



Snap Lake Environmental Monitoring Agency
Main Floor, Lahm Ridge Tower
4501 Franklin Avenue
P.O. Box 95, Yellowknife, NT X1A 2N1
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Erica Bonhomme
Environment Manager, Snap Lake Mine
De Beers Canada Inc.
Suite 300, 5120-49th St.
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November 27, 2014

Subject: Water Licence MV2011L2-0004
SLEMA Modeling Update

Dear Ms. Bonhomme,

The Snap Lake Environmental Monitoring Agency (SLEMA) has reviewed your letter of November 12, 2014 to Angela Plautz and Marc Cassis of the Mackenzie Valley Land and Water Board (MVLWB) on the above-noted subject, and the November 14, 2014 response from the MVLWB. We are also in receipt of the MVLWB letter to De Beers dated November 19, 2014. and subsequent workplan.

As you know, SLEMA developed a water quality model to predict whole lake average (SNP 02-18) of Total Dissolved Solids (TDS), Chloride and Calcium concentrations in Snap Lake in 2010, and updated the predictions in 2012 and 2013.

Again SLEMA updated the modeling in 2014, and would like to provide De Beers with the modeling results as below.

Back test for modeling TDS was carried out with discharge data up to September 2014, and reasonable assumptions were applied in the prediction of water quality change in Snap Lake.

TDS modeling back test indicated that the correlation coefficient of the two data sets (observed values and modeling results) is 0.99, and confirmed the model capable of predicting future whole lake average of TDS concentrations in Snap Lake.

If the discharge amount and TDS concentration are 1,400,000 m³/month and 650 mg/L, the whole lake average TDS level will be 376.8 mg/L in **January 2015**, which will exceed the Water Licence limit (350 mg/L). The prediction is consistent with the one conducted in October 2013 (376.8 mg/L vs. 378.8 mg/L).



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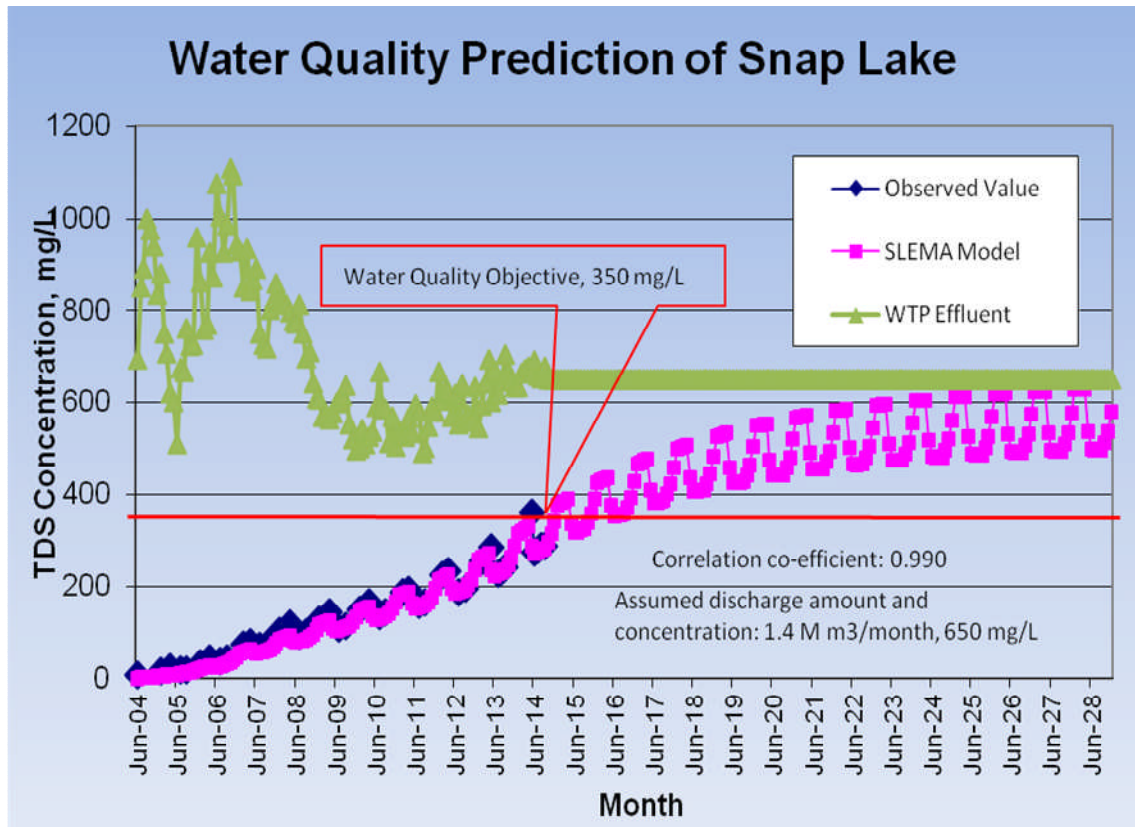


Figure 1. TDS Prediction

De Beers reported a TDS exceedance on June 24, 2014. The whole lake average concentration of TDS was 361 mg/L on May 6, 2014.

Based the TDS prediction and the TDS exceedance in late winter of 2014, SLEMA believes that the whole lake average of TDS will exceed the water licence limit (350 mg/L) again in 2015 and in the ice-cover season of the following years.



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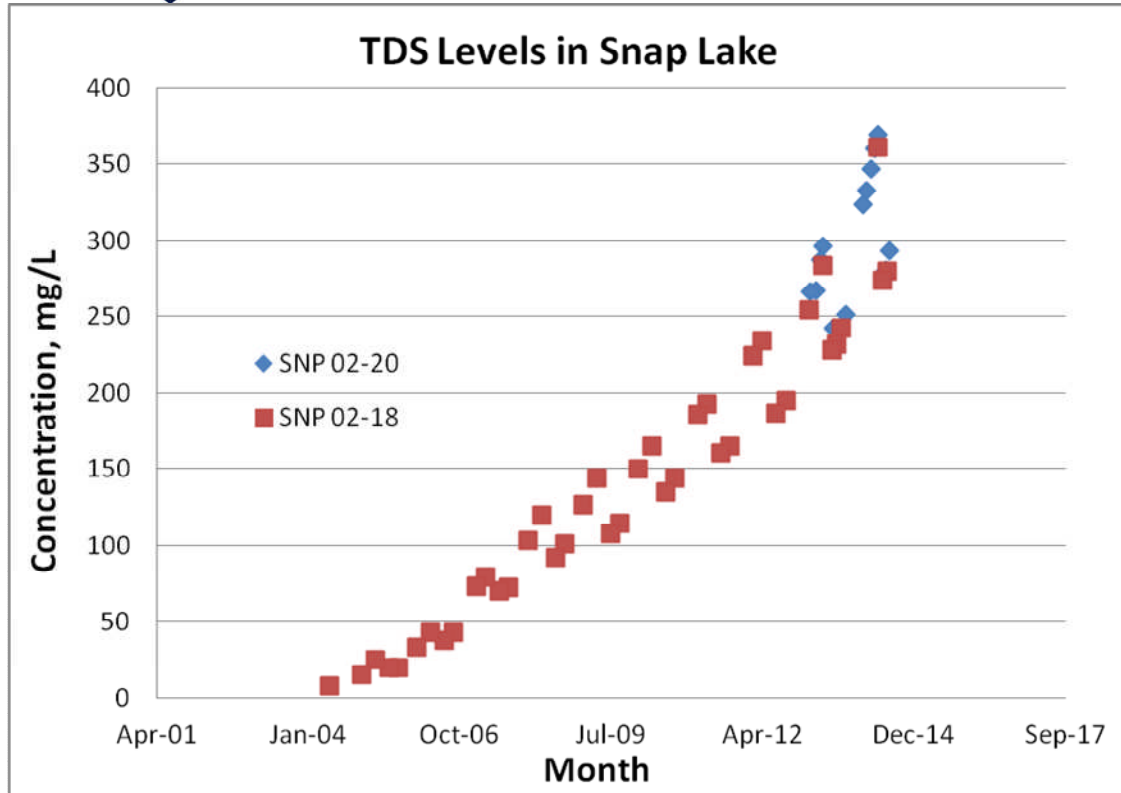


Figure 2. TDS Levels Measured in Snap Lake

If the TDS exceedance occurs in January 2015, it will be happening until the end of the 2015 ice cover season, in contravention of Water Licence MV2011L2-0004, Part F, Item 13.

- *The calculated whole lake average of total dissolved solids (TDS), (as described in the Surveillance Network Program) at sampling locations comprising Surveillance Network Program Station Number 02-18 shall remain below 350 mg/L **at all times**.*

In light of the timelines indicated in the MVLWB draft workplan regarding the November 2014 application for licence amendments, SLEMA kindly requests De Beers to demonstrate its compliance with the Water Licence MV2011L2-0004, Part F, Item 13 until these amendments are approved.



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If you have any questions, please feel free to contact the undersigned or Zhong Liu, Environmental Analyst.

Sincerely,

ORIGINAL SIGNED BY:

Philippe di Pizzo
Executive Director