mine's proposed location at the headwaters of major fish-producing drainages, and the need for containment structures to function long-term following mine closure, waterborne and air contaminates impacting aquatic resources should be considered in the Draft EIS.

Moving large quantities of gold-copper/molybdenum ore concentrate from the mine site to the port daily, and storing and transferring those mineralized materials at both locations, provides multiple opportunities for copper and other contaminants to enter the environment. The applicant proposes to use enclosed containers when transporting concentrates, but mineralized dust may be released to some degree during the life of operations. The strong wind common to this relatively low-lying area adjoining the Bristol Bay and Cook Inlet basins is referred to by meteorologists as the "Kamishak Gap Wind" (Fett 1993). These strong winds could easily facilitate copper-laden dust being blown into the many waterbodies adjoining the mine site, transportation corridor, and port facility. The impact of copper contamination (through runoff and/or wind-blown dust) should be evaluated in the Draft EIS for the mine site, along the transportation corridor, and at the port facility. Mitigation options to be considered should include fugitive dust control at the

mine site, the port site, and along the transportation corridor and vehicle wash plants to minimize mechanical transfer of contaminants.

Many fish species have life history adaptations that can compensate for natural seasonal and geographic gradients of temperature but do not protect them from short-term unnatural changes in their normal temperature regime. The Draft EIS should identify and evaluate project components with the potential to alter stream temperature as well as assess the cumulative effects of the project on stream temperatures under several climate change scenarios.

The proposed location for Pebble Mine straddles two major drainages that support highly productive and valuable fishery resources. Although ADF&G monitors the escapement of major stocks targeted by commercial fisheries, many gaps in knowledge exist regarding the abundance, diversity, and productivity of freshwater resources in this area and how they might be impacted by the construction and operation of a copper-gold-molybdenum mine. Given the scope and scale of the proposed mine project, the Draft EIS should be informed by high-quality baseline data sets for all aquatic resources and habitats potentially affected by the proposed activities. There should be studies that evaluate the abundance and distribution of adult salmon species in water bodies that could be affected by development of the Pebble Mine. Specifically, studies to delineate important spawning reaches and determine the proportion of reaches that may be inundated by the mine or thought to be at risk from mining activities should be described in the Draft EIS. A combination of adult and juvenile studies should be conducted to document the use and productivity of anadromous species in the project area. Juvenile fish studies should be used to estimate freshwater productivity of anadromous fish species, a component especially important with regard to mining.

Wildlife and Habitat

Numerous wildlife species use the proposed project area, including brown bear, black bear, moose, caribou, wolves, multiple small game and furbearer species, and migratory birds. Loss of habitat, impacts to surrounding habitat (noise, pollutants, etc.), and the presence of garbage are all issues that should be evaluated in the Draft EIS.

Impacts of noise disturbance from construction, blasting operations and increased air traffic has the potential to directly impact wildlife. The Draft EIS should include an assessment of noise disturbances to marine mammals, bears, and other wildlife from construction, blasting, daily operations, and air traffic. Assessments should include impacts on abandonment of surrounding habitats, the ability to communicate or locate prey, and denning of animals. Timing of blasting operations can disturb denning bears and disruptions to bear congregations can affect feeding, energy use, survival, and safety at viewing programs within MRSGSR. There are harbor seal haulouts in Iliamna Lake and Kamishak Bay where important life events, such as pupping activity and molting activity occur. Harbor seals are susceptible to overhead disturbances.

The Bristol Bay uplands are used by the Mulchatna caribou herd as rangeland, calving grounds and as a migration corridor. The size and distribution of caribou herds in the project area have undergone profound changes since the 1970's, with the herd size increasing rapidly, expanding its range and using other areas. Herd use of habitat in the project area shifts regularly and areas not currently used are likely to be used again in the future as range and herd conditions change. The Draft EIS should analyze the impacts to range and calving areas currently and historically used, with emphasis on habitat that would be permanently taken out of range rotation due to construction of project infrastructure.

Recently the Board of Game reduced the season and bag limit for Alaska hare due to concerns of low abundance. The Draft EIS should evaluate the potential loss of breeding, brood rearing,

nesting, and overwintering habitat for small game species, including Alaska hare, rock and willow ptarmigan and ground nesting birds. Baseline studies documenting movement and habitat use, as well as before/after impacts study of predator-prey species should be conducted.

Domestic refuse is proposed to be disposed of in an on-site landfill according to the project description. This has the potential to attract bears and other wildlife. The Draft EIS should examine and describe the potential to create nuisance wildlife and evaluate the alternative of incineration of all putrescible materials and burial of that material into a waste rock stock pile. This comment applies to all locations where refuse is stored, transferred, and disposed of including the port and transportation corridor.

Bristol Bay provides important habitat for numerous species of waterfowl, seabirds, and shorebirds many of which are listed as Species of Conservation Concern, as well as numerous marine mammal species which provide an important subsistence food source for communities in the area. Hundreds of thousands sea ducks breed in the area and congregate annually for molting and pre- and post-breeding. Also, there are over fifty seabird colonies in northern Bristol Bay which provide breeding habitat for species such as black-legged kittiwake, horned puffins, and common murres as well as many other species of conservation concern. Bristol Bay provides feeding habitat for these species during the breeding season. Hundreds of thousands of shorebirds also either breed in or refuel in Bristol Bay during migrations. The Draft EIS should evaluate the impacts to species that may use the tailings pond including migratory birds, such as waterfowl and shorebirds that have the potential to be exposed directly to contaminants from using the tailings pond, as well as indirectly through feeding on vegetation and invertebrates that may be in the tailings pond. Additionally, the Draft EIS should evaluate a potential tailings spill and the downstream effects on aquatic environments, benthic prey species, intertidal and marine food web, and potential impacts to waterfowl, shorebirds and seabirds, and marine mammals. Baseline data should include surveys of abundance, composition and distribution of seasonal bird use throughout the year and surveys of associated benthic prey. The use of deterrents for migratory birds should be considered.

There is potential for contaminants and toxins from mine pit dust, the tailings storage area, fuel, oil, anti-freeze, de-icing compounds, explosives, chemicals, and road dust to affect terrestrial and aquatic habitats in and downstream of the project area. The Draft EIS should assess potential impacts to wildlife, wildlife prey, and marine mammals from exposure to contaminants and toxins. Trace elements analysis of select herbivores, carnivores and vegetation within the project area and road corridor should be conducted. Studies should gather baseline trace element data from select herbivores, carnivores, and vegetation in the project area and continue monitoring throughout the project life.

The potential for mine discharge into the rivers and streams, which flow into Cook Inlet and impact marine mammal species should be included in the Draft EIS. Marine mammals in the project area could be indirectly affected if a fuel spill or mine discharge was to contaminate prey resources. Further indirect impacts to marine mammals could include reduction of sources of prey due to loss of anadromous fish habitat. Some prey such as salmon and eulachon are short-lived and would not likely be able to accumulate mine-related toxins to concentrations of concern; however, marine mammals who ingest contaminated prey species or contaminated water and sediment can be impacted. Toxins can bioaccumulate into the tissues of upper trophic level wildlife having a permanent impact to individuals and possibly local populations.

Access by User Groups

The project area is used extensively by hunters, fishers, and other recreationalists and subsistence users. The proposed infrastructure and proposed private road can greatly impact public access along historic routes, stream corridors and to various fish and wildlife or subsistence resources. The Draft EIS should analyze the impacts of the project infrastructure and access corridors on public access and use of public lands, including existing trails, easements (e.g., section-line easements, RS 2477 rights-of-way, 17(b) site and trail easements), navigable and public waters, as well as overland access to fish and wildlife or recreational areas. The Draft EIS should address how mine access routes (roads, airstrips, ferry routes, docks/barge landings), utility and/or pipeline corridors, camp facilities and the mine facility itself may affect public access through state, federal, and private land as well as use of public land and waters within the mine-affected area. Conflicts or impediments to access and other uses should be avoided or mitigated.

Additionally, the Draft EIS should clearly describe the intended uses of the proposed access road and how uses are planned to be managed, especially given that the applicant proposes to connect to existing public road systems servicing the communities of Kokhanok, Iliamna and Newhalen.

Please consider using the following language in the Draft EIS to describe RS 2477 routes identified by the State of Alaska:

> Under Revised Statute (RS) 2477, Congress granted a right-of-way for the construction of highways over unreserved public land. Under Alaska and Federal law, the grant could be accepted by either a positive act by the appropriate public authorities or by public use. "Highways" under state law include roads, trails, paths, and other common routes open to the public. Although RS 2477 was repealed in 1976, a savings clause preserved any existing RS 2477 right-of-way. The State of Alaska claims numerous rights-of-way across the subject lands under RS 2477, including rights-of-way identified in AS 19.30.400.

Please consider using the following language in the Draft EIS to describe 17(b) easements:

> Section 17(b) of ANCSA provided for the United States to reserve easements across Native Village and Regional Corporation lands for public access to publicly owned lands (including waters) for the purpose of recreation, hunting, transportation, utilities, docks, and other similar public uses. The BLM is responsible for identifying and reserving these easements during the conveyance process. The BLM has management authority for the United States for these easements unless that authority has been otherwise delegated.
>
> While BLM has management authority for all 17(b) easements it has a largely undefined management policy that fails to provide the public a mechanism to address the concerns of land owners and easement users. Current problems include poorly or inaccurately placed easements, trails that allow for ORV use being aligned through wetlands, discontinuous easements, and lack of easement marking.
>
> Also note that, in accordance with ANCSA 17(b) and regulations implementing the statute, an easement may not be terminated simply due to lack of use. We suggest the following language address termination/relocation of 17(b) easements:
>
> Easement relocation and termination would be subject to State of Alaska and public involvement.

The Draft EIS should be especially clear that where a water body is navigable-in-fact and was not reserved (Congress expressly intended to defeat State title) prior to statehood the submerged

lands that lay between the outermost ordinary high-water mark on the left bank and the right bank are owned by the State of Alaska.

The mine proposal may result in loss of hunting areas and lowered quality of hunting and the overall outdoor experience due to sound and visual pollution, dust along road corridors, increased competition, decreased bag limits, and decreased opportunity. This has the potential to impacts hunters, game guides, transporters and eco-tourism industries. The Draft EIS should include an analysis of public comments, historic hunting and harvest reports, subsistence harvest records, guide camp records, ADNR Commercial Day Use Registration records, and public use records.

Subsistence Use

The following 18 communities use fish and wildlife resources near the proposed mine for subsistence purposes: Aleknagik, Clarks Point, Dillingham, Ekwok, Igiugig, Iliamna, King Salmon, Kokhanok, Koliganek, Levelock, Manokotak, Naknek (including South Naknek), Newhalen, New Stuyahok, Nondalton, Pedro Bay, Portage Creek, and Port Alsworth. The Draft EIS should evaluate potential direct and indirect impacts of the mine on subsistence resources, including direct impacts on fish and wildlife health, abundance and movements, as well as indirect impacts on habitat and food sources. The Draft EIS should also evaluate potential impacts of the mine on subsistence users and their ability to access subsistence resources. ADF&G has conducted research in many of these communities and has published and unpublished data describing the various modes of transportation and social mobilization used by subsistence users in the project area. These include transportation by boat, snow machine, ATV, airplane, and on foot. Social mobilization strategies include organizing groups by kinship, by age, by skill or knowledge specialty.

The potential impacts on work schedules, wages, local tax revenue, outmigration, and technical training and educational opportunities may potentially alter the social and economic environment of area communities. ADF&G research has collected local community input on perceived potential impacts of mine infrastructure to subsistence hunting and fishing activities. ADF&G research has also collected baseline demographic data describing household composition, wage and employment characteristics including seasonality of work and employment by industry.

The Draft EIS should evaluate the effect of potentially harmful or disruptive interactions between wildlife and ground-disturbing activities in the project area, as well interactions that may occur downstream and downwind. Possibilities include interactions between wildlife and mine structures such as tailings, quarries, sediment ponds, seepage ponds, stockpiles, and the open pit. ADF&G has conducted household surveys documenting subsistence use patterns in the project area intermittently between the years 1980 and 2016. For many of these studies maps are available that identify the geographic locations where community residents search for and harvest subsistence resources during the study year.

Salmon and non-salmon fish live in the waters near the mine site, and like wildlife species, the mine's impact to land, air and aquatic habitats may result in disturbance to fish health, movement, and abundance, which may in turn affect subsistence harvests. Possible points of interaction between the proposed activities and fish include industrial wastewater discharge sites, subterranean disturbance of aquifers, alteration of natural water flow rates and temperatures, disturbance to surface wetland ecology and insect prey habitat at the mine site, and stream crossings of the road to the southeast of the mine site. ADF&G has conducted surveys documenting subsistence harvest, use, and distribution of fishery resources in the project area for intermittent years ranging from 1980 to 2016.

In addition to impacts on animal species and their habitats, the Draft EIS should also focus on potential direct impacts to the human communities in the region. Physical, chemical and atmospheric changes to the environment caused by the proposed activities may impact the movement, abundance, and health of fish and wildlife resources, resulting in a disturbance to the schedules and strategies local people use to access those resources for subsistence. Local knowledge of the ecological system may become ineffective, and residents may be forced to adjust to a new environmental configuration. In anticipation, the Draft EIS should document traditional ecological knowledge of local people regarding interactions with subsistence resources, including the strategies taught to young people. ADF&G has conducted interviews and surveys with residents of communities near the project area, documenting traditional knowledge of subsistence resources in social and environmental contexts.

Traditional knowledge and access to subsistence resources is integrated with the socioeconomic character of each community. The Draft EIS should document potential economic and demographic changes caused by the mine, both during development, over the course of operation, and during mine closure. Household demographic, employment and wage data collected during ADF&G household surveys, in addition to other data sets, may be used to help evaluate socioeconomic impacts on communities.

ROAD CORRIDOR

Fish Habitat

The project description states a two-lane dirt road would connect the Amakdedori Port to the south ferry terminal on Iliamna Lake and the mine site to the north ferry terminal. The Draft EIS should assess potential impacts to freshwater resources in Amakdedori Creek, Newhalen River, Upper Talarik Creek, and Gibraltar River drainages stemming from construction and use of the road corridor, including appropriate use of bridges to maintain the ability of anadromous and resident fish species to continue accessing available habitats; roadbed construction interrupting hyporheic flow into adjacent streams; and sedimentation of aquatic habitats, especially spawning habitats, deriving from dust and increased erosion and run-off caused by road construction and use.

Field studies documenting anadromous and resident fish presence and absence along the road corridor route should be considered in the Draft EIS. The southern portion of the road corridor, from the south ferry terminal outside of Kokhanok to the port at Amakdedori Creek is unstudied in terms of fish presence in streams where road crossings are currently proposed. In addition to fish presence and absence data, hydrology and geomorphology data should be collected to properly design drainage structures. The project description indicates that 222 culverts will be needed, but only 73 will require fish passage and 149 will be on non-fish bearing waters. Under state authorities, ADF&G may require fish sampling be conducted before determining which structures will require fish passage and which structures will require permits. Eight bridges are currently proposed, and ADF&G plans to assess how many more fish stream crossings may require bridges to minimize habitat alteration, assure fish passage, and decrease long term maintenance. This information may be used to inform ADF&G Habitat Title 16 permitting decisions associated with the proposed stream crossings.

Per state law (Title 16), uses and activities occurring below the ordinary high-water mark for waterbodies containing fish requires a Fish Habitat permit issued by ADF&G, including water withdrawals, dams, ferry terminals and facilities, geotechnical drilling, installation of stream gages, stream crossings with equipment, material removal or disposal, and any alterations of stream habitats or connected wetlands (if documented in the Anadromous Waters Catalog).

Fish and Water Quality

In addition to considering potential impacts to aquatic resources from waterborne and air contaminates (see Fish and Water Quality comments under Mine Site and Facilities section above), the Draft EIS should evaluate possible effects of spills on fish from the proposed transportation of fuel, ore concentrate, reagents and consumables, across numerous streams and rivers, as well as Iliamna Lake, as well as potential fuel spill mitigation and containment measures. The proposed 35 round trips per day (including three loads of fuel per day) creates potential for accidents to occur over the life of the project. Impacts to aquatic resources could be significant in the event of a storage tank failure or from accidents involving trucks and ferries transporting fuel, concentrate, and backhauled waste between the mine site and the port. The Draft EIS should consider spill prevention, impacts, and mitigation plans, and include a detailed analysis of how major spills would be contained and affected areas cleaned up. Appropriate consideration of the area's seismic activity (e.g., landslides) should be included in the accident/spill risk analysis and the design/engineering/placement of roads and bridges. Environmentally sensitive areas along the transportation corridor should be identified and containment/mitigation plans should be developed to quickly and effectively respond if a spill occurs.

Sport Fisheries

The road corridor has the potential to impact sport fishing in the area, both by impacting fish resources and impacting the aesthetic value of recreating in "wild" and undeveloped river systems. Numerous sport fisheries exist in the project area:

- The Nushagak River drainage (including the Koktuli River drainage) supports significant guided and unguided sport fisheries for all five species of Pacific salmon, rainbow trout, Dolly Varden, Arctic grayling, and northern pike. The king salmon sport fishery is the largest of these and accounts for the highest levels of sport fishing effort in the Bristol Bay Management Area. The drainage supports also supports Arctic char, lake trout, burbot, whitefish spp., stickleback spp., and sculpin spp.
- The Newhalen River supports a significant, mostly unguided, sockeye salmon fishery and a smaller guided and unguided sport fishery for rainbow trout. The drainage also supports Chinook and coho salmon, anadromous Dolly Varden, Arctic grayling, northern pike, whitefish spp., stickleback spp., and sculpin spp.
- Upper Talarik Creek supports guided and unguided coho salmon and rainbow trout sport fishery. The drainage also supports populations of all five species of Pacific salmon, anadromous Dolly Varden, Arctic grayling, northern pike, whitefish spp., stickleback spp., and sculpin.
- The Gibraltar River supports a well know fly-fishery for rainbow trout and sport fishery for sockeye salmon. The Gibraltar River watershed is a particularly productive watershed for sockeye salmon. The drainage also supports populations of chum and coho salmon, anadromous Dolly Varden, Arctic grayling, northern pike, whitefish spp., stickleback spp., and sculpin spp.

Due to the significant fish resources and sport fisheries in the vicinity of the road corridor, baseline size, abundance, and distribution information should be collected on adult and juvenile resident species, particularly rainbow trout and Arctic grayling, prior to the start of construction. Seasonal fish use and critical habitat areas for juvenile and adult resident and anadromous species should be identified and documented in the Draft EIS, as these drainages are utilized for

spawning, rearing, migration, feeding, and overwintering. The Draft EIS should evaluate potential impacts to the sport fisheries in the area, both from direct impacts to fish and indirect impacts from increased access and loss of pristine wilderness due to presence of roads and bridges.

Wildlife

The development of the road corridor has the potential to cause wildlife habitat fragmentation and disruption of wildlife movement corridors. This is of particular concern along southern road corridor and at the Amakdedori Port site as brown bears using these areas also utilize MRSGSR. Species of particular concern include brown and black bear, moose, caribou, harbor seal, sea otter, furbearers, wolves, Alaska hare, and rock and willow ptarmigan. The Draft EIS should include research and analysis of the project impacts on wildlife movements, important habitats, and species use of and movements within and across the project area.

Focused research, both before and after construction, should be conducted to determine brown bear use areas, landscape use patterns, movements, degree of relatedness among bears in area and fidelity to MRSGSR, southern road corridor, Amakdedori beach site, and Chenik Head areas.

The development of the road corridor (as well as other project components) has the potential to impact the wildlife viewing programs, public safety, and management at MRSGSR and other viewing areas along the Kamishak coast and Katmai National Park and Preserve. Behavioral changes of bears or other wildlife due to project infrastructure or operations; garbage and food conditioning of bears; disruption of movement corridors; deconditioning of human habituated bears by project operations; increased disturbance and traffic; and increased harvest, road kills, Defense of Life and Property kills and hazing; all have major public safety, management and economic consequences for these programs. The Draft EIS should describe high value brown bear habitat use areas, wildlife movements within and across project areas, anticipated levels of mine project use, impacts of those uses or operations on wildlife movements, important habitats and the socio-economic impacts to viewing programs at MRSGSR. Moreover, the Draft EIS should also consider brown bear fidelity to MRSGSR and project areas, the degree of relatedness amongst bears in the area and the potential effect of the project on landscape use by bears (particularly for brown bear within and surrounding MRSGSR, Amakdedori Port site, Chenik Cove and the road corridor).

The road corridor, along with other project components, has strong potential to impact a number of wildlife populations and wildlife related socio-economic aspects. Potential impacts to wildlife populations, hunters, game guides, subsistence users, transporters and eco-tourism industries should be evaluated, and avoidance measures developed. Food conditioning of bears or other wildlife from garbage and other industrial attractants at facilities and along roadways should be evaluated and avoidance measures developed. This is particularly problematic along the southern road corridor and at the Amakdedori Port site as brown bears using these areas also utilize MRSGSR. Food conditioning of bears that utilize MRSGSR can cause substantial public safety problems. Changes in harvest, road kills, Defense of Life and Property kills, and wildlife behavior as a result of infrastructure, operations and increased accessibility are a concern and should be addressed in the Draft EIS.

Potential loss of hunting areas and quality of hunting and other outdoor recreation experiences due to increased competition, decreased opportunity and bag limits, “sound and visual pollution”, and dust along road corridors should also be considered in the Draft EIS. In addition to brown bears, these considerations should also apply to the following species: black bear,

moose, caribou, wolves, furbearers, small game, waterfowl, avian scavengers/predators and marine mammals. The Draft EIS should include research and analysis of potential sources of food, garbage, or other wildlife attractants at each facility and along new road corridors; and relate this to wildlife movement corridors, accessibility, mortality threat, and food conditioning risks to public safety. Analysis should consider existing harvest and mortality rates and projected post development rates based on increased access into low use areas; how that may impact existing populations, hunting opportunities and the bear viewing programs at MRSGSR and other locations along the coast or within Katmai National Park and Preserve. Analysis should include public comments, historic hunting and harvest reports, subsistence harvest records, guide camp records, ADNR Commercial Day Use Registration records and public use records and expected impacts on hunters, commercial guides, transporters, and other recreational users. During construction, the project plans include using the Williamsport-Pile Bay Road. An alternative to consider in the Draft EIS is use of that route as the permanent transportation corridor, which would eliminate the need for the 35-mile southern road corridor through undeveloped land. This alternative could reduce potential impacts to the MRSGSR.

Subsistence

Similar to subsistence concerns under the Mine and Facilities section, possible impacts to wildlife may occur along the transportation routes and in associated noise zones. The Draft EIS should also include recommended measures to deter wildlife from undue exposure in these locations, reducing disruption to the existing patterns of movement and abundance that subsistence users rely on.

ILIAMNA LAKE FERRY ACTIVITY and TERMINALS

Fish Habitat and Water Quality

Iliamna Lake supports populations of all five species of Pacific salmon, anadromous Dolly Varden, rainbow trout, Arctic char, lake trout, Arctic grayling, northern pike, whitefish spp., stickleback spp. and sculpin spp. Due to the size and depth of Iliamna Lake, it is possible that other undocumented species of fish inhabit the lake. Iliamna Lake provides critical habitat for the unique migratory resident rainbow trout population and is one of the most productive sockeye nursery lakes in the world. Adult sockeye salmon spawn at many locations around the lake, as well as at the lake outlet and in several inlet streams.

The project proposes operating an all-season icebreaking ferry to transport fuel, supplies, outbound concentrates, and backhauled waste and empty containers across Iliamna Lake daily. The Draft EIS should evaluate if the construction/operation of the north and south ferry terminals may impact habitats used by beach spawning adult sockeye salmon and/or rearing juvenile sockeye salmon, and if ice breaking ferry operations may impact the aquatic resources and/or limnology of Iliamna Lake. The Draft EIS should consider identifying alternative ferry terminal locations if the proposed sites are found to contain valuable spawning and/or rearing habitats for sockeye salmon. Additionally, the Draft EIS should quantify and evaluate the amount of rearing habitat that would be impacted by the construction and operation of the ferry terminals.

Storage and containment of concentrates and back hauled waste may result in unforeseen discharge of pollutants into Iliamna Lake. Water quality models should be developed to predict the magnitude of potential toxicity to the aquatic community of Iliamna Lake that could result from containment failures at the ferry terminal facilities or while transiting Iliamna Lake. Copper is highly toxic to freshwater organisms, as described in previous comments. Specifically, the Draft EIS should include water quality modeling to understand the magnitude of copper

toxicity (and impact to aquatic organisms) in Iliamna Lake, should the contents of one or more copper ore concentrate containers spill into the lake during a ferry accident.

Wildlife and Subsistence

Construction and operation of the Iliamna Lake ferry terminals have the potential to impact Iliamna Lake's resident population of about 400 harbor seals. Pile driving and other construction activities can generate noise and hauled-out harbor seals are very susceptible to human disturbances including noise and vessel traffic. Disturbances to seals during pupping activities (mid- May through early July) could cause permanent separation of mom/pup pairs and lead to injury or death. Disturbances to hauled-out seals during the molting period (about May 1 – October 1) could lead to loss of energy, interruption of hair growth, and prolongation of the molting period.

The harbor seals in Iliamna Lake overwinter in the lake and the Draft EIS should assess the impacts of creating a permanent open water channel and interactions that may occur between the ice-breaking ferries and seals. It is possible that seals with be attracted to the open water channel. The Draft EIS should include measures that can be taken to deter seals from undue exposure to the ferries. Additionally, impacts to traditional winter travel routes and subsistence activities of communities around the lake (Kokhanok, Iliamna, Newhalen, Pedro Bay, and Igiugig), as a result of the creation of an open water channel, should be included in the Draft EIS. On average, 20 seals are harvested each year, which matches the reproductive rate keeping the population numbers in balance.

AMAKDEDORI PORT

Dredging

Kamishak Bay is relatively shallow and has extensive reefs and strong tidal currents. The port may require dredging to support its use and thus potential impacts from dredging should be addressed in the Draft EIS. Geotechnical information on the sub-bottom profile throughout the dredge area was not provided in the project description; however, the applicant surmised that it was comprised of soft sediments. Kamishak Bay in this area is characterized by abundant rocky reefs, some of which are exposed at low tide and others not. A thorough geotechnical evaluation should be conducted to determine if the proposed port facilities can be constructed by dredging soft sediment or whether more aggressive methods (e.g., drilling, explosives) may be needed to excavate hard rock sections of the access channel. Due to the strong tidal currents and high sediment loads common to Cook Inlet, and particularly its lower west side, regular dredging may be needed to maintain 50-foot channel depth throughout the life of the project. Because of the important marine resources in the bay, including multiple finfish, shellfish, groundfish species, and marine mammal species, and the extent of dredging that may be required, the Draft EIS should evaluate the potential impacts to marine resources from construction and maintenance of the port and turning basin.

The estimated initial volume of dredge material from port construction is 10 million cubic yards with an additional 10 million cubic yards in maintenance dredging. This material is proposed to be contained within an onshore disposal area, but the application does not specify the quantity or composition of the liquids associated with dredging activities, where those liquids may be discharged, or how they may be treated. The Draft EIS should assess the whole breadth of dredging activities when determining the possible impacts to aquatic organisms and consider practicable alternatives that would avoid and minimize impacts.

Water Quality

Construction and operation of the Amakdedori Port has the potential to impact important aquatic resources. The proposed location for the port site is prone to frequent high winds from two sources: the "Kamishak Gap winds" and a regular onshore "day breeze" that occurs most afternoons during summer months due to convection air currents. The Draft EIS should evaluate the potential impact of contaminants, such as copper, being introduced into the environment through runoff and wind-blown dust (see Fish and Water Quality under the Mine Site and Facilities Section above).

Although a lined/bermed area is specified for the fuel storage tanks at the port site, impacts to aquatic resources in Amakdedori Creek and surrounding wetlands and marine waters could occur in the event of a storage tank failure or from accidents involving trucks transporting fuel from the port to the mine site. Spill prevention, impacts, and mitigation plans should be addressed in the Draft EIS, to include detailed analysis of how a major spill outside the lined/bermed area would be contained and affected areas cleaned up. Analysis of the area's seismic/volcanic activity should be included in the spill risk analysis and the design/engineering of fuel tanks, containment structures, and fuel transport along the road corridor. Along with seismic events, the Draft EIS should assess the risk of a major volcanic eruption producing a landslide on Augustine Island significant enough to generate a tsunami wave capable of rupturing fuel storage tanks at the port site, potentially releasing diesel fuel into the surrounding freshwater and marine environments.

In addition to onshore fuel spills, the draft EIS should address potential for impact of fuel and lubricants entering the marine environment, either through periodic minor events typical of heavy marine vessel traffic (e.g., bilge water discharge), or through major acute events such as vessel groundings. Strong tidal currents and frequent high winds (particularly during fall/winter months) are common to this area of Cook Inlet. Especially prevalent in the Amakdedori Beach area are the high winds associated with the Kamishak Gap, a low-lying area in the mountains of the Alaska Peninsula located between Iliamna Lake and Kamishak Bay, which coincides with the proposed port location. Gap winds and drainage winds occur year-round here but are most prevalent in winter months where they can reach 99 knots. This area is also subject to high levels of snow fall, which in conjunction with strong winds, result in a high frequency of restricted visibility events. Sea ice occurs in the proposed port location in winter months and can extend to and beyond Augustine Island. These conditions, coupled with the fact that the narrow-dredged access channel to the port is surrounded by shallow water (<6 fathom) and nearby rocky reefs, increase the likelihood of one or more major incidents (e.g., vessel grounding) occurring over the life of this project. The Draft EIS should include a risk analysis of a major vessel grounding incident occurring and the potential impacts and mitigation of the event, should one occur.

Commercial Fisheries

Construction and operation of the Amakdedori Port has the potential to conflict with commercial salmon fishing activities in this area. The proposed Amakdedori Port is located at the outlet of Amakdedori Creek. Typically, commercial fishing for sockeye and pink salmon occurs 500 yards away from the stream mouth. However, commercial fishing may occur closer than 500 yards from the stream mouth in years when escapement goals have been achieved for this system. Much of this near shore (500 yards) area may be inaccessible to commercial fishermen due to the construction and operation of the Amakdedori Port site. The port site may also present a variety of fishing hazards to the commercial fishing fleet, including port related marine traffic, the natural gas pipeline landfall, navigational markers, the 2,000-foot earthen causeway, as well as ore loading infrastructure. Potential changes in this fishing area could result in loss of revenue

for fishermen in some years for sockeye salmon in Amakdedori Creek. Such changes and potential impacts should be assessed in the Draft EIS.

Although the commercial sac-roe herring fishery is closed due to low abundance, the currently undisturbed habitats of Kamishak Bay can support similar levels of productivity in the future as environmental conditions shift to those experienced during previous periods of high abundance. As the herring population builds and the threshold for a fishery is attained, commercial herring fishing may return to Kamishak Bay. The proposed location for the Amakdedori Port is in an area that historically received considerable fishing effort, and it is immediately north of one of the principal herring spawning areas in Kamishak Bay (i.e., Chenik Head). The Draft EIS should assess potential impacts to this fishery and consider alternate port sites.

Construction and operation of the Amakdedori Port could also affect commercial groundfish and halibut fisheries as a result of impacts to the marine environment and marine resources described above. The project has the potential to hinder the recovery of populations that are depressed such as Tanner, red king, and Dungeness crab species, and to impact crab and weathervane scallop habitats that are necessary to support the fisheries depending on these resources. Additionally, the Draft EIS should assess potential impacts due to marine traffic into and out of the port that may affect access to fishing grounds, impede fishing operations, and jeopardize fishing gear for some species, including pot fishing for Pacific cod, longline fishing for halibut, and noncommercial fishing with pot gear for Tanner crab.

Coastal Wildlife and Marine Mammals

Numerous species use the intertidal, shoreline, and nearshore habitat of Kamishak Bay, including waterfowl, seabirds, shorebirds, brown bears, and marine mammal species. The Draft EIS should evaluate potential impacts to the wildlife whose range includes the Amakdedori Creek drainage, Kamishak Bay, and Cook Inlet.

Construction and operation of the port and associated infrastructure has the potential to impact brown bears that use the coastal habitat of Amakdedori Creek and Kamishak Bay. The development of the port site (as well as other project components; see Wildlife comments under the Road Corridor section above) has the potential to impact the wildlife viewing programs, public safety, and management at MRSGSR and other viewing areas along the Kamishak coast and Katmai National Park and Preserve.

Construction, dredging and port operations area likely to impact shoreline habitats, intertidal and offshore resources. Many species of waterfowl, shorebirds and seabirds use the coastal habitat near the proposed port. Cook Inlet is an important area for migrating shorebirds due to its proximity to breeding sites and high-quality foraging habitat. Kamishak Bay provides important breeding habitat for several seabird species of conservation concern and is one of several molting sites for Stellar's eiders, which also overwinter in Cook Inlet. Baseline studies of abundance, composition, and distribution of seasonal bird use throughout the year may be helpful to understand the potential impacts from port construction and operation. The Draft EIS should assess the direct and indirect impacts of the proposed project to the waterfowl, shorebirds, and seabirds using this area.

Construction and dredging of the port site has the potential to impact numerous marine mammal species. The Draft EIS should include an evaluation of impacts to marine mammals ranging in the project area, with emphasis on Endangered Species Act listed species and the National Oceanic and Atmospheric Administration's Biologically Important Area's within the vicinity of the proposed port site and Gulf of Alaska locations with increased vessel traffic resulting from the project. Direct impacts to species such as Northern sea otters and harbor seals utilizing the

shoreline and intertidal habitat are likely and should be evaluated in the Draft EIS. Additionally, harbor porpoises and Cook Inlet beluga whales are very sensitive to disturbance (construction, dredging, noise, increased vessel traffic) and their use of the bay will likely be impacted and should be evaluated in the Draft EIS. Potential impacts to the foraging habitat and range of the marine mammals, such as whales, porpoises, otters, seals, and sea lions that use the area should be evaluated in the Draft EIS. Increased vessel traffic and associated noise have the potential to affect marine mammals, particularly the harbor porpoise and Pacific white sided dolphin as they are especially sensitive to boat traffic and should be evaluated. Haul out areas should be identified and evaluated in the Draft EIS, as marine mammals that are using haul outs are sensitive to noise and other disturbances.

Water quality and contaminant concerns associated with the port site and operations were previously discussed. Any impacts to water quality and contamination have the potential to affect coastal wildlife, including marine mammals. In addition to addressing potential water quality and contaminant impacts, the Draft EIS should also include potential impacts such as the introduction of invasive species deriving from ballast water discharge by vessels utilizing the Amakdedori port site.

The Draft EIS should evaluate whether potential alternative port site locations exist that would serve the project's needs, while reducing the anticipated impacts to marine mammals and commercial fisheries resources in the Amakdedori Creek/Kamishak Bay location. An alternative port site would also reduce potential impacts to management and public viewing programs at MRSGSR.

NATURAL GAS PIPELINE

Pipeline designs should account for tidal stresses in the Cook Inlet, proximity to volcanoes (Mt Augustine, etc.), and seismic activity in the region. The Draft EIS should review potential alternative alignments for the pipeline route, such as an alignment north of Augustine Island.

Based on recent pipeline installations in Cook Inlet, it may be wise to consider the possibility of trenched installation from uplands to subsea areas as a potential technique. Tyonek pipeline was installed via trenching after consultation with Kenai Peninsula Borough.

Sterling Highway Right-of-Way

The Draft EIS should evaluate practicable alternatives for reducing the amount of natural gas pipeline that is installed in the Sterling Highway right-of-way, which is managed by the DOT&PF. For example, it may be possible to make modifications to the current gas pipeline system on the Kenai Peninsula and relocate the connection point for the proposed Pebble Project system, reducing the amount of pipeline proposed parallel to the Sterling Highway. If it is not practicable to eliminate the entire segment of gas pipeline proposed by the applicant parallel to the Sterling Highway, the DOT&PF recommends proposing the gas pipeline on the opposite side of the highway, so the highway does not get "pinned" between two gas pipelines on opposite sides of the road.

Installation Methods

The project description indicates the proposed pipeline will enter Cook Inlet on the Kenai Peninsula side via HDD. However, there is no mention of how the pipeline is proposed to come out on the Amakdedori Port side. The Draft EIS should describe how the proposed pipeline may make the transition on the west side of Cook Inlet, as well as potential impacts to fish, marine mammals and intertidal species for the entire crossing.

The Draft EIS and the project description should also clarify whether the pipeline is proposed to be pinned or otherwise weighted or secured to the seafloor where it crosses Cook Inlet and Iliamna Lake, and describe design methods to protect the pipeline from subsea hazards.

Further details regarding proposed power sources (e.g. gas or electric) for the proposed compressor stations would be useful in the Draft EIS, along with information regarding whether security structures such as fencing may be installed around the above ground facilities associated with the pipeline (e.g. compressor stations, block valves) to restrict public access.

The Kenai Peninsula portion of the gas pipeline would cross Stariski Creek, which supports spawning, rearing, and migration habitat for Chinook, coho, and pink salmon, Dolly Varden, and steelhead trout. The Amakdedori Creek drainage supports coho, sockeye, pink and chum salmon. The EIS should evaluate ways to avoid and minimize damage to streambank habitat and spawning gravels, as well as disruption to salmon movement, from pipeline installation.

For the proposed crossing of Iliamna Lake, the project description indicates that methods will be similar to the Cook Inlet crossing. The Draft EIS should describe how the lake crossing, burial and transition may take place, as well as potential impacts to fish and marine mammals.

In some cases, HDD drilling muds have been known to propagate into a waterbody (frac-out) because of excessive drilling pressures and site-specific geology. An HDD drilling mud management plan should be developed to minimize the potential for frac-out, as well as to have a plan in place to both detect drilling muds entering waterbodies and to trigger an appropriate course of action. The Draft EIS should also describe any geotechnical work used to determine the proper location and depth of an HDD.

A large amount of water may potentially be needed for pipeline hydrostatic testing, as well as a multitude of other uses. Water sources, methods of retrieval as well as potential disposal methods and sites should be evaluated in the Draft EIS.

Ditching and pipe stringing operations should consider wildlife movements. Extensive lengths of ditch or pipe either awaiting welding or laying, can deflect or form barriers to wildlife movement (moose migration between summer and winter range; caribou seasonal migrations). In the worst case, open ditch could result in animal entrapment. Cross-right-of-way access should be maintained for resident animals during non-migratory periods. Similarly, ditching and pipe installation across some fish streams may need to be scheduled to minimize impacts to the aquatic system.

High-resolution bottom mapping (bathymetric, bottom type, and geotechnical information on the sub-bottom profile) of the marine environment within and adjacent to the proposed natural gas pipeline corridor should be used to guide placement of the pipeline so it avoids sensitive habitats and/or places with hard bottom where the pipeline could not be covered, and abrasion could occur. Sea floor maps can also be used to quantify impacted habitats by type and to select appropriate locations and methods for baseline fishery surveys described below.

Commercial Fisheries

The proposed Pebble Mine includes the construction of a natural gas pipeline from the eastern to the western shore of Lower Cook Inlet, then along the road corridor out to the mine site. The subsea section spanning Cook Inlet is expected to be about 94 miles long and laid either in a shallow trench or directly on the sea floor where water depth exceeds 200 feet. This component of the project falls almost entirely within the Lower Cook Inlet (LCI) Management Area for salmon and herring species and entirely within the Cook Inlet Management Area for groundfish and shellfish species. While ADF&G bottom trawl and weathervane scallop surveys occur

directly in the path of the proposed gas pipeline in Kamishak Bay, relatively few fishery-independent research surveys have been conducted between the eastern extent of these surveys and the proposed pipeline route to Whiskey Gulch. However, fisheries for halibut and Pacific cod do occur over the entire extent of the pipeline, and for scallops on the western portion near Augustine Island. Additional baseline studies to address this data gap may be necessary for the Draft EIS to effectively evaluate potential impacts.

The Draft EIS should evaluate the potential for the natural gas pipeline to conflict with commercial salmon fisheries in LCI, especially in Kamishak Bay where fishing effort is higher and marine waters shallower. Legal purse seine gear used in LCI can be up to 325 meshes in depth, which equates to nets potentially touching bottom in waters 95-feet or less deep, given typical mesh size (3.5 inches). At depths less than 200 feet, the development plan specifies that the natural gas pipeline would be buried in a shallow trench. However, the pipeline could be exposed in areas where hard bottom occurs or where strong tidal currents erode sediment around the pipe, creating the potential for fishing gear to hang up on the structure. The Draft EIS should also evaluate the impacts to commercial salmon fishing if fishing exclusion zones are necessary around the natural gas pipeline.

The proposed gas pipeline route traverses roughly through the center and highest density of the Kamishak Bay weathervane scallop North Bed. The Draft EIS should evaluate the effects of the pipeline on Kamishak Bay weathervane scallop North Bed as well as the potential of direct scallop mortality. The Draft EIS should also evaluate any potential conflicts with the Kamishak Bay commercial scallop fishery. The commercial scallop fishery uses hard on-bottom steel dredges that can weigh more than 1000 pounds. The Draft EIS should evaluate the effects of a potential collision of a scallop dredge with the gas pipeline and determine if this could cause a rupture of the pipeline. The Draft EIS should consider alternate routes for the pipeline that wouldn't impact the scallop resource or the fishery. The Draft EIS should specify the details of the depth of burial and evaluate the potential of the pipeline becoming exposed due to erosional currents. The Draft EIS should evaluate the impacts if scallop fishing closures are necessary around the natural gas pipeline and examine available options to mitigate such closures.

The proposed gas pipeline route also traverses roughly through the center of the historical Kamishak Bay Tanner crab fishing grounds. Though the commercial Tanner crab fishery is currently closed due to low abundance, the undisturbed habitats of Kamishak Bay can support similar levels of productivity in the future as environmental conditions shift to those experienced during periods of high abundance. As the Tanner crab population builds and thresholds are attained, commercial fishing may return at the location of the gas pipeline. The Draft EIS should evaluate the effects of the pipeline on a potential commercial Tanner crab fishery in the vicinity. The Draft EIS should consider alternate routes for the pipeline that wouldn't impact the Tanner crab resource or the fishery. The Draft EIS should evaluate the impacts if a closure area is necessary around a Tanner crab fishery. The Draft EIS should also evaluate the effects and or conflicts of a natural gas pipeline to current ADF&G Tanner crab research in the area. The ADF&G bottom trawl surveys utilize historical tow paths that may intersect the proposed pipeline. If these must be changed to avoid project activities, it may lead to a potential loss of precision and accuracy of the Tanner crab assessment.

Though the population of legal-size Tanner crab is currently depressed, Kamishak Bay, Kachemak Bay, and likely lower Cook Inlet in general continue to experience high levels of juvenile recruitment, as detected in bottom trawl and dredge surveys. Installation of the gas pipeline could result in direct mortality of juvenile Tanner crab. The Draft EIS should consider

alternatives to laying the pipeline directly on the bottom (unburied) or evaluate the effects of an unburied pipeline's impact on crab movements, access to important habitat, and direct mortality.

The Draft EIS should evaluate the effects of the pipeline on commercial halibut and Pacific cod fisheries as well as any sport and subsistence fisheries in the vicinity. Currently, considerable halibut longline and Pacific cod pot fishing occurs along the proposed gas pipeline route, including in water depths greater than 200 feet where the pipeline would be exposed. The Draft EIS should evaluate the potential for direct mortality to weathervane scallops, Tanner crab, and razor clams from pipeline installation. The pipeline may also impede fishing operations and jeopardize the security of fishing gear including dredging for weathervane scallops, pot fishing for Pacific cod, and longline and jig fishing for both Pacific cod and halibut, as well as noncommercial fishing with pot gear for Tanner crab and should be evaluated.

The Draft EIS should document what marine species (and life stages) use the habitat within and adjacent to the proposed natural gas pipeline corridor. The Draft EIS should also evaluate the potential impacts to marine life resulting from a pipeline failure. The Draft EIS should include an analysis of the risk of natural gas entering the marine environment, the impact it would have on marine resources, and how gas line leaks or ruptures would be contained. It should also consider alternative methods for delivering natural gas to the project area.

CUMULATIVE EFFECTS

Development of the Pebble Mine and associated infrastructure, such as a port, roads, and natural gas pipeline, may increase the likelihood other future development occurs in the area and human use increases. The concerns and potential impacts described above would increase in scale, commensurate with the reasonably expected increase in development in this area due to the presence of infrastructure associated with this project. The Draft EIS should consider the potential cumulative effects resulting from all past, present, and reasonably foreseeable future development activities in the areas associated with this project. As appropriate under the NEPA, the USACE may also consider cumulative environmental effects at broader scales, such as global climate change or ocean acidification.

CONCLUSION

In concert with the above comments, the Draft EIS should thoroughly evaluate and describe current environmental, social, and economic conditions found in the analysis area to provide a basis for comparing potential changes resulting from all reasonable alternatives, including the No Action Alternative. The USACE should consider reasonability, feasibility, and practicability when developing action alternatives to be evaluated in detail in the Draft EIS. For example, a full feasibility study should be part of the USACE's evaluation which considers among other things the economics of the proposed project itself as well as economic impacts to the region. The USACE should also consider mitigation measures for potential impacts, including acid rock drainage, tailings, and potential metal leaching, during operation and post-closure. Treatment of waste rock and contaminated water should be addressed, and impacts on fish, water quality, groundwater, surface water, subsistence resources, and public health should be evaluated. Direct, indirect, and cumulative impacts on air and water quality should be addressed. Archeological and cultural resources should be addressed, and the Alaska State Historic Preservation Officer should be consulted regarding archeological and cultural resources in the proposed project area.

As the Pebble Project and evaluation of the project evolves, the principles outlined in this letter should continue to apply.

Thank you for this opportunity to provide scoping comments to inform the Draft EIS. If you have any questions or to discuss any of the above comments in more detail, please contact me.

Sincerely,

Kyle Moselle
Associate Director

Enclosures: Generally Allowed Uses on State Land (August 2011); and
Select State Tools for Managing State Land/Water and Related Public, Activities involving Fish and Wildlife Resources, Version # 8 (updated December 13, 2010)

cc: Andy Mack, Commissioner, DNR
Larry Hartig, Commissioner, DEC
Sam Cotten, Commissioner, ADF&G