

**Proposed Pebble Project
Preliminary Draft Environmental Impact Statement
Review Comments**

Reviewer: NARF Technical Team
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Chapter: Chapter 4: Environmental Consequences
Section: Section 4.16 Surface Water Hydrology
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Comments

Figures 4.16-1 to 4.16-6. The text in these figures is difficult to read and should be larger and clearer. Please revise these figures as necessary.

Section 4.16.2 Alternative 1 – Applicant’s Proposed Alternative. 4.16.2.1 Mine Site.

Construction. Water Management. Much of the information in this section is not related to the element of the environment that this section is supposed to address, and other sections do not contain enough information on surface water hydrology. Management of stormwater runoff is already discussed in the surface water quality section and other sections and does not need to be described here. The focus of this section should be on impacts and changes to baseline surface water hydrology.

Streamflow Effects. This subsection provides a very limited discussion of surface water hydrology impacts during construction. Given the time construction may take, a more quantitative estimate should be provided. For example, how much of the surface water flows will be diverted, and from where to where? How much will groundwater drawdown affect surface water flows? To what extent will this cause flows in specific reaches of surface water bodies to fall below those required to support fish and other aquatic life? It is not enough to say that there will be an impact—the what, how much, where, when, and how substantial these impacts will be should be stated in this section.

Operations. Water Balance. Past climate variability has been incorporated, but projected climate change has not. Please include a discussion of climate change in any section or appendix dealing with surface water and aquatic life, separately and as part of cumulative impacts. Because the operational lifetime of the mine is expected to be more than 20 years, and the closure phase would be more than 50 years, climate change is relevant to water balance models.

A model realization should be selected that incorporates climate conditions expected to occur at that time under current projections.

Water Management. This section should again be more quantitative about which reaches will be affected at what times of year and how that will affect aquatic life. If the mine structures will include excess capacity for high-rainfall years or periods, then this will further decrease average flows in the streams by sequestering higher flows that would normally flow into the streams. Please discuss this added impact in the same quantitative terms. Please provide more detail on the way water will be discharged to optimize downstream fish and aquatic habitat, particularly since the periods when the mine will need the water, and the periods when the fish will need the water may be the same (i.e., low-rainfall periods).

Streamflow. Table 4.16-2. This table is a start in providing information needed; however, it appears to provide annual averages and skips all operational years but the last one. Seasonal stream flows are most important to aquatic life and are not addressed here. An annual average may mask greater changes in surface water flows that occur during seasons in which critical spawning or life stages occur.

Closure and Post-Closure. Water Balance. Water Management Plan. Predictions for the closure and post-closure phases should be based on anticipated climate conditions based on climate change projections. Future climate variations could differ substantially from past climate variations.

Table 4.16-3. See comments on Table 4.16-2, above. Combined with seasonal effects and climate change, these reductions could be much lower than those shown in Table 4.16-3 at critical times of year.

Table 4.16-4. Monthly estimates like those that appear in this table should be provided for the operational period. Commentary on seasonal variations in stream flow and the effect on aquatic life should be included as part of the discussion of impacts.

Section 4.16.2.2 Transportation Corridor. Any assumptions being made regarding probability of occurrence, engineering design, and/or planned mitigation need to be clearly stated.

Surely culverts and placement of roads across streams will have some impact on stream hydrology. It has been stated in other sections that access to the flood plain may be cut off for some streams. Please describe these impacts in more detail.

Bridge footings, embankments, and supports would certainly have an impact on stream hydrology. Please describe these impacts in more detail.

Culverts will be designed to handle specific flow volumes but could certainly restrict stream flows during flood events. Please be more specific regarding the level of flooding that the culverts will be designed for and how events exceeding that size may be affected by the culverts.

Surface Water Extraction. This is a large amount of water to be extracted from a limited number of streams. It is insufficient to state that extraction of water would be conducted in accordance with a permit, as it is unclear to the reader that this amount of water can be extracted in a manner that would be protective of in-stream flows, fish and other aquatic life, and therefore in accordance with any permit. Please be more specific about where water is expected to be extracted from, what percentage of the streamflow that represents (considering the season), and what impacts this may have on aquatic life.

In addition, it is stated in other sections that dust suppression may be required in perpetuity along the roads to prevent sedimentation and chemical impacts to streams at crossings. The amount and origin of the dust suppression water is not described and should be discussed here and factored into any stream flows that it may affect.

Section 4.16.2.4 Iliamna Lake. Ferry Terminals. Vessel Operations. Is the design of the ferry known? Many ferries have powerful propellers that are directed toward the shoreline during arrival (for braking) and departure (for accelerating). An ice-breaking ferry would be expected to have relatively powerful engines and propellers capable of disturbing the lake bottom in the vicinity of the terminals.

Section 4.16.6 Cumulative Effects. Particularly for surface water hydrology, this subsection, as well as the entire section, needs to consider the cumulative effects of climate change with respect to the proposed project and other reasonably foreseeable future actions.

The discussion in this section is not nearly quantitative enough to conclude that adverse effects on surface water bodies would be prevented outside the expanded mining area. In addition, there would certainly be adverse effects within the mining footprint under a larger build-out scenario. The discussions of cumulative impacts provided in this section are so vague as to be relatively useless. Enough information exists from the previous project proposal to do a better job with this preliminary draft environmental impact statement.