Information Request 16

Response to Information Request 16

IR 16 – Water Quality Model

References:

EIS Guidelines, Section 2.7.2.4.2
EIS, Section 2.7

Related Comments:

CEAR # 292 (Environment Canada)
CEAR # 290 (Tsilhqot'in National Government)

Rationale:

The Proponent indicates (p.706) that: "Complete details of the stochastic water quality model used to predict water quality in Fish Lake, Fish Creek Reach 8, Fish Lake Tributary 1, TSF Lake, and the Pit Lake can be found in Appendix 2.7.2.1-I." It appears that this information is missing from the Appendix; only tables and figures are provided and those tables and figures are not fully detailed. Environment Canada indicated that there is insufficient information provided to assess whether the mitigation proposed will adequately address impacts on water quality to a reasonable level of confidence. No key describing the five graphed lines is presented in the Appendix, and while the EIS describes seven scenarios graphed, it is unclear which of the seven are actually presented.

Information Requested:

The Panel requests that Taseko:

a. Provide details of the stochastic water quality model used to predict water quality in Fish Lake, Fish Creek Reach 8, Fish Lake Tributary 1, TSF Lake, and the Pit Lake to enable a determination of whether the mitigation proposed will adequately address water quality issues to a reasonable level of confidence.

Information Request #16a

Provide details of the stochastic water quality model used to predict water quality in Fish Lake, Fish Creek Reach 8, Fish Lake Tributary 1, TSF Lake, and the Pit Lake to enable a determination of whether the mitigation proposed will adequately address water quality issues to a reasonable level of confidence.

Response Summary

Complete details of the water quality model are provided in the EIS document on pages 521 to 537. The water quality model was created using GoldSim software. GoldSim is a graphical, object oriented program for carrying out dynamic, probabilistic simulations of proposed systems. The water and load balance model for the New Prosperity Project includes Monte Carlo simulations to represent the range of anticipated hydrological conditions at the mine site. A quality analysis of the model was carried out to confirm the relevance of the results. This model adequately addresses water quality to a reasonable level of confidence; however, Taseko is committed to applying Adaptive Management Plans in order to monitor and confirm the modeling results and as such commits to applying further mitigation if monitoring results indicate trends that could lead to unacceptable impacts.

Discussion

In the Panel's letter, the rationale preceding the request quoted above (Section 2.3.1) made it clear that the language used on p. 706 was unclear. For the clarity, the statement in question on p. 706 should be interpreted as follows (revised word in italics, original word struck through):

"Complete *results* ~~details~~ of the stochastic water quality model used to predict water quality in Fish Lake, Fish Creek Reach 8, Fish Lake Tributary 1, TSF Lake, and the Pit Lake can be found in Appendix 2.7.2.1-I."

For further clarity, the details of the water quality model are described in the EIS document on pp. 521-537. The water quality model was created using GoldSim software. GoldSim is a graphical, object oriented program for carrying out dynamic, probabilistic simulations of proposed systems. The water and load balance model for the New Prosperity Project includes Monte Carlo simulations to represent the range of anticipated hydrological conditions at the mine site.

A quality analysis of the water and load balance model for the New Prosperity Project was conducted, including the following:

- The calculations of loading inflows and outflows and load balance structure were verified for accuracy

- The assignments of loading inflows and outflows for each mine component were verified for consistency with the water balance, project assumptions and changes occurring over the mine life phases

- The behavior of the calculated loads for each mine component was reviewed over the life of the Project to verify that the changes expected to occur at each mine phase were accurately reflected in the loadings, and

- The results of the water and load balance model were analyzed to delineate the contributing factors for key changes in water quality over time at each mine component.

In the December 10, 2012 letter, the Panel notes that the key for the charts presenting the water quality results was not provided. A key is provided here as part of this response, and has been assigned the title 'Appendix 2-7-2-1-I-00: Legend for Charts Displaying Water Quality Results' to indicate that the legend should precede the results charts in Appendix 2-7-2-1-I. The text of the EIS incorrectly indicates that seven statistical categories of results are provided in Appendix 2-7-2-1; only five are shown on the results charts, as indicated on the legend that accompanies this response. The 25th and 75th percentile categories were removed from the charts to improve legibility.

Appendix 2.7.2.1-I-00

Legend for Charts Displaying Water Quality Results

- **Mean Results**
- **Minimum Results**
- **5th Percentile Results**
- **95th Percentile Results**
- **Maximum Results**

} **Water Quality Results**

- **1. Start Operations I**
- **2. Start Operations II**
- **3. Start Closure I**
- **4. Start Closure II**
- **5. Start Post-Closure**

} **Dates indicating project milestones**