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Our file: 4702 025
Your File: NWB 2AM-JER

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Via Email at exec@nunavutwaterboard.org

Dear Mr. diPizzo

RE: Tahera Diamond Corporation, Jericho Diamond Project – Annual Seepage Report

Thank-you for the opportunity to provide input to the Nunavut Water Board (NWB) regarding the Annual Seepage Report developed by Tahera Diamond Corp. for the Jericho Diamond Project. The Annual Seepage Report is required under Part L, Item 9, and Schedule L, Item 3 of the water license NWB 2AM-JER0410. This submission is being provided as requested by the NWB in their letters dated March 23, 2005 and October 23, 2006, indicating that a written hearing will be held on this report.

1.0 Introduction

The mandate of Environment Canada (EC) is defined by the *Department of the Environment Act*. This *Act* provides the Department with a general responsibility for environmental management and protection in terms of the need to foster harmony between society and the environment for the economic, social, and cultural benefit of present and future generations of Canadians. The Department shares this responsibility with the provinces and territories. Environment Canada is also responsible for providing specialist or expert information and knowledge for the preservation and enhancement of environmental quality.

The operation of the Jericho Diamond Mine is subject to the following statutes administered by Environment Canada: Section 36(3) of the *Fisheries Act*, the *Canadian Environmental Protection Act (CEPA 1999)*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

Environment Canada's review of the Annual Seepage Report is based primarily on its mandated responsibility for the administration and enforcement Section 36(3) of the *Fisheries Act*. The *Compliance and Enforcement Policy for the Habitat Protection and Pollution Prevention Provisions of the Fisheries Act* states that compliance with the federal *Fisheries Act* is mandatory. Subsection 36(3) of the *Fisheries Act* specifies that unless authorized by federal regulation, no person shall deposit or permit the deposit of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water. Proponents should note that only a federal regulation under the *Fisheries Act* or another Act of Parliament can authorize a discharge of a deleterious substance; no federal permit, provincial, territorial or municipal regulatory permit or approval allows for exemption from these provisions of the *Fisheries Act*.

2.0 Specific Comments

Environment Canada is pleased to provide the following comments for the Nunavut Water Board (NWB) for consideration in their review of this document. The comments are organized by page number and section number for ease of comparison.

Page 5, Section 4.1.2

- Concentrations of nitrate and nitrite in Seep-05 greatly exceed the pre-mining estimates from the Final Environmental Impact Statement. Further, nitrate concentrations in Seep-05 also exceed PKCA discharge criteria. Similar exceedances were observed at the Pit Sump (JER-SW2) and the East Sump (JER-SW8) for nitrate and nitrite, and ammonia also exceeded predicted levels. Tahera Diamond Corp. states that increases in concentrations of these parameters are typical of early stages of mining when wet conditions are common, and are expected to decrease as drier conditions are encountered as the pit advances. However, experiences at the Diavik Diamond Mine have shown that decreases are not always observed as the pit advances, as drier conditions have not been encountered. Concentrations of ammonia and related degradation products (primarily nitrate) have increased as the surface area of the pit wall increased. Given that the proponent is already exceeding predicted concentrations, EC recommends that Tahera Diamond Corp. review their explosives management plan and ensure that source control is optimized. Recognizing the challenges associated with nutrient management, if elevated concentrations of ammonia and nitrate continue to be observed in seeps, Tahera should be prepared to hold water in the PKCA for longer than anticipated, or develop other management plans to ensure that nutrient concentrations are acceptable for release to the receiving environment.
- It is noted that Seep-13 is not contained within the current water collection system. As such, it would appear that this seep is discharging directly to the receiving environment in Lake C1. Given that this seep is not reporting to any water management facility and the elevated levels of dissolved phosphorous, nitrite, dissolved chromium, and dissolved copper were observed, EC recommends that this seep be monitored closely to ensure that flow volumes do not increase to a point where the receiving environment in Lake C1 is affected. If significantly increased concentrations of parameters of concern or higher flow volumes are noted, EC recommends that the flow from this seep be captured and directed to the PKCA for management. Further, if increased loadings of contaminants are observed, Lake C1 should be monitored to ensure that water quality in this lake is not being adversely affected by Seep-13.

Page 8, Section 5

- Environment Canada is in agreement with the recommendations included in Section 5 of the report, including conducting the seepage surveys earlier in July to capture the greatest number of seeps, establishing a collection sampling station at Seep-09, and including a detailed survey of waste rock dumps to locate the most suitable sampling sites.
- Environment Canada also recommends that Seep-13 continue to be monitored, as outlined above, especially during spring freshet.

Appendix A.

- It is noted that field pH and lab pH differ by almost 0.9 of a pH unit, with the pH at Seep-13 of 6.42. This is approaching the lower license limit, and it would be useful to have a brief QA/QC section included in the report, with calibration information in confirmation of field measurements. It would be prudent to take reference or background pH measurements for similar terrain which is not adjacent to mine infrastructure.

It is noted that the Annual Seepage Report does not seem to include all of the required elements in Schedule L, Item 3. Given the observed concentrations of nitrate, nitrite and ammonia in the seeps that were sampled, EC strongly recommends that the explosives storage and emulsion plant areas be included in the annual seepage report (as required by Item 3(a) and 3(b)). It is also noted that seepage from the base of the West Dam and all other dams around the perimeter of the PKCA is not addressed in this report. Environment Canada recommends that this information be submitted as soon as possible.

If there are any changes in the proposed project, EC should be notified, as further review may be necessary. Please do not hesitate to contact Colette Spagnuolo with any questions or comments with regards to the foregoing at (867) 975-4639 or by email at colette.spagnuolo@ec.gc.ca.

Yours truly,

Original signed by

Stephen Harbicht
Head, EA-South

cc: (Cheryl Baraniecki, Manager, Environmental Assessment, Environment Canada, Edmonton)
(Anne Wilson, Water Pollution Specialist, Environment Canada, Yellowknife)
(Colette Spagnuolo, EA / Contaminated Sites Specialist, Environment Canada, Iqaluit)