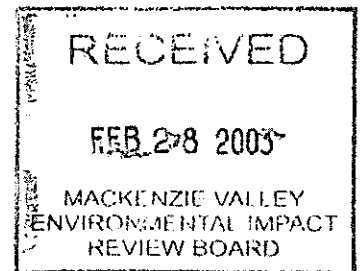


**Indian and Northern Affairs Canada
Summary of Technical Report**



1. Minewater Quality and Wastewater Storage Capacity

- A. **Connate groundwater:** Is defined as groundwater trapped in a sedimentary deposit (sediment or rock) when the deposit was laid down. There are a number of hydrogeological issues that have significant implications for prediction of the effects of mining activities on aquatic resources in the Lockhart River Basin. The most significant outstanding hydrogeological issue is the potential for connate groundwater in the vicinity of the mine workings to contain higher than expected concentrations of dissolved constituents (e.g., total dissolved solids (TDS); chloride, other major ions, and/or phosphorus). This issue is critical because higher than expected levels of dissolved constituents in connate groundwater are likely to result in higher than expected levels of these constituents in mine water and higher than expected loadings of these constituents to Snap Lake. The proposed water treatment plant is unlikely to remove most of these dissolved constituents. Accordingly, it is likely that the EA report has underestimated the adverse effects of mining activities on ecological receptors in Snap Lake.
- B. **Capacity of the water management pond:** review of the technical information that has been provided by DCMI indicates that the water management plant does not have sufficient storage capacity to handle excessive inflows, should upsets of the water treatment plant occur for extended periods of time (i.e., in excess of 10 to 20 days). If such upsets occur, there is significant potential for release of untreated mine water to Snap Lake.

2. Management of Paste Kimberlite and Waste Rock in the North Pile

There is potential for greater than predicted rates of release of wastewater from the North Pile during and following construction. Such releases of wastewater may arise due to:

- excess water in the paste discharge,
- seepage and runoff escaping beyond the perimeter ditches,
- freezing being much slower than anticipated,
- cryo-concentration of paste pore water,
- elevated levels of leaching from the paste, and/or,
- oxidation of the potentially acid generating meta-volcanic rocks.

3. Impacts of Wastewater Discharges to Snap Lake

- A. **Site-specific water quality benchmarks:** that were developed to support the assessment were not developed using the procedures that have been developed by the Canadian Council for Ministers of the Environment (CCME). Application of such procedures would likely have resulted in the development of lower benchmarks. As a result, the predicted effects on fish and other aquatic organisms are likely underestimated. In addition, the impact assessment criteria used in the EA report do not consider that zooplankton are keystone species in Snap Lake and that adverse effects

on these organisms could lead to cascading effects on other species in the aquatic food web that consume zooplankton (e.g., lake trout). As a result, it is likely that the effects of mining activities on fish and other aquatic organisms will be substantially greater than predicted. DCMI has not provided the information that was requested to evaluate the extent to which such effects have been underestimated.

- B. **Levels of several water quality variables:** (e.g., total dissolved solids and chloride) could be higher than predicted in wastewater discharged from the mine site. In addition, the lack of mixing under ice-covered conditions and the negative buoyancy of the effluent could result in higher than anticipated levels of such Chemicals of Potential Concern (COPCs) in water at the bottom of Snap Lake during the winter, and in water recharging the underground workings. Furthermore, the potential effects of increased levels of total dissolved solids and associated major ions on the structure of the aquatic community have not been adequately assessed in the EA report.
- C. **Validity of the nutrient modelling:** it is likely that the concentrations, loadings, and availability of key aquatic plant nutrients (i.e., dissolved phosphorus and orthophosphate) in wastewater from the mine have been underestimated. Consequently, it is likely that the severity of eutrophication (i.e., increased levels of aquatic plant growth) that will occur in Snap Lake in response to phosphorus releases from the mine has likely been underestimated. It is possible that the levels of Dissolved Oxygen (DO) in Snap Lake during the winter could be depressed to levels that are associated with chronic effects in fish and/or other aquatic organisms.

1. **Assessment of Cumulative Effects on Aquatic Resources in Lockhart River Basin**

- A. **Anthropogenic activities:** the EA report does not provide a basis for fully evaluating the effects of the proposed Snap Lake diamond project nor the interactive effects between the project and other anthropogenic activities that could influence aquatic resources in the Lockhart River Basin. More specifically, it is INAC's considered opinion that the EA has underestimated the effects of the various mining activities and associated discharges of COPCs on aquatic organisms (i.e., the effects of releases of phosphorus, TDS, and possibly metals have likely been underestimated). In addition, the interactive effects of multiple COPCs have not been adequately addressed (i.e., the issue not been resolved) in the EA report (although the implementation of whole effluent toxicity tests mitigates this concern to a certain extent). Furthermore, the interactive effects of the Snap Lake project with other land and water use activities in the Lockhart River Basin (e.g., exploration activities, sport and subsistence fishing, etc.) have not been fully evaluated.
- B. **Other human activities:** the interactive effects of the project with other human activities (e.g., long-range transport of atmospheric pollutants, global climate change, etc.) have likewise not been assessed. While the terms of reference of the EA do not explicitly require DCMI to conduct a broader assessment of cumulative effects, it is reasonable to expect the EA to assess the interactive effects of project activities and interactions between project activities and activities that occur elsewhere in the Lockhart River Basin. These shortcomings render the EA inadequate in terms of assessing cumulative effects.

5. **Abandonment and Restoration**

- A. There is uncertainty and a general lack of information explaining and supporting the abandonment and reclamation activities, as outlined by DCMI. Of specific concern is the omission of details supporting the disposal methods, disposal location, rationale for the disposal option and the state to which the land will be reclaimed. These information requirements were identified parameters within the ToR. In the absence of this information and without an assessment for validation, we would require the remove all materials from the land upon closure and the land be reclaimed to a stable state, facilitating its return to a condition that is functionally similar to its original state. Without these commitments, alternatives to the above recommendation would require further review before INAC could respond favorably on this issue.