



Snap Lake Environmental Monitoring Agency
Main Floor, Lahm Ridge Tower
4501 Franklin Avenue
P.O. Box 95, Yellowknife, NT X1A 2N1
Phone: 867-765-0961 FAX: 867-765-0963
Website: www.slema.ca

John Bartlett
Environmental Superintendent
De Beers Canada Inc.
Suite 300-5102 50th Ave.
Yellowknife, NT
X1A 3S8

December 22, 2008

Subject: De Beers Submissions to DFO – Annual Reporting on DO, TDS, S27, and Embankments

Dear Mr. Bartlett,

Snap Lake Environmental Monitoring Agency (SLEMA) has reviewed the following documents De Beers submitted to Department of Fisheries and Oceans (DFO):

- 2008 Snap Lake Dissolved Oxygen Report,
- Total Dissolved Solids Monitoring Near the Fish Habitat Compensation Areas in Snap Lake, 2008,
- S27 Habitat Compensation Monitoring Report (October 2008), and
- Water Intake and Minewater Outlet Embankments Post Construction Habitat Compensation Monitoring Report, 2007 (February 2008).

SLEMA is satisfied with the information provided for the fish habitat monitoring and compensation project, and would like to see more good work in environmental monitoring and reporting. The comments are provided for each document as follows.

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1. 2008 Snap Lake Dissolved Oxygen Report

SLEMA is pleased that the submission has a sub-section of assessment of actual change of DO concentrations from 1999 to 2008. All data are shown in one figure, and suggest that the mine effluent may have result in higher DO concentrations near the bottom of Snap Lake at near-field stations during ice cover period of the years 2005 to 2008. Relative change over the ice cover season near and far from the diffuser (2005 to 2008) was also assessed. The 2008 report for the monitoring of total dissolved solids (Total Dissolved Solids Monitoring near the Fish Habitat Compensation Areas in Snap Lake, 2008) lacks similar detailed assessment.



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The observation of the trend over time in the amount of DO loss during the winter is generally inconsistent with an effect due to the treated effluent. The increase in DO concentration with ice cover relative to baseline is likely due to the discharge of oxygenated treated effluent, which is ongoing throughout the period of ice cover. The aforementioned statement requires confirmation. It is recommended that DO measurement for the treated effluent is added into the DO monitoring plan and verify that hypothesis.

Since 2005, Winkler titrations (lab analytical method) have been performed to confirm the calibration of the YSI DO meter and accuracy of the field measurements. The report identified that the value of the Winkler titrations performed using a commercial kit is questionable due to its low accuracy achievable (1 to 1.5 mg/L DO) and recommended that consideration should be given to moving to the standard Winkler technique, which has an accuracy of 0.1 mg/L DO and matches with YSI probe's accuracy (0.2 to 0.3 mg/L DO). SLEMA supports the consideration.

2. Total Dissolved Solids Monitoring Near the Fish Habitat Compensation Areas in Snap Lake, 2008

Appendix II of the submission provides field water quality profiles, and major ion and TDS data. Table II-3 lists two columns of TDS concentration (i.e. TDS and TDS, Calculated), which indicate evident deviation. Clarification is required.

The submission simply and objectively presents the monitoring results. It is recommended that trend analysis should be conducted in order to take full advantage of the TDS data and serve for the potential study plan and mitigation measures.

3. S27 Habitat Compensation Monitoring Report (October 2008)

Two recommendations were proposed in the submission. One is the surveys in the subsequent years to monitor the stability and integrity of the habitat improvements, and another is the associated contingency plan for the potential concerns on the stability of the compensation habitat. SLEMA supports the two recommendations.

4. Water Intake and Minewater Outlet Embankments Post Construction Habitat Compensation Monitoring Report, 2007 (February 2008)

The report provides useful monitoring data, but no conclusive results for the assessment of the compensation project, thus more study is needed to confirm the project success. SLEMA supports all three recommendations proposed in the



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report, i.e. to continue monitoring in 2008 (maybe subsequent years), to add new capture or observation methods, and late August fall survey.

The change of fish species and number may not be simply attributed to the embankment habitat compensation project. More factors, such as the increased nutrient loading, warmer effluent discharge, and the turbulence near the minewater diffuser area (Zone of Turbulence), should be incorporated into the monitoring design, data analysis and results discussion.

Two typos were identified:

- The number of lake chub in fall 2005 (Table 3), and
- The misplaced description of post construction habitat for minewater outlet and its northern reference.

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SLEMA would be pleased to discuss the above comments with De Beers and others to ensure improved annual environmental reporting.

Sincerely,

Original signed by

Johnny Weyallon
Chairperson