EPA Comments – Pebble Project Preliminary Draft EIS, Section 3.16 – Surface Water Hydrology

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
EPA	1	3.16, 3.16-1	GENERAL comment on baseline data, analysis area, and modeling. The baseline studies are summarized in this section and more details regarding meteorological inputs to water balance models and water balance calibration are provided in Appendix K3.16.	We have the following overall recommendations for section 3.16: • Clearly define the area of analysis for the baseline studies and impact analysis for this resource for all project components and alternatives; and • Describe whether there are data gaps with the existing baseline studies for the proposed action and alternatives. If there are gaps, discuss whether there will be additional monitoring, when it will occur, and when it will be included in the EIS. If no additional monitoring is planned, then describe the extent to which any data gaps affect characterization of the affected environment (section 3.16) and the impact analysis (section 4.16). Appendix K discusses the water balance model calibration. We recommend that the appendix describe the model basis, approach, sensitivity analysis, and any uncertainties in the model output. This information was previously requested in our scoping letter and our comments submitted to the Corps on 7/24/2018. See also our similar comment on section 3.17 citing examples from Corps mining project EISs.	• Description of the EIS analysis area has been added to Sections 3.16 and 4.16. • With regard to the affected environment for components other than the mine site (e.g. along port access road corridor), at a minimum we would expect to have drainage basin size above the waterbody crossings, bankfull width and depth at crossings, and an estimate of flood magnitude and frequency. With regard to impact evaluation there is little information at this time on the specific design guidelines to be used to construct bridge, culvert and pipeline crossings (e.g. flood-peak magnitude and frequency, whether riverbed scour and bank migration will be considered in designing pipeline crossings). • Appendix K3.16 of the DEIS provides an expanded discussion of the inputs to the water balance models, calibration, and validation.
EPA	2	3.16.1.1 Mine Site – Streamflow,	Groundwater/surface water interaction in the mine site watersheds is controlled by glacial and fluvial deposits of	We recommend including a figure that illustrates the locations of surface and subsurface drainage pathways that result in cross-drainage transfer of flow.	Groundwater and surface water interaction is described in Sections3.17 and 4.17 and includes figures.

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		3.16-8	varying thicknesses that occur over most of the project area below elevations of approximately 1,400 feet amsl.		
EPA	3	3.16.1.1 Mine Site-Gaging Stations, Figures 3.16-4 and 3.16-5, 3.16-8	Since 2004, streamflow monitoring has been conducted at gaging stations on the NFK and SFK rivers and the UTC, as well as tributary streams in each watershed. Figure 3.16-2 depicts all gaging station locations in the three watersheds and Figure 3.16-3 provides a focused view of gaging stations with regard to the mine site.	Per our previous comments submitted to the Corps on 7/24/2018, we recommend identifying which gaging stations could provide early indications of expected impacts as a result of mining operations (e.g, stations placed closest to pit or wastewater discharges), and whether additional gaging/sampling stations are proposed in the future. In the figures, we recommend using different colors or shapes for distinguishing the gaging stations operated by the USGS and those operated by Pebble, since the instrumentation, accuracy, and validation operations might not be similar. We also note that the gaging stations appear in both Figure 3.16-4 and Figure 3.16-5 and recommend correcting the text.	Figure 3.16-5 has been added to depict gaging stations closest to the mine site. Figure 3.16-4 depicts gaging stations throughout the NFK, SFK, and UTC drainage basins. We are not aware of the applicant's plans for "additional gaging/sampling" stations. There is one USGS gaging station in each of the in the NFK, SFK, and UTC drainages. The USGS gage numbers are shown in parentheses on Figure 3.16-4. Text callouts to figures have been reviewed and corrected, as needed.
EPA	4	3.16.1.1 and K3.16, 3.16-10 and K3.16-8	Years of gaging stations record	We note that there is a discrepancy between the years of record for the gaging stations listed in Section 3.16 and in K3.16. In Section 3.16, different ranges of years are stated for each station, whereas K3.16 reports the years of record as 2004-2015 for all stations. We recommend correcting where necessary and/or explaining the reason for the difference.	Tables have been checked/revised as needed in Section 3.16 and the updated calibration and validation information now provided in K3.16 resulted in deletion of the previous (Nov. 9 draft) table in K3.16.
EPA	5	3.16.1.1, 3.16-18	Metrological Inputs to Water Balance Modeling	Although the document discusses the meteorological data inputs to the model	Input parameters and updated calibration and validation information is now included

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		K3.16-1		and calibration, it does not provide information about the water balance model itself. We recommend that the DEIS include the following information: (1) which hydrologic cycle components are included in the model; (2) whether the spreadsheet method in the water balance approach was tested at different watersheds for its applicability; (3) a description of the model sufficient to address the model's merits and limitations compared to other possible models; and (4) the size and extent of the overall watershed used in the model. We recommend that this information be included in section K3.16 since this section describes the inputs in detail.	in K3.16. Additional discussion of the model is also provided in Section 3.16.
EPA	6	3.16.1.1 and K3.16, 3.16-18 and K3.16-4	USGS regional regression equations were used for estimating instantaneous peak flows for the mine site…	Per previous comments submitted to the Corps on 7/24/2018, we recommend that the regression equation and description be included in K3.16.	USGS regression equation was not used for DEIS and the narrative has been revised. Details of the procedures used to generate long-term synthetic temperature and precipitation record are presented in Knight Piésold 2018g, Hydrometeorology Report. This report has been independently reviewed and information incorporated or referenced as appropriate in Section 3.16.
EPA	7	3.16.1.1, 3.16-18, 3.16-23	Flood Hazards: …there are no flood hazards.	We recommend that the DEIS provide additional information and analysis to support this conclusion. For example, we recommend including predictions of the possible flood hazards (including magnitude and frequency) due to potential changes in long-term weather and climate.	Text has been expanded regarding flood magnitude and frequency, flood hazards, and floodplain functions and values.
EPA	8	3.16.1.2, 3.16-	Limited data are available	We recommend that the DEIS discuss	We are not aware of applicant's plans for

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		19	for the southern segment of the mine access road from the south ferry terminal to Amakdedori. No known surface water investigations have been conducted along the south access road.	whether surface water data collection is planned for this area. If no additional data collection is planned, then we recommend describing the extent to which identified data gaps would be discussed and analyzed as part of the characterization of the affected environment (section 3.16) and the impact analysis (section 4.16).	"surface water [flow] data collection" along the port access route (formerly known as south access route). Limited surface water data for the port (former "south") access route is not a data gap (see Chapter 3.1). With regard to the affected environment, at a minimum we would expect to have drainage basin size above the crossing, bankfull width and depth at crossing, and an estimate of flood magnitude and frequency. With regard to impact evaluation there is little information at this time on the specific design guidelines to be used to construct bridge, culvert and pipeline crossings (e.g. flood-peak magnitude and frequency, whether riverbed scour and bank migration will be considered in designing pipeline crossings).
EPA	9	3.16.1.3, 3.16-23	No streamflow gaging stations are present in the port area (USGS 2018).	We recommend that the DEIS discuss whether surface water data collection is planned for this area. If no additional data collection is planned, then then we recommend describing the extent to which identified data gaps would be discussed and analyzed as part of the characterization of the affected environment (section 3.16) and the impact analysis (section 4.16).	We are not aware of the applicant's plans for "surface water data collection" at the port site. The lack of streamflow gaging stations in the port area is not a data gap (see Chapter 3.1). Drainage structures (e.g., bridges, culverts) and flood prevention measure (such as raising pads above flood level) are typically based on flood-peak discharges of a specified recurrence interval. The flood-peak magnitude and frequency can be adequately predicted based on regional relationships (such as USGS equations) and do not require stream gaging data for each stream on which a structure would be located.
EPA	10	3.16.1.2 - 4	General comment on	We recommend providing tables that list	Figures have been added to the DEIS

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		and 3.16.2 through 3.16-3, 3.16-19 to 3.16-21	identification and disclosure of streams in the analysis areas of the project and alternatives.	each of the streams (named and unnamed) crossed or potentially impacted by the roads, pipeline(s), and port sites for the proposed action and alternatives. In the tables, we recommend identifying the applicable project component and alternative, whether the stream would be crossed by a bridge or culvert, and whether the culvert would be designed for fish passage. Because these would be large tables, it may be appropriate to include in the appendix.	depicting all stream crossings (noting bridge or culvert) for all alternatives and variants. Fish culvert crossings are addressed in Section 4.24. Chapter 2 also describes numbers of stream crossings for each alternative.