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December 15, 2014

File: L020

Philippe di Pizzo
Snap Lake Environmental Monitoring Agency
Main Floor, Lahm Ridge Tower
PO Box 95
Yellowknife, Northwest Territories
X1A 2N1

Dear: Mr. di Pizzo

Re: Water Licence MV2011L2-0004 SLEMA Modeling Update

Dear Mr. di Pizzo,

De Beers is in receipt of your letter of November 27, 2014 regarding Snap Lake Environmental Monitoring Agency (SLEMA)'s Modeling Update. As required by the Environmental Agreement under Section 4.3: Recommendations of the Monitoring Agency; De Beers provides the following response.

We note firstly, that De Beers has undertaken comprehensive water modeling to predict future TDS concentrations in mine water, effluent and in Snap Lake. The basis of these predictions result from: the underground model; the mine site model (mass balance); three-dimensional (3-D) hydrodynamic models (for Snap Lake and Lac Capot Blanc); and, mass balance water quality models (all other downstream lakes). The hydrodynamic models for Snap Lake and Lac Capot Blanc utilize the following inputs to predict long-term water quality in the receiving environment:

- Bathymetry to generate 3-D grids for Snap Lake and Lac Capot Blanc;
- Non-point source inflows to the lakes;
- Meteorological Inputs (air temperature, dew point, pressure, wind direction/speed, and solar radiation);
- Point and non-point source inflows; and,
- Chemical Inputs.

The models are then calibrated to actual monitored conditions to verify the accuracy of the models. The Model results show predicted increases in TDS concentrations in Snap Lake. All information has been publicly available in reports and presentations since 2012. Model predictions; and comprehensive studies of aquatic organisms that show that the current TDS whole-lake limit is overprotective, are the basis upon which De Beers is seeking amendments to its water licence.

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SLEMA has requested that De Beers demonstrate compliance with the Water Licence MV2011L2-0004 Part F, Item 13 which is:

> *"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 time"*

De Beers notes that the description and requirements for sampling at SNP Station 02-18 are well-defined in the water licence (Annex A). De Beers will conduct and report to the Mackenzie Valley Land and Water Board, the results of its required sampling during the period of ice cover (immediately prior to ice out). However; De Beers acknowledges SLEMA's request, and will attempt to conduct an sampling program in early January to attempt to obtain relevant TDS data within Snap Lake, as it may address your request to obtain data for this time period. De Beers stresses that this program will only be undertaken in whole or in part, if ice, daylight and weather conditions are deemed safe for Snap Lake Mine workers, in accordance with De Beers' health and safety policies, the *NWT Mines Health and Safety Act*, and the Workers' Safety and Compensation Commission Code of Practice for Thermal Conditions.

As SLEMA has noted, De Beers has applied to rescind condition F.13 in water licence MV2011L2-0004 as part of two amendment applications currently before the Mackenzie Valley Land and Water Board (MVLWB). The condition is not based upon an aquatic effects response, nor does it conform with current MVLWB *Water Quality and Effluent Management Policy* (2011).

This letter hereby satisfies the requirements for a response to recommendation pursuant to the Environmental Agreement, and De Beers looks forward to its continued relationship with SLEMA.

Should you have any questions or concerns, please feel free to contact me by phone at (867) 766-7331 or by email at erica.bonhomme@debeersgroup.com .

Sincerely,
DE BEERS CANADA INC.

Erica Bonhomme
Environment Manager
Snap Lake Mine

cc J. Steele, M. Sanderson, L.McGregor — GNWT
Z. Liu — SLEMA

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