State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
ADF&G-Habitat	1	4.24-1	Chapter does not list any indirect effects on fish from the proposed project.	Chapter should describe indirect effects on fish such as increased fishing pressure due to increased access.	Direct and indirect effects are described throughout Section 4.24, Fish Values. Impacts associated with recreational fishing are discussed in Section 4.6, Commercial and Recreation Fisheries.
ADF&G-Habitat	2	4.24-3	Section only describes the fish habitat loss from the proposed pipeline in the waters of Cook Inlet.	Section should describe all potential sources of fish habitat loss from the installation of the pipeline including placement in Lake Iliamna as well as inadequate bank restoration/protection.	This section has been updated to assess the magnitude and extent of impacts associated with habitat loss from the installation and operations of the pipeline crossing Iliamna Lake. Text revised as: The magnitude and extent of impacts are such that the two terminals would remove 0.8 acres and 923 ft (0.2 miles) of approximately 300 miles of existing littoral zone. Rip-rap placed around the landing ramp will be similar in size and character to the boulder habitats currently present in both locations and will not represent a novel habitat feature. Rip-rap would be colonized in the short-term and subsequently used by fish and their prey organisms. Habitat abutting fill locations may be disturbed or degraded during construction, but the duration of the impact would be short term as habitat is expected to recover after construction activities are completed There would be temporary impacts to near-shore benthic habitats during construction, and permanent impacts to benthic habitat beneath the footprint of the pipeline in deeper waters. These deeper affected areas do not constitute quality benthic habitat due to the water depth, lack of light, and oligotrophic status of Iliamna Lake. To the extent these benthic habitats are impacted, the lake habitat under the pipe would be permanently lost, but the pipeline itself will provide areas for colonization of lake organisms.
ADF&G-Habitat	3	4.24-4	Section only lists two potential sources of fish displacement, injury, and	This section should describe the sources of and all impacts from stream	This section revised to assess the potential sources of fish displacement, injury, and mortality from the proposed pipeline-stranding from water diversions

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			mortality from the proposed pipeline-stranding from water diversions and impingement from water pumping.	sedimentation on all life stages of fish. Sedimentation sources include trenching, improper use of BMPs, inadequate bank restoration and stabilization, channelization of backfilled trench, and HDD frac-out. Additional examples of impacts include direct mortality to eggs (both directly from trenching, blasting and piledriving as well as blocking the O2 intake from filling in interstitial spaces in stream gravel from sedimentation) and displacement and mortality of adults and juveniles from blasting, piledriving, and sedimentation.	and impingement from water pumping. Text revised as: Potential direct impacts from HDD activities include loss of fluid through subsurface fractures (frac-out) and unconsolidated gravel or coarse sand. Drilling mud (fluid) used in HDD is non-toxic and poses a low risk to waterbodies. However, fluid loss may result in a temporary increase in turbidity or siltation that can negatively impact aquatic life by covering spawning and feeding areas and clogging fish gills. Monitoring would be conducted throughout the HDD process to determine whether a subsurface fluid loss occurs. Details regarding prevention, detection, and response to a potential frac-out or drilling fluid release would be addressed in the HDD and SWPP plans.
ADF&G-Habitat	4	4.24-17	NFK sub-section states that a 2.8 C rise in temperature during winter months will alter incubation times of salmon eggs.	Impacts from temperature changes in the streams should be weighed against other measures and not just the ADEC guidance. A nearly 3 degree rise in winter stream temperatures will have some effect on incubating eggs even if below the ADEC threshold.	This section revised to assess potential impacts from increased stream temperatures on fish at different life stages. Text revised as: *Winter water temperature changes could impact eggs and alevins within spawning gravels primarily through increased metabolism, growth, and changes in time of emergence. However, current winter temperatures in NFK River and UT Creek, and likely SFK River, are below the optimum egg incubation ranges found for Pacific salmon species in the analysis area. Weber-Scannell (1991) reports the following ranges of optimum egg incubation temperatures from the literature: Chinook, 39.2 to 53.6°F (4.0°C to 12.0°C); coho, 41°F to 51.8°F (5.0°C to 11.0°C); sockeye, 39.9°F to 55.0°F (4.4°C to 12.8°C); chum, 39.9°F to*

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
					55.9°F (4.4°C to 13.3°C); and pink salmon, 41.0°F to 57.2°F (5.0°C to 14.0°C). The predicted increased winter discharge water temperatures would not raise river temperatures to the lower limits of optimum egg survival for any species and would therefore be unlikely to negatively affect egg survival, rather there may potential for increased survival of eggs in NFK River. Increases in water temperatures during alevin development can substantially increase development rates and associated yolk conversion rates potentially leading to faster yolk depletion and early emergence from the gravel at overall smaller sizes. Fry could emerge too early at suboptimal periods of the year and experience poor feeding, growth, and survival. Studies reviewed by Weber-Scannell (1991) were conducted at water temperature ranges substantially higher than post-mining temperatures predicted in NFK, SFK or UT Creek. Coho and sockeye salmon length at emergence decreased between 35.6°F and 41.0°F (2.0°C and 5.0°C), while chum and Chinook salmon length at emergence increased between 41.0°F and 46.4°F (5.0°C and 8.0°C), then decreased with higher temperatures (Weber-Scannell 1991). NFK River habitats could warm to near the optimum alevin development temperatures for coho salmon or could be slightly higher. It is unlikely that increases in winter water temperatures will warm adequately to enhance or adversely affect developing alevins in SFK River or UT Creek, and within NFK River, post-mining water temperatures may increase to within the optimal ranges for alevin development of slightly warmer (EFH, Owl Ridge, 2018).
ADF&G-Habitat	5	4.24-17	This section states that any water chemistry impacts to fish would not be measurable, but this assumes that operations are conducted exactly as	Expand the scope of potential impacts to more accurately include the range of potential operational issues that may occur over the life of the	The EIS analysis area is the area where potential impacts are likely to occur under standard operating conditions. An assessment of impacts associated with upset conditions is provided in Section 4.27, Spill Risk. Refer to Section 4.18, Water Quality for additional

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			planned with no operational issues. Potential impacts due to pump breakdowns, frozen pipes, operator error, or other disruptions to the water distribution system could have impacts on fish and should be included in the assessment. In general, unplanned events should also be considered for impacts (e.g., breakdown of water management system, AMD - testing and predictions are not 100%, large rain events, road washouts, unplanned fuel releases...).	project.	information on the proposed water treatment system to allow for operational upsets. Text revised as: *Water would be treated prior to discharge into NFK, SKF, and UTC in compliance with applicable water quality standards established to protect aquatic life, as described in Section 4.18, Water and Sediment Quality. Treated water would be discharged to buried infiltration chambers designed to provide energy dissipation, erosion control, and freeze protection. Compliance monitoring during construction, operations, and closure would assure water quality standards are maintained to protect fisheries resources. Because the discharged water would be required to comply with APDES permit limits established to be protective of aquatic life, no impacts to fish and other aquatic life would be expected*
ADF&G-SportFish	6	4.24-7	"The magnitude and extent of impact would vary among the three principal tributaries, according to the degree of surface water and groundwater capture, the location of impacts in the basin, the proximity and size of downstream tributaries, and the magnitude of flow augmentation at the water release facilities."	Provide further analysis of these impacts, since a detailed water management plan is proposed, the information should be available to assess the estimated magnitude and extent of impacts	Text has been updated to assess the magnitude and extent of potential impacts associated with changes in baseline flows.
ADF&G-SportFish	7	4.24-16	In the Natural Gas Pipeline section there is no mention to disrupting important fish stocks such	A thorough review of important fish stocks migration through Cook Inlet salt waters should be	Section 3.24, Fish Values was updated to describe baseline conditions in the Cook Inlet analysis area. Potential impacts associated with the installation and operations of the natural gas pipeline are addressed

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			as Pacific halibut and salmon.	reviewed. The nearshore waters near the compression station location is an important staging area for Kenai Peninsula salmon stocks as they return to spawn.	in Sections 4.24 and 4.6, Commercial and Recreation Fisheries. . Text revised as: *ADFG permit conditions (if issued) would likely stipulate timing windows for construction to avoid impacting migrating anadromous fish in Cook Inlet. As described in Section 4.6 Commercial and Recreational Fisheries, the salmon fishery occurs within the top 30 feet of the water column and once in place, the pipeline would not be expected to directly interact with commercial fisheries.*
ADF&G-Comm. Fish	8	4.24-1	List of potential impacts is incomplete.	Additional impacts such as changes to estuarine and marine water quality such as turbidity, dissolved oxygen, metal, hydrocarbon, or other chemical contaminants, potential spills. The 6th bullet should include lakes and other fish bearing water bodies, not just streams (instream water quality).	This section has been updated to address potential impacts to fish from changes in water quality. Impacts associated with upset conditions are addressed in Section 4.27, Spill Risk.
ADF&G-Comm. Fish	9	4.24-2	"In the context of the entire Bristol Bay drainage, with its 9,816 miles of currently documented anadromous waters, the loss of Tributary 1.19 represents a 0.002 percent reduction in miles of anadromous stream habitat, or a 0.03 percent decrease in accessible drainage area." Not all anadromous	Provide context for the statements about percentage reduction in anadromous fish habitat, preferably by identifying specific percentages for spawning and noting that spawning habitat is often the limiting factor in Bristol Bay.	This section was updated to provide context for fish habitat reduction estimates. Text has been revised to address the magnitude and extent of impacts to spawning habitat. Text revised as: Adult coho salmon have been documented in 4.3 miles of tributary 1.190 though only during one aerial survey and in low numbers (27 fish) compared to other NFK (1,746 fish) tributaries (Owl Ridge, 2018). Spawning has not been documented in 1.190 for any other salmon species. The majority of adult fish and spawning observations for all adult salmon occurred

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			habitat is equal. Some anadromous waters are designated so because they are used for migration, however they may have limited or poor spawning habitat. Other anadromous waters are designated so because they are spawning habitat; spawning habitat is often limiting in Bristol Bay. To say a loss of x miles of spawning habitat represents x percent loss of anadromous habitat is misleading.		downstream of waters that would be directly affected by proposed mine facilities. Within the NFK River, the majority of salmon adults and spawners were observed in the lower portions of the rivers (PLP 2011) suggesting the presence of higher quality habitat or simply adequate quantities of suitable habitat are readily available to accommodate the numbers of salmon entering the streams without the need to distribute further upstream. Rearing coho salmon have been documented throughout the drainage though in lower densities (1.24 fish/100m2) than in the mainstem NFK (25.33 fish/100m2), indicating overall lower habitat quality or adequate quantity and quality habitat in other areas of the drainage. Rearing Chinook salmon have been documented in 2.9 miles of 1.190 in low densities (0.11 fish/100m2) compared to the mainstem NFK (4.88 fish/1002). Rearing has not been documented in 1.190 for any other salmon species. The 8.2 miles of anadromous habitat permanently removed within tributaries 1.190 and 1.20 represents 11 percent of the total documented 72.7 mi of anadromous habitat in NFK River. When compared to the total mileage of documented anadromous waters in the three tributaries associated with the mine site (i.e., the NFK, S SFK, and the UTC), the loss of Tributary 1.19 habitat represents 4 percent and 3 percent of spawning and rearing habitat for coho salmon, respectively; and 3 percent of Chinook salmon rearing habitat. The entire Bristol Bay drainage has 9,816 miles of documented anadromous waters. Thus, the loss of Tributary 1.19 represents a 0.08 percent reduction of documented anadromous stream habitat.
ADF&G-Comm. Fish	10	4.24-3	Road/Pipeline does not include impact to scallop	Address potential impact to scallop bed by loss of	This section was updated to address potential impacts to scallop habitat from the construction and

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			bed caused from crossing directly through it. Impacts from building Amakdedori port is incomplete. In Ch 5 that there will be lightering in lieu of dredging a deep water channel. To say that "There would be a permanent, direct loss of benthic habitat beneath the pipeline footprint on the bottom of Cook Inlet." and then state "Habitat alteration would be limited over time, and would not have quantifiable effects to populations of fish and shellfish." seems to understatement what may be a significant impact to the scallop bed.	habitat. Also include additional impacts on survival and recruitment of shellfish from building Amakdedori port.	operations of the natural gas pipeline. The extent of impacts are defined by the EIS analysis area. Text revised as : *The magnitude and extent of impacts would be that construction would remove and/or fill 11.3 ac of nearshore habitat including 2.5 acres of beach complex and 8.8 acres of subtidal mixed gravel habitat. The duration of impact would be such that discharge of fill material to construct the Amakdedori Port would permanently remove benthic habitat; however fish surveys indicate the beach complex and subtidal mixed gravel habitat is less productive than other areas sampled in Kamishak Bay (GeoEngineers 2018a,b). In terms of magnitude and extent, the beach complex and subtidal mixed gravel would represent a reduction of 0.05 percent and 0.06 percent, respectively of locally mapped habitat (GeoEngineers 2018a and 2018b). These impacts would be certain to occur if the project is permitted and the Amakdedori port is built. Rip-rap placed on the causeway slopes would be similar in size and character to the boulder habitats currently present in both locations and would not represent a novel habitat feature. Rip-rap would be colonized in the short-term and subsequently used by prey organisms.* Text revised as: *The construction phase would include installation of a 104-mile-long, 12-inch diameter gas pipeline on the floor of Cook Inlet from between the Kenai Peninsula and Amakdedori port. HDD would be used to install the pipeline segments from the shoreline into waters deep enough to avoid navigational hazards. These activities may involve displacement of some substrate material along with the associated organisms. Generally, the submarine portions of the pipeline would be constructed using heavy wall steel pipe placed on the seafloor. This would introduce a solid material and represents a change from the natural,*

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
					softer substrate to the artificial substrate of the pipeline itself, for a combined area of approximately 11.5 acres. It is expected that the pipeline would be colonized by marine life in the short term. In soft substrate areas the colonized pipeline would provide a new habitat type, while hard substrate habitat would be similar…. *Habitat losses resulting from pipeline installation would range from temporary to short-term. Habitat may be disturbed or displaced, but would likely return to prior state after the activity ceases.* *There would be permanent, direct mortality of benthic organisms beneath the pipeline footprint on the bottom of Cook Inlet during pipeline installation. In terms of magnitude, extent, and duration, approximately 6.8 acre of weathervane scallop beds would be permanently impacted by placement of the pipeline. Unlike most adult fish that are mobile and able to actively avoid direct impacts from pipe laying activities, weathervane scallops may not be able to avoid the area, which could potentially result in weathervane scallop mortality. The area of weathervane scallop beds permanently affected (6.8 acres) is only 0.014 percent of the weathervane scallop range in Cook Inlet (approximately 49,000 acres). The impacts on weathervane scallop beds would be certain to occur if he project is permitted and the natural gas pipeline is constructed.*
ADF&G-Comm. Fish	11	4.24-3	The habitat loss section pertaining to the Natural Gas pipeline states that: "Habitat alteration would be limited over time, and would not have quantifiable effects to populations of fish or	Baseline studies to characterize habitats and marine fauna along the proposed or alternate Natural Gas pipeline corridors should be completed and provided for review before conclusions	Baseline surveys have not been completed for the entire proposed natural gas pipeline corridor crossing Cook Inlet. Considering the data available, additional information is not necessary to disclose the reasonably foreseeable significant impacts of the proposed project. Additionally, the requested information would not be essential to make a reasoned choice among alternatives.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			shellfish." There is no baseline data for the Natural Gas pipeline route so it is unclear what data or analysis supports this conclusion.	about potential impacts can be made.	Section 3.24 has been updated with the 2018 Cook Inlet field study results.
ADF&G-Comm. Fish	12	4.24-4	"Sockeye salmon are known to use shoreline habitat for spawning, and therefore could be potentially affected; however, documented spawning areas are more than 0.5 mile from the ferry terminals and primary entry points of the pipeline into the lake (EPA 2014)."	The mouth of Upper Talarik Creek is less than a mile from the North Ferry Terminal. Adult sockeye salmon likely use the shoreline near the ferry terminal for staging before entering streams nearby. Ferry operations could potentially delay fish migration into spawning streams. This should be described in the DEIS.	This section has been updated to reflect the potential impacts on migrating salmon from ferry terminal and operations. Text revised as: Sockeye salmon are known to use shoreline habitat for spawning, and therefore could be potentially affected; however, documented spawning areas are more than 0.5 mile from the ferry terminals and primary entry points of the pipeline into the lake (EPA 2014). Investigations by PLP have documented that nearshore lake habitat at the ferry terminal is lightly used by juvenile salmonids and is not used for adult spawning. (Hart Crowser 2018a, Hart Crowser 2018b, Paradox NR 2018a). Nearshore trenching at Iliamna Lake has the potential to temporarily disturb and displace sockeye salmon fry and adults during construction, but fish use is expected to return to previously existing conditions after the activity ceases
ADF&G-Comm. Fish	13	4.24-3-6	The sections pertaining to the gas pipeline across Cook Inlet (and Iliamna Lake) do not consider the potential gas leaks that could occur over the life of this project and how they will displace, injure, or kill fish. The EIS should provide an ecotoxilogical assessment of the impact	additional baseline environmental studies associated with the gas pipeline portion of this project should be conducted or included.	Spill scenarios associated with accidents or upset conditions are discussed in Section 4.27, Spill Risk.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			gas leaks may have on various life stages of freshwater (Iliamna Lake) and marine (Cook Inlet) organisms commonly found along the pipeline corridor.		
ADF&G-Comm. Fish	14	4.24-6	There may be direct and indirect mortality to razor clams, weathervane scallops or other marine life during gas pipeline installation in Cook Inlet due to burial and displacement.	Baseline studies to characterize habitats and marine fauna along the proposed or alternate Natural Gas pipeline corridors should be completed and provided for review before conclusions about potential impacts can be made.	Baseline studies have not been completed for the entire natural gas pipeline corridor crossing Cook Inlet. Considering the data available, additional information is not necessary to disclose the reasonably foreseeable significant impacts of the proposed project. Additionally, the requested information would not be essential to make a reasoned choice among alternatives. Sections 3.24 and 4.24 have been updated with the 2018 Cook Inlet nearshore field study results. Text revised as: *There would be permanent, direct mortality of benthic organisms beneath the pipeline footprint on the bottom of Cook Inlet during pipeline installation. In terms of magnitude, extent, and duration, approximately 6.8 acre of weathervane scallop beds would be permanently impacted by placement of the pipeline. Unlike most adult fish that are mobile and able to actively avoid direct impacts from pipe laying activities, weathervane scallops may not be able to avoid the area, which could potentially result in weathervane scallop mortality. The area of weathervane scallop beds permanently affected (6.8 acres) is only 0.014 percent of the weathervane scallop range in Cook Inlet (approximately 49,000 acres). The impacts on weathervane scallop beds would be certain to occur if he project is permitted and the natural gas pipeline is constructed.* *Potential impacts from the placement of anchors for the pipe lay barge include benthic fauna mortality.*

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
					Impact sources include anchor scarring each time an anchor is set, and the scraping or sweeping of the seafloor from the movement of the anchor cables across the seafloor (cable sweep). Assuming an average anchor scar of 360 ft^2 with up to a 12-anchor array, and resetting the anchors twice per mile, for the 104.5 miles length of the submarine pipeline, the magnitude and extent of anchor scarring would be to temporarily impact approximately 21 acres of benthic habitat. The weight of the anchor and potential depth of the scar could potentially result in mortality of benthic fauna, including weathervane scallops. The benthic fauna would be expected to recover and thus the duration of the impacts would be short term.
ADF&G-Comm. Fish	15	4.24-6	Amakdedori Port sub-section, should include text about the potential for injury and mortality to shellfish, in addition to fish species, from construction (direct and indirect impacts); similar to comment above, natural gas pipeline discussion should include potential mortality and injury to scallops and other shellfish, which could impact the resource, particularly with presence of equipment required for ditching and to place the pipeline which will increase the overall footprint of the impact and associated water quality issues. Scallop beds are in a finite area in	Revise section to more accurately present potential impacts.	See comment response above.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			Kamishak Bay and are not widespread and do not adapt and move to different areas, therefore, the impact could be significant and long-lasting, resulting in a direct decrease in the commercial fishery resource.		
ADF&G-Comm. Fish	16	4.24-9	Table does not include units for available habitat and some species are missing.	Include units in table. Expand to include all fish species in the mine site area.	Units of "acres" are included in first row of table beneath the header. Treated water would be released to optimize habit for *priority species and life stages*.
ADF&G-Comm. Fish	17	4.24-13	Statement that Amakdedori port would impact 14 acres of benthic habitat but "there would be no anticipated impacts to the overall benthic productivity in Cook Inlet" is not acknowledging potential impacts to localized scallop beds and crab populations.	Account for potential impacts to benthic productivity in relation to shellfish populations, specifically scallop, Tanner crab, and Dungeness crab in Kamishak Bay.	No shellfish have been documented at Amakdedori Port. Sections 3.24 and 4.24 have been updated with the 2018 Cook Inlet nearshore field study results. Text revised as: *The magnitude and extent of impacts would be that construction would remove and/or fill 11.3 ac of nearshore habitat including 2.5 acres of beach complex and 8.8 acres of subtidal mixed gravel habitat. The duration of impact would be such that discharge of fill material to construct the Amakdedori Port would permanently remove benthic habitat; however fish surveys indicate the beach complex and subtidal mixed gravel habitat is less productive than other areas sampled in Kamishak Bay (GeoEngineers 2018a,b). In terms of magnitude and extent, the beach complex and subtidal mixed gravel would represent a reduction of 0.05 percent and 0.06 percent, respectively of locally mapped habitat (GeoEngineers 2018a and 2018b). These impacts would be certain to occur if the project is permitted and the Amakdedori port is built. Rip-rap placed on the causeway slopes would be similar in size and*

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
					character to the boulder habitats currently present in both locations and would not represent a novel habitat feature. Rip-rap would be colonized in the short-term and subsequently used by prey organisms
ADF&G-Comm. Fish	18	4.24-15	For Amakdedori port, turbidity could also affect shellfish.	Include effects on shellfish from turbidity during construction of Amakdedori port - see comments above.	No shellfish have been documented at Amakdedori Port. Text revised as: *The existing marine substrate at the port site consists of subtidal gravels (GeoEngineers 2018a). While project-related activity would contribute to suspended sediment levels in marine water around the proposed port site, sediment in the area is coarse grained and the incremental increase in suspended sediment and redeposition due to project-related disturbance of this coarse grained material would be limited in magnitude and extent (Section 3.18, Water and Sediment Quality). The duration impacts from port construction are expected to be short term, lasting only during construction, but would be certain to occur if the project is permitted and constructed.*
ADF&G-Comm. Fish	19	4.24-16	To state that there are no anticipated impacts to fish migration from the port is presumptuous, since the physical barriers from the dock as well as increased sound from equipment and vessel traffic associated with the port could affect fish migration due to disruption and displacement; there could also be water quality effects. The port jetty will extend some distance feet offshore with no breach at it's connection to the coast	Address potential impacts to fish migration from construction of Amakdedori port. Assess fish and shellfish migration corridors as part of the DEIS. If USACE goes with alternative 1 port design (solid jetty), recommend that the project consider adding a raised piling section.	This section has been updated to assess potential impacts associated with the construction and operations of Amakdedori Port. Text revised as: *In terms of magnitude and extent, the proposed Amakdedori port causeway and jetty would extend 1,900 feet into Cook Inlet and would alter local currents and water circulation. The proposed causeway and jetty would be an obstacle that fish migrating along the beach would encounter. Obstacles are common along the Alaska coast, primarily in the form of reefs, rocky points, and peninsulas many of which have similar structure as the proposed rock-armored causeway. Prevention or delay of fish migration is not anticipated from the port structure.*

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			to facilitate ease of movement by organisms traveling along the shore. Also, assumptions that, while the pipeline has the potential to hinder migrations of crab, the impacts are expected to be minimal, is presumptuous.		*The magnitude of impact of the gas pipeline on migration of macroinvertebrates (e.g., crabs) would be that the diameter and height of the pipe would be in the natural range of seafloor topography and would not be expected hinder marine macroinvertebrate migration patterns. HDD would be used to install the pipeline at the terrestrial-marine interface with Cook Inlet to a depth that would prevent navigational hazards. ADFG permit conditions (if issued) would likely stipulate timing windows for construction to avoid impacting migrating anadromous fish in Cook Inlet. As described in Section 4.6 Commercial and Recreational Fisheries, the salmon fishery occurs within the top 30 feet of the water column and once in place, the pipeline would not be expected to directly interact with commercial fisheries.*
ADF&G-Comm. Fish	20	4.24-18	EFH (Essential Fish Habitat) section is not complete.	Provide a complete EFH section to Cooperating Agencies for review prior to finalizing DEIS.	The EFH Assessment has been included as Appendix I in the DEIS.
ADF&G-Comm. Fish	21	4.24-18	"Potential impacts associated with the ferry terminal location on Iliamna Lake would be similar to those described under Alternative 1." This statement is a leap since resources at this site are not fully described or are unknown (no project surveys in this area).	There are several productive sockeye salmon spawning streams in this area and adult sockeye salmon are frequently observed staging in the near shore areas of this portion of the lake. Site specific studies should be conducted for this area so the extent of resources and potential impacts can be described.	Section 3.24 has been updated with the 2018 field study results to better describe baseline conditions in Iliamna Lake.
ADF&G-Comm. Fish	22	4.24-19	For Diamond Point Port impacts from Alternative 2, specific organisms impacted is not detailed.	For Diamond Point Port impacts from Alternative 2, provide specific information on marine invertebrates	See comment responses 7, 8 and 10 above. .

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 4.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
				impacted (e.g. shellfish - crab).	
ADF&G-Comm. Fish	22	4.24-25	Page 4.6-8 of Chapter 4.6 lists Pebble South as a RFFA for development. Here is says it's only an RFFA for continued exploration.	Reconcile the discrepancy between sections, preferably by acknowledging that Pebble South is a RFFA for development during the 78-year RFFA timespan of the EIS.	This was a format error that has been edited. The revised Section 4.1 indicates that Pebble South is reasonably foreseeable only for exploration activities and not development.