

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – 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	Sec 3.24.1.1, 3.24-1	NFK sub-section states that 15 miles of mainstem channel are upstream of the mine site footprint. It is unclear what is meant by upstream of the mine and how the 15 miles were calculated. Mainstem habitat upstream of Tributary 1.19 appears closer to 9 miles of anadromous stream length and there are mine components upstream of this tributary (e.g., water management pond, water well field).	Define what is upstream of the mine and identify what the 15 miles refers to or how it was calculated. Where is the break point of what is considered upstream of the mine. This is referred to throughout this section and it is important to understand how it was derived. For example, 'preferred coho spawning habitat appears to be in the 10 miles of mainstem immediately downstream of the mine site.'	Text added to define "upstream of the Mine Site", and stream length corrected to 8.3 mi.
ADF&G-Habitat	2	Sec 3.24.1.1 Figures 3.24-2 to 3.24-4, 3.24-8 to 3.24-10	These figures contain inaccurate or misleading information. Segments of stream that were never sampled are listed as "no fish present." See especially Fig. 3.24-3 (near mine site and Trib. 1.19).	Only streams with comprehensive surveys resulting in no fish observed, or where habitat is unsuitable, should be identified as "no fish present." Lakes should be included in these figures for fish distribution.	Channels outlined in red were sampled during the environmental baseline assessments (R2 et al. 2011) but no fish were observed or captured. Text was added to describe baseline conditions. Lakes are portrayed on each figure and discussed in text but are not referenced by miles of channel and therefore were not added to Table 3.24-2.
ADF&G-Habitat	3	Sec 3.24.1.13.24-5,	This section refers to a reach of SFK as "going dry during summer," or "dry reach" and "dry channel." The way the section is written implies the reach is dry on an annual basis. Some years it contains water at the surface during all seasons and 4 years of surveys may not be representative of frequency trends.	It would be more accurate to describe this reach as intermittently going subsurface. It should also be noted that fry and eggs may still find suitable habitat beneath the gravels when the stream appears dry, unless this was researched and found not to be occurring.	Text was added detailing the periodicity and extent of dry or intermittent flows in the SFK.
ADF&G-Habitat	4	Sec 3.24.1.1, 3.24-11	The Transportation Corridor sub-section contains errors or omissions	The DEIS should properly state that the number of fish streams crossed	Road crossing numbers and associated fish status have been

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			and appears incomplete for review. Fish surveys along the transpiration corridor are not yet completed.	by the transportation corridor is currently unknown or data could be identified as incomplete	revised based on data collected in 2017 and 2018. Figures have been revised. Currently unsurveyed aquatic habitats are clearly identified in the Draft EIS.
ADF&G-Habitat	5	Sec 3.24.1.1 Figure 3.24-5, 3.24-16	Figure 3.24-5 only depicts 2 anadromous fish streams crossed by the corridor south of Iliamna Lake. Preliminary results from sampling conducted in 2018 report at least 10 anadromous fish streams and not all of the streams have been surveyed. Three streams with documented sockeye salmon spawning in Section 11 (T 9 S/R 33 W) near Kokhanok are not depicted.	Figure should be updated to accurately depict the affected environment and streams that have not been surveyed should be identified.	See response to Comment #4.
ADF&G-Habitat	6	Sec 3.24.1.1 Table 3.24-12, 3.24-11	The last paragraph on the page states that a total of 7 anadromous streams would be crossed by the transportation corridor. This is inaccurate and misleading to report results for something that is not yet fully investigated. There are 10 anadromous fish streams crossed by the southern portion alone and surveys are not yet completed.	Accurately report the number of anadromous fish streams affected by the project and note where surveys are incomplete.	See response to Comment #4.
ADF&G-Habitat	7	Sec 3.24.1.1, 3.24-12	Sub-section states that 32 waterbodies will be crossed by the north access road. This contradicts information submitted to the USACE in Pebble's 404 application which lists 55 waterbodies crossed by the northern portion of the access road.	The DEIS should be updated to accurately report the number of waterbodies crossed and correct number of fish bearing streams. Preliminary data show that at least 11 fish bearing streams are crossed by the north portion of the access road and future surveys may	See response to Comment #4.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
				increase this number.	
ADF&G-Habitat	8	Sec 3.24.1.1, 3.24-13	Sub-section states that 65 water bodies would be crossed by the south access road, of which 2 are anadromous. Preliminary results indicate that there are at least 10 anadromous fish streams crossed by the south access road. The applicant's 404 application lists 173 waterbodies crossed by the south access road.	The DEIS should be correct to accurately depict the number and type of stream crossings.	See response to Comment #4.
ADF&G-Habitat	9	Sec 3.24.1.2, 3.24-14	Stream mileage captured or blocked by mine facilities is not listed like in SFK subsection.	Include paragraph like that in SFK sub-section that states the stream mileage captured or blocked by mine facilities for the sake of consistency and to completely depict the affected environment.	Text added to enumerate mileage of lost channels, with reference made to Section 4.24 for detailed stream lengths.
ADF&G-Habitat	10	Sec 3.24.1.2, 3.24-15	Last paragraph states that other resident fish are distributed in low abundance in the lower reaches of the NFK.... This sentence is misleading and should be revised. Many of the resident fish species are found throughout the drainage, including headwaters.	Include information on headwater distribution of fish species.	Sentence removed, prior text additions described distribution of resident fish portrayed in associated figures.
ADF&G-Habitat	11	Sec 3.24.1.2 Table 3.24-5, 3.24-19	Section states that stream mileage for species is given in Table 3.24-5, but the table does not contain that information.	Update table or correct reference for accuracy.	Clarification and text corrected refer to Table 3.24-2.
ADF&G-Habitat	12	Sec 3.24.1.2, 3.24-21	The first sentence of the last paragraph says that DV, SS, and AG are the only resident fishes documented in the headwater reaches near the mine site. The next sentence	The two sentences contradict one another and should be corrected for consistency and accuracy.	Revision made in Section 3.24.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			states that juvenile rainbow trout were observed in the headwater reaches near the mine site		
ADF&G-Habitat	13	Sec 3.24.1.2, 3.24-22	The Iliamna Lake sub-section begins by stating that 11 fish species have been reported from Iliamna Lake and then lists 14 species as documented using the lake. This is another contradiction and inconsistency in this section which is difficult to review overall because of how it is written.	Include all species that have been reported in Iliamna Lake, such as pond smelt, least cisco, 3-spine stickleback, AK blackfish, round whitefish, burbot, lamprey sp..... (26 species in total by my quick research).	Text and species list was revised.
ADF&G-Habitat	14	Sec 3.24.1.3, 3.24-25	Figure 3.24-6 is referenced for macroinvertebrate sampling sites, but the figure does not contain any depiction of such locations. Additionally, data from Y Valley Creek and an unnamed creek are referenced here but those sites are located more than 40 miles away and were sampled when the transportation corridor was proposed further north.	Sampling results should be listed from creeks along the transportation corridor or at the port to properly depict the affected environment.	Macroinvertebrate baseline data is unavailable for the Action Alternative 1 transportation corridor. Text was updated based on regional information.
ADF&G-Sport Fish	15	3.24, 3.24-13	The description of the Cook Inlet area most likely to be affected is not accurate.	Include Upper Cook Inlet for the pipeline corridor and eastern terminus	Additional text on Cook Inlet habitat and fisheries was added to this section.
ADF&G-Sport Fish	16	3.24.1.2, 3.24-14 through -19	The Nushagak River Chinook salmon run is one of the largest and most consistent Chinook salmon runs in the state and supports one of the largest sport fisheries in Southwest Alaska.	Provide some description of the size, utilization, and value of the Nushagak River Chinook salmon run.	This is discussed in Section 4.6, Commercial and Recreational Fishing.
ADF&G-Sport Fish	17	Table 3.24-5, 3.24-17	Cook Inlet salt waters commercial and sport fisheries are not included in this section. There is potential for this project to affect both fisheries.	Create separate periodicity table for all salmon species and steelhead trout in Cook Inlet salt waters.	Refer to Section 3.6 and Section 4.6, Commercial and Recreational Fishing. The periodicity of salmon runs is described for the EIS analysis area.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – 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-Sport Fish	18	Sec 3.24.1.2, 3.24-20	It should be mentioned during discussion of pink salmon abundance that they are on a 2-year cycle. It is also unclear which year is being referenced when 2 years are listed as a range (i.e. "zero in 2004-2005 and 2008-2009").	Expand discussion of pink salmon life cycle and specify which year of data is being referenced.	Text was updated to recognize the 2-yr life cycle and years when pink salmon were observed.
ADF&G-Comm. Fish	19	3.24.1.1 3	First paragraph describes the Kvichak River as 50 miles long. It is 70 miles long.	Change 50 miles to 70 miles.	Text revised accordingly.
ADF&G-Comm. Fish	20	3.24.1.1, 3.24-13	The gas pipeline has the potential to affect more than what has been stated. The substrates are much more complex in Kamishak Bay than stated and there is no mention of the hard substrate communities. Additionally, no mention of substrate composition on the east side beaches that support clams.	Revise section to include recommended information. If baseline studies exist, include them and if not the studies should be completed prior to finalizing the DEIS.	Text updated to describe baseline conditions in Kamishak Bay. 2018 field data incorporated into baseline descriptions.
ADF&G-Comm. Fish	21	3.24-14	There is no mention of kelp in the description of Amakdedori Port.	Describe the kelp species and extent there and the fact that this is spawning substrate for Pacific herring.	Text updated to describe baseline conditions in Kamishak Bay with 2018 field data incorporated into baseline descriptions.
ADF&G-Comm. Fish	22	3.24-14 through 3.24-19	The Nushagak River Chinook salmon run is one of the largest Chinook salmon runs in the state.	Provide a description of the size and value of the Nushagak River Chinook salmon run.	This is discussed in Section 4.6, Commercial and Recreational Fishing. #4.
ADF&G-Comm. Fish	23	3.24-22	The discussion on abundance of spawning sockeye in the eastern part of Iliamna lake should be expanded. Aerial surveys indicate highly variable escapements to these habitats, with aerial survey estimates ranging from tens of thousands to over 2 million spawning sockeye salmon (Morstad	Expand the discussion/context of the sockeye spawning in Iliamna Lake.	Text revised as appropriate.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			2003).		
ADF&G-Comm. Fish	24	3.24-22	Section describing species found in the Cook Inlet Portion of the Natural Gas Pipeline Corridor does not include the following important forage fish: sand lance, eulachon	Add sand lance and eulachon to the list of species found Cook Inlet along the pipeline corridor.	Species list updated.
ADF&G-Comm. Fish	25	3.24-22 & 3.24-23	Note that information included here on species occurrence for groundfish and shellfish species is actually complete and further confounds the exclusion of these species in the earlier sections mentioned.	Utilize information provided in the section to expand fishery resources information in 3.6. Ensure DEIS is consistent.	Species description has been updated. Previous section described habitat.
ADF&G-Comm. Fish	26	3.24-23	The information provided on fisheries in the immediate area of the Amakdedori River is incomplete. There is no reference to the Kirschner Lake sockeye remote release site, (established 1985) that is 10 miles away, or the Paint River salmon ladder that is 8 miles to the south of the proposed Amakdedori port complex. In addition, Chenik Lake is only 4 miles south of the Amakdedori site and information is limited. All of these are major salmon producers that are fished commercially in the summer. Commercial harvest also occurs in Iniskin and Iliamna Bay. Both of these bays are associated with the Diamond Point alternate site. Further to the south is the McNeil River which is in the McNeil River Wildlife sanctuary. Further south is Kamishak Bay where significant numbers of chum, coho, and pink salmon are regularly harvested by commercial permit	Include more information on, and evaluation of potential impacts to, commercial salmon fisheries in the area of the proposed Amakdedori and Diamond Point port locations.	The description of fish resources is limited to the EIS analysis area, where impacts from the project are likely to occur. 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 and has not been included in the Draft EIS. Please refer to Sections 3.6 and 4.6 Commercial and Recreational Fisheries, for a description of baseline conditions and potential impacts.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			holders. Purse seine gear is operated seasonally in the immediate area of the mouth of the Amakdedori River. Information about alternate sites should be included also (egg. Iliamna and Cottonwood bays are fished commercially for pink and chum salmon.)		
ADF&G-Comm. Fish	27	3.24-23	Description of hardshell clam abundance in Lower Cook Inlet should be updated. Hardshell clams are no longer "prolific" in Kachemak Bay. Likewise, Red and Golden king crab are likely no longer found in Cook Inlet.	Update this section with more accurate narrative on LCI shellfish populations.	Text edited to reflect current baseline conditions for shellfish in the EIS analysis area.
ADF&G-Comm. Fish	28	3.24-23	Description of salmon and herring resources in Kamishak Bay marine and freshwaters should be updated. The recent 10-yr average escapement of pink salmon to Amakdedori Creek was 7.5 thousand (Hollowell et al. 2017). McNeil River and Ursus Cove should be added as major chum salmon producers. The Kamishak Bay sac roe herring fishery has been closed to commercial fishing since 2000 (Hollowell et al. 2017)	Update this section with more accurate narrative.	Text revised to add updated escapement data from Hollowell 2017. Herring closure information added.
ADF&G-Comm. Fish	29	3.24-23	The DEIS states that the proposed port site will be near Amakdedori Creek which the DEIS identifies as having an abundant sockeye salmon population. The proposed port is actually located at the mouth of Amakdedori Creek in the historic floodplain of this river and in neighboring wetlands. Commercial	The DEIS should properly state that the proposed port is at the mouth of Amakdedori Creek. Additional waterbodies mentioned above [in this comment] should be included in the description and analysis of the DEIS.	Text revised to add detail to relationship of port site to Amakdedori Creek. Additional salmon waters proximal to Amakdedori Port added to discussion in this section.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			fishing which normally occurs offshore of the river mouth will be impossible for the life of this project. There is no mention of Kirschner Lake which is a sockeye enhancement project that has operated since 1985 and is only 10 miles from the port. In addition, while the report mentions three chum salmon systems by name, (Big Kamishak River, Little Kamishak River, and Cottonwood Creek) there are four other chum salmon index systems in close proximity to the proposed Amakdedori Port. These are the McNeil River, Bruin River, Ursus Cove, and the Iniskin River. Note that the Iniskin River is approximately 5 miles east of the Diamond Point quarry and salmon runs to the Iniskin River (and Cottonwood Creek) could be potentially impacted if development occurs there.		
ADF&G-Comm. Fish	30	3.24-29	Anadromous stream crossings have an "n/a" in the feature column. This table appears to have incorrect streams or is incomplete depending on what it is intended to show. Alternative 2 text states that 23 anadromous fish streams would be crossed, but only 9 streams are listed in the table. The Iliamna River is east of Eagle Bay and is not on the road corridor for this alternative.		Footnotes were added to table to distinguish locations and alternatives related to crossings.
ADF&G-Comm. Fish	31	3.24-30 & 3.24-31	This section is lacking descriptions of the diversity of sockeye salmon habitat in the Kvichak drainage.	Revise section: There are 22 genetically distinct populations of sockeye salmon in the Kvichak drainage that make up four sub-	Text added to describe genetic diversity of Kvichak drainage sockeye populations.

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

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				stocks of the greater Kvichak River stock (T. Dann, Fisheries Geneticist, ADF&G, Anchorage, personal communication).	
ADF&G-Comm. Fish	32	3.24-24	In the Transportation and Natural Gas Pipeline Corridors section it describes two macroinvertebrate sampling sites, one in Y Valley Creek and another at an "unnamed creek site" and then references Figure 3.24-6, presumably so we can see the locations of those sites (especially the unnamed one since no lat/longs are provided). However, in the materials we were provided, Figure 3.24-6 depicts "Iliamna Lake Alternatives", not Cook Inlet Aquatic invertebrate sampling sites. So we have no idea where this "unnamed creek" site is and how relevant it may be towards characterizing macroinvertebrate and periphyton communities near the proposed port site at Amakdedori Creek.	Provide lat/longs for study sites and label their locations on Figure 3.24-6 or provide a new figure with that information.	Figure revised as suggested.
ADF&G-Comm. Fish	33	3.24-26	Description of macroinvertebrates commercially harvested in Lower Cook Inlet (in the Cook Inlet Portion of the Natural Gas Pipeline Corridor section) needs to be updated. Crabs, butter and little neck clams, and shrimp are no longer commercially harvested. However, scallops are targeted in a commercial fishery in LCI but they are not included in the DEIS list.	Update this section with more accurate narrative.	Text edited.
ADF&G-Comm.	34	3.24-26	The Amakdedori Port section simply states "Available information is	include more data to establish a baseline	Text added incorporating 2018 sampling data

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

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Fish			included in the Cook Inlet Portion of the NG Pipeline section". However, the referenced section contains no information whatsoever on aquatic resources (marine or freshwater) in the immediate vicinity of Amakdedori Creek. Question: How can an EIS effectively review potential impacts from proposed activities when it doesn't include baseline studies focused in the immediate vicinity of a proposed major port/fuel storage facility?		
ADF&G-Comm. Fish	35	3.24-26	Aquatic invertebrates for CI portion of gas pipeline corridor is incomplete.	Should include sessile invertebrates such as coral, sponges, sea whips, and sea pens. These are all known to be important habitat for groundfish and crab and shrimp species. All of these occur in Kamishak Bay. There are extensive sea whip and sea pens colonies in the corridor and these are known to increase survival of early settled weathervane scallops and Tanner crab. Pacific halibut and Pacific cod, two of the most important groundfish species in LCI consume a diverse diet of marine invertebrates many of which are not commercially fished. These should be included.	Text added as per proposed resolution
ADF&G-Comm. Fish	36	3.24-27	Figure 3.24-6: Cook Inlet Aquatic Invertebrates Sampling Sites. The actual figure does not show any CI sampling sites.	Update figure and provide data sources.	Figure revised.
ADF&G-Comm.	37	3.24-28	This section on Fish Tissue Trace Element Analysis only includes	The missing baseline data (tissue samples from resident and	Refer to Section 4.27, Spills Analysis, for a description of

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
Fish			samples from the mine site and none from Amakdedori Creek, the applicant's preferred location for the port site (Alternative 1). The applicant proposes to store 5 million gallons of fuel, store concentrate (potential source of dust drift), and operate equipment next to Amakdedori Creek (an anadromous stream with significant sockeye and pink salmon runs), but chose not to include it as a sample site for fish tissues. This baseline data is needed to assess potential impacts in the future.	anadromous species in Amakdedori Creek to characterize baseline metals concentrations) should be collected to accurately establish a preproject baseline.	potential impacts. Text added to include 2018 fish tissue data from Amakdedori Port
ADF&G-Comm. Fish	38	3.24-31	The Illiamna Lake section describes the route and references previous sections, but does not address fish resources.	Suggest adding: "This route is immediately adjacent to sockeye salmon spawning beaches on the south side of Pile Bay (Southeast Beaches and Finger Beaches) and the along the islands important to spawning sockeye salmon (Porcupine Island, Flat Island, Ross Island, Triangle Island, and Eagle Island; Morstad 2003)."	Suggested text was added.
ADF&G-Comm. Fish	39	3.24-31	Access Corridor section does not sufficiently address fish resources.	Suggest adding: "Illiamna River and Chinkleyes Creek are important habitat spawning habitat for sockeye salmon. Aerial survey estimates indicate that hundreds of thousands of spawning sockeye salmon use the system in some years (Morstad 2003)."	Suggested text was added.
ADF&G-Comm. Fish	40	3.24-34	Very limited site visits are used to describe fish resources in these watershed groups. There are significant populations of sockeye	Include adequate fish surveys in these drainages and expand on the description of fish resources.	Table 3.24-6 lists the anadromous streams crossed by the road/pipeline corridor with the anadromous

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.24 – Fish Values

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
			salmon that spawn in these watersheds.		species/lifestages present, and text also lists the presence of anadromous and resident fish in each watershed group. The description of fish resources is limited to the EIS analysis area as this is the area where impacts from the project are likely to occur. 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 and has not been included in the Draft EIS.
ADF&G-Comm. Fish	41	3.24-35	The Infauna section references Figure 3.24-6 to identify intertidal sites sampled between 2004-08. However that figure depicts Iliamna Lake alternatives and has no details on intertidal sampling sites or habitats.	Create a new figure that provides the intended information on sampling sites and habitats. Note that this same figure has been incorrectly referenced multiple times to illustrate various Cook Inlet coastal sampling sites (e.g., macroinvertebrate/periphyton, epibiota, and infauna).	Figure 3.24-6 revised.