



Indian and Northern
Affairs Canada

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Our reference
File # IQA-N 9545-2-1.2BB.BOSA UNC
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September 25, 2009

Your reference
2BB-BOS0712/TR/E8

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
Gjoa Haven, NU

Chris Hanks
Director, Environmental and Social Responsibility
Hope Bay Mining Ltd.
North Vancouver, BC

Sent Via Email

Dear Phyllis and Chris,

**Subject WATER LICENSE #2BB-BOS0712, HOPE BAY MINING LTD., BOSTON
ADVANCED EXPLORATION PROJECT, KITIKMEOT REGION, SUBMISSION
OF WATER AND ORE/WASTE ROCK MANAGEMENT PLAN**

Please be advised that on behalf of Indian and Northern Affairs Canada, I have completed a review of the above referenced Hope Bay Mining Ltd. submission to the Nunavut Water Board.

A Technical Review Memorandum (attached) is provided to the Board for consideration.

Should you have any questions regarding this submission, feel free to contact me at 867-975-4555 or David.Abernethy@inac-ainc.gc.ca.

Regards,

David W. Abernethy
Water Resources Regional Coordinator
Operations Directorate, Nunavut Regional Office
Indian and Northern Affairs Canada
Iqaluit, Nunavut

Attached.

Cc: Kevin Buck, Manager of Water Resources. INAC – Iqaluit, NU
 Peter Kusugak, Manager of Field Operations. INAC – Iqaluit, NU
 Melissa Joy, Water Resources Officer. INAC – Kugluktuk, NU

TECHNICAL REVIEW MEMORANDUM

Date: Sept. 25/09

To: Chris Hanks, Hope Bay Mining Ltd.
Phyllis Beaulieu, Nunavut Water Board

From: David Abernethy, Indian and Northern Affairs Canada

Re: **WATER LICENSE #2BB-BOS0712, HOPE BAY MINING LTD.,
BOSTON ADVANCED EXPLORATION PROJECT, KITIKMEOT
REGION, SUBMISSION OF WATER AND ORE/WASTE ROCK
MANAGEMENT PLAN**

A. PROJECT DESCRIPTION

On Aug. 20/09 the Nunavut Water Board (NWB or Board) distributed Hope Bay Mining Ltd.'s (HBML) Water and Ore/Waste Rock Management Plan for the Boston Advanced Exploration Project to interested parties for review. This report was prepared by SRK Consulting on behalf of HBML, dated July 2009, and was submitted to the Board for approval pursuant to Part E, Item #8 of Water License #2BB-BOS0712.

The submitted Water and Ore/Waste Rock Management Plan addresses acid rock drainage (ARD) and metal leaching potential of the materials on site as required by the project's water license. The findings of an SRK Consultants 2008/09 geochemical characterization study were used in the preparation of this plan.

Ore and waste rock generated as part of the 1996/1997 BHP Billiton underground exploration program at the Boston deposit are the focus of this management plan. A total of 105,400 tonnes of waste rock and 26,760 tonnes of ore were mined and brought to surface. Waste rock generated from this program was used to construct the camp pad, roadways, airstrip, and the pad where the ore stockpiles are situated. Sometime after BHP Billiton sold their interests to this project some ore material was used as dressing for the camp, roads, airstrip, and construction of a fuel storage area. Based on an August 2008 analysis, it has been determined that, "almost half of the ore material may have been redistributed to other locations on the site." HBML acquired the rights to this project in 2008 and under their ownership the use of material from the ore stockpiles has been stopped" (refer to page 3 of the submitted Plan).

Consultants have determined that, “according to the ARD classifications described in INAC’s 1992 Guidelines for ARD Prediction in the North, the excavated waste rock can be classified consistently as non-potentially acid generating (non-PAG) and approximately two thirds of the ore can be classified as non-PAG with the remainder as uncertain.” They have also noted that, “although some parameters in the seepage exceed the Canadian Council of Ministers of the Environment (CCME) guidelines for aquatic life, there is considerable distance between the stockpiles and receiving water, and it is likely that a risk assessment will show that these levels are within acceptable limits for a source material” (refer to page 28 in Supporting Document A of the submitted Plan).

This past July, SRK Consultants developed a water and load balance to assess the potential impacts of seepage from the waste rock and ore stockpiles at key locations downstream of the site. They noted that “concentrations of nitrate, nitrite, arsenic, copper, iron, nickel, and selenium exceeded the CCME water quality guidelines for the protection of aquatic life in the ephemeral streams.” However, it is argued that “due to limited flows and lack of channel characteristics in these small catchments, these ephemeral streams are not considered to be aquatic habitats and the CCME guidelines are not directly applicable.” Modelling results also conclude that, “predicted concentrations for all parameters were close to background levels in the main part of Aimaokatalok Lake due to the very large inflows to this lake from the Aimaokatalok River (refer to Page 11 of the submitted Plan). INAC recognizes that this model assumes that as water flows over the tundra there is no attenuation or degradation of contaminants and as a result, provides a conservative indication of the potential effects of ore and waste rock seepage on the downstream environment.

B. RESULTS OF REVIEW

The following comments / recommendations are provided to the Board for consideration,

1. Ephemeral Stream Monitoring Program

According to the submitted plan, HBML has implemented an ephemeral stream monitoring program to assess water quality down-gradient of the site (refer to page 13). It is recommended that this program be revised as follows,

- The program should include at least one (1) monitoring station beyond the waste rock and ore stockpile footprint to allow for the comparison of contact and non-contact water quality conditions;
- The same parameters that are analysed in runoff and seeps from the Waste Rock / Ore Storage Facility, identified as Monitoring Station #BOS-8 in the license, be monitored; and,

- Criteria/limits/trigger values be imposed (with respect to monitoring parameters) and mitigation procedures be developed and implemented if monitoring results indicate an exceedence. INAC is not opposed to the assignment of criteria/limits/trigger values to a limited, representative group of monitoring parameters.

2. Closure

It is recognized that the final closure and decommissioning of the Boston Advanced Exploration Project will be determined by HBML's development plans for the larger Hope Bay Greenstone Belt. This Plan provides options for the reclamation of ore stockpiles. As stated in Section 4 of the Plan, "If an opportunity arises, the ore would be removed from site and processed. Otherwise, the ore stockpiles would be re-sloped and covered in place. The type of cover has not been determined, but could range from a simple waste rock cover to a thermal cover or geo-synthetic" (refer to page 15).

INAC recommends that prior to any reclamation of the ore stockpiles, HBML submit a revised Water and Ore/Waste Rock Management Plan and Abandonment and Reclamation Plan detailing proposed procedures to the Board for approval.

Prepared by David Abernethy
Water Resources Regional Coordinator. INAC – Iqaluit, NU

Cc. Kevin Buck, Manager of Water Resources. INAC – Iqaluit, NU
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