



December 3, 2010

Our reference  
File #9545-2-1.2AM.DOHA  
CIDM #436308

Sent by email: [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

Your reference  
2AM-DOH0713

Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
Gjoa Haven, Nunavut  
X0E 1J0

**Re: Nunavut Water Board Licence #2AM-DOH0713, Hope Bay Mining Ltd., Doris North Gold Project, Kitikmeot Region, Licence Amendment Application #2**

Dear Phyllis,

Thank you for your November 5, 2010 request for written representations on the above referenced licence amendment application.

A Technical Review Memorandum is provided for the Board's consideration.

Please do not hesitate to contact me by telephone at 867 975-4555 or email at [david.abernethy@inac-ainc.gc.ca](mailto:david.abernethy@inac-ainc.gc.ca) to discuss this submission.

Regards,

David W. Abernethy  
Water Resources Regional Coordinator  
Operations Directorate  
Nunavut Regional Office  
Iqaluit, Nunavut  
X0A 0H0

Encl.

c.c.: L.A. Cornacchio, Water Resources Manager  
P. Kusugak, Field Operations Manager

## Technical Review Memorandum

**TO** Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board

**OUR REFERENCE**  
File #9545-2-1.2AM-DOHA  
CIDM #436308

**FROM** David Abernethy  
Water Resources Regional Coordinator  
Indian and Northern Affairs Canada

**YOUR REFERENCE**  
2AM-DOH0713

**DATE**  
Dec. 3/10

**SUBJECT** **Nunavut Water Board Licence #2AM-DOH0713, Hope Bay Mining Ltd., Doris North Gold Project, Kitikmeot Region, Licence Amendment Application #2**

### **A. PROJECT DESCRIPTION**

On Nov. 5/10 the Nunavut Water Board (NWB or Board) distributed Hope Bay Mining Ltd.'s (HBML) Oct. 29/10 application to amend their Doris North Gold Project's Type A Water Licence, #2AM-DOH0712. Interested parties were requested to provide written representations by Dec. 5/10.

This is HBML's second application to amend their project's Type A Water Licence. They are requesting the Board's permission to,

- Expand the Roberts Bay Fuel Storage and Containment Facility;
- Expand the project's airstrip and construct a bypass road east of the airstrip; and,
- Construct the project's cyanide and reagent storage facilities at a different location than what was originally planned.

The complete licence amendment application is posted on the NWB's online public registry and includes the following documentation,

- Application for Water Licence Amendment Form;
- Executive summary of Project Description in English, Inuktitut (Inuinnaqtun to follow as soon as available);
- Project Description;
- Executive summary of consultant supporting reports (SRK, Rescan) in English, Inuktitut (Inuinnaqtun to follow as soon as available);
- Project Description, Appendix A: Detailed design memo and drawings prepared by SRK Consultant Engineers describing the additional fuel tanks at Roberts Bay;

- Project Description, Appendix B: Detailed design memo and drawings prepared by SRK Consultant Engineers describing the airstrip expansion and bypass road;
- Project Description, Appendix C: Detailed design memo and drawings prepared by SRK Consultant Engineers describing reagent and cyanide storage;
- Project Description, Appendix D: Memo prepared by Rescan Environmental Services Ltd. considering environmental matters identified in the Supplementary Information Guide;
- Project Description, Appendix E: Memo prepared by Points West considering archaeological matters;
- Project Description, Appendix F: HBML compliance report; and,

The Nunavut Impact Review Board (NIRB) received HBML's licence amendment application on Oct. 29/10 and subsequently issued a letter to the company on Nov. 15/10 requesting additional information by Dec. 6/10. This information is intended to help the NIRB determine whether the proposed changes are acceptable and whether the terms and conditions included in the project's certificate will achieve their purposes.

## **B. RESULTS OF REVIEW**

On behalf of the Indian and Northern Affairs Canada Water Resources Division I am providing the following comments/ recommendations for the Board's consideration,

### **1. Nunavut Impact Review Board (NIRB) Process**

It is understood that before making any decision on the submitted licence amendment application the NWB will consider the outcome of the NIRB's review. Indian and Northern Affairs Canada supports this approach to confirm whether the proposed amendment is consistent with and within the scope of the original NIRB project certificate. Further, the outcome of the NIRB review may impact the water licence application and review process.

### **2. Expansion of Roberts Bay Fuel Storage and Containment Facility**

HBML intends to expand their Roberts Bay Fuel Storage and Containment Facility by installing four additional 5.7 million litre (ML) diesel fuel storage tanks and one 1.5 ML Jet A fuel storage tank in a separate area on the Roberts Bay laydown area. They argue that this expansion is necessary to support construction and mining related activities associated with the Doris North Gold

Project. A portion of this fuel will support exploration activities in other areas of the Hope Bay Belt. These tanks will be constructed within a lined containment berm similar to the existing 5.7 ML diesel fuel storage and containment facility. Included in their submission are details of a fuel pipeline that will connect the fuel storage and containment facility with the Roberts Bay jetty. Design details are presented in Appendix A of the HBML's licence amendment application.

In their Project Description document HBML proposes that an additional monitoring station and discharge point be established at the new Roberts Bay fuel storage and containment site through an amendment to Part G, Item #22 of their licence. The effluent quality limits and discharge criteria specified in the licence for the current Roberts Bay fuel storage and containment facility would apply at this monitoring station. This proposal is considered to be reasonable.

### **3. Airstrip Expansion and Bypass Road Construction**

The Doris North Gold Project's airstrip is currently 746 m long and 23 m wide. It can accommodate Dash 8 and Buffalo aircraft. This structure is also used as the primary access road between Roberts Bay and the Doris Camp. HBML is proposing to construct a 2.9 km all-weather bypass road east of the airstrip and to expand the airstrip to an overall length of 1,795 m and width of 46 m. Once completed, it will be capable of accommodating Lockheed L382G Hercules aircraft. HBML claims that these activities will improve the airstrip's operational safety and site logistics.

As stated in Appendix B, "The airstrip bypass road will be constructed with run of quarry material excavated from drilling and blasting the new Roberts Bay tank farm base, as well as any cut required to meet the obstacle limitations. The airstrip expansion will be constructed from other designated rock quarries forming part of the Doris North Project." Geochemical characterization and recommendation memos prepared by SRK Consultant Engineers (SRK) for the proposed quarry sites are included in HBML's submission.

The SRK June 8/10 memo, *Geochemical Characterization and Recommendations for Quarry 5, Doris North, Hope Bay Project* included in Appendix B recommends that,

"a monitoring program to verify the characteristics of these materials be initiated following construction. This program would include visual inspection and sampling of both solid materials and seepage flowing from infrastructure, as has already been conducted for the existing Doris North camp, airstrips, and roads."

The proposed monitoring program is reasonable and should apply to the material quarried from both the new Roberts Bay fuel storage and containment site and where cut is required to meet obstacle limitations for an expanded airstrip (referred to as Quarry 5). Furthermore, HBML is expected to satisfy Part D, Items

#21 and #22 of their licence concerning the implementation of a Quarry Rock Seepage Monitoring and Management Program and the submission of summary reports that discuss and interpret geochemical data derived from collected samples.

Due to this project's location and the airstrip's year-round operational status, it is expected that de-icing fluids will be periodically applied to aircraft before takeoff. HBML should be required to develop procedures for managing these fluids as they can negatively impact water sources if mitigation measures are not in place.

#### **4. Stream Crossings Along the Proposed Airstrip Expansion Area and Bypass Road**

According to Appendix D of HBML's submission (Rescan Environmental Services Ltd.'s supporting memo) there will be no structures placed within or across water bodies as a result of the proposed licence amendment and a minimum setback of 30 m from all water bodies will be maintained. However, it is noted that the maps included in this document and the Appendix A document reference a stream that passes through the proposed airstrip expansion area and bypass road. I recognize that this is a Department of Fisheries and Oceans area of responsibility and that they have applicable operational statements that HBML must follow. However, if this amendment application is approved, construction should only occur when the stream is not flowing and appropriate mitigation measures should be established to prevent the entry of sediment into water.

#### **5. Revised Location of Reagent and Cyanide Storage Facilities**

HBML is proposing that the project's reagent and cyanide supply be stored in purpose built secondary containment facilities at the Lower Reagent Pad which is situated along the all-weather access road that connects Roberts Bay and the Doris Camp. According to the submitted documentation the amount of on-site reagent and cyanide to be stored on site has not changed from the original design intent. This material was to be stored on the Roberts Bay and Doris Camp laydown areas but after a re-evaluation of alternative locations the Lower Reagent Pad area was considered optimal.

Each of these facilities will have a sump within their respective secondary containment areas for the collection of surface water and/ or chemical spills. As stated in Appendix C of the submitted application,

"When the sump contains liquid it will be tested. If it meets discharge criteria it will be pumped out and spread out on the tundra or used as dust suppressant on the roads. If the liquid does not meet the discharge criteria it will be pumped to empty containers for proper off-site disposal at a registered hazardous waste disposal site."

According to the definitions provided in Schedule A of the licence, the Sedimentation Pond is designed to temporarily contain stormwater runoff from the clean surfaces of the camp mill pad which includes a chemical storage area. The Sedimentation Pond has a monitoring program station (ST-1) and its effluent quality limits and discharge requirements are presented in Part G, Item #21 of the licence. Having reviewed supporting documentation for the project's 2007 revised licence application it is understood that a "Laydown and Chemical Reagent Storage Area" was planned to be situated adjacent to the mill facility on the camp/ mill pad. It is recommended that the Board confirm with HBML if the project's reagent and cyanide supplies would have been stored at this location and if the chemical storage area referred to in the Sedimentation Pond's licence definition is the "Laydown and Chemical Reagent Storage Area."

The license should be amended to include monitoring program stations for the reagent and cyanide storage facilities and discharge criteria for the release of any effluent that collects within their sumps that are based on the chemicals stored within, their respective toxicological profile, and any relevant guidelines/ standards. Also, once the mine is operational HBML should consider directing effluent that does not meet discharge criteria into the mill's process water or cyanide destruction circuit rather than shipment off-site.

## **6. Sedimentation Control Berm, Roberts Bay Laydown Overburden Dump**

As indicated in Appendix A of the submitted licence assignment application, overburden soils removed to prepare the quarry for constructing the airstrip bypass road and the new Roberts Bay fuel tank facility will be disposed at an existing overburden dump that is located immediately east of the existing Roberts Bay fuel tank facility. They plan to construct a sedimentation control berm along the downstream edge of this dump using run of quarry material. Details of this berm's design are presented in the Roberts Bay Overburden Storage Area and Sedimentation Control Berm engineering drawing (SRK drawing #RBTF-05).

The terms and conditions included in Part D of the licence are designed to minimize impacts on surface drainage and water quality that may result from activities associated with the project's construction and operation. Criteria for total suspended solids in surface runoff are identified in Part D, Item #19. It is recommended that HBML revise their Water Management Plan (Part F, Item #1 requirement) to describe this sedimentation berm and any monitoring activities that will be applied.

Furthermore, it is recommended that HBML submit a construction summary report for this sedimentation berm within ninety (90) days of completion pursuant to Part D, Item #26 of the licence.

## **7. Annual Geotechnical Inspections**

HBML is required to have a geotechnical inspection carried out at prescribed locations annually between July and September by a Geotechnical Engineer in accordance with Part J, Item #18 of their licence. They must also submit the Geotechnical Engineer's inspection report and a cover letter that outlines an implementation plan for each recommendation to the Board within sixty (60) days of completing the inspection in accordance with Part J, Item #19 of the licence.

It is recommended that the reagent and cyanide storage facilities, airstrip, and sedimentation control berm at the Roberts Bay overburden dump be included in the project's annual geotechnical inspection requirements. Part J, Item #18 already identifies the project's Fuel Storage and Containment Facilities and all-weather access roads as components of HBML's annual geotechnical inspection requirement.

## **8. Revisions to Plans**

The submitted Project Description document states that the proposed changes will not result in any substantive revisions to the plans required by the project's Type A Water Licence. It identifies the following plans as being applicable,

- Emergency Response and Contingency Plan;
- Water Monitoring Program;
- Water Management Plan; and,
- Quality Assurance/ Quality Control Plan.

The proposed changes identified in this licence amendment application are considered to be important and must be reflected in revisions to all applicable plans and monitoring programs required by the project's Type A licence. In addition to the plans identified above, HBML should submit to the Board a revised Monitoring and Follow-Up Plan (Part K, Item #5 requirement) and Hazardous Materials Management Plan (Part G, Item #11 requirement). Furthermore, it is noted that the submission of a Revised Waste Rock Management Plan (Part G, Item #15 requirement) remains outstanding and must be provided to the Board for approval.

## **9. Monitoring of Effluent Discharge to Tundra**

It is recommended that the Board revise Part J, Item #20 of the licence to include the reagent and cyanide storage facilities in the list of project facilities that HBML must visually monitor and record observations on a daily basis during periods of discharge onto the tundra.

## 10. Reclamation Security

In their Oct. 29/10 Cover Letter HBML indicates that the security requirements for the project are presented in Appendix G of the licence amendment application but it appears that this document was not included in their submission to the Board. However, their Project Description document states that they

“will consider the proposed facilities in respect of *Mine Site Reclamation Policy for Nunavut*, Indian and Northern Affairs Canada, 2002, and provide a supplemental document to the NWB which will consider the issue of security in relation to the proposed amendment.”

Indian and Northern Affairs Canada recommends that this updated estimate of reclamation liability be evaluated to determine whether a revised security amount is warranted.

Please do not hesitate to contact me by telephone at 867 975-4555 or email at [david.abernethy@inac-ainc.gc.ca](mailto:david.abernethy@inac-ainc.gc.ca) to discuss this submission.

Prepared by David Abernethy

c.c.: L.A. Cornacchio, Water Resources Manager  
P. Kusugak, Field Operations Manager