



Aboriginal Affairs and Northern Development Canada  
Nunavut Regional Office  
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October 7, 2012

Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
GJOA HAVEN, NU X0E 1J0

*Our reference:*  
IQALUIT-#575240

*Your reference:*  
2BB-BOS1217

*Sent via email*

**Re: Water Licence 2BB-BOS1217 – Hope Bay Mining Ltd. – Hope Bay Regional Exploration Project – Submission of Boston Camp Revised Interim Closure Plan – Kitikmeot Region**

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Dear Ms. Beaulieu,

Thank you for your August 8, 2012 request for written representations on the above referenced Final Closure Plan.

A Technical Review Memorandum is provided for the Board's consideration. Comments/ recommendations have been provided pursuant to the Department's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

Please do not hesitate to contact me by telephone at (867) 975-4555 or email at [David.Abernethy@aandc-aadnc.gc.ca](mailto:David.Abernethy@aandc-aadnc.gc.ca) to discuss this submission.

Regards,

David Abernethy  
Regional Coordinator  
Water Resources Division

Encl.

c.c.: Murray Ball, Manager of Water Resources, AANDC  
Andrew Keim, A/Manager of Field Operations, AANDC  
Karen Costello, A/Director of Resources Management, AANDC

## TECHNICAL REVIEW MEMORANDUM

<b>TO</b>	Phyllis Beaulieu Assistant Licence Administrator Nunavut Water Board	OUR REFERENCE File #9545-2-1.2BB.BOSA IQALUIT# 575240
<b>FROM</b>	David Abernethy Water Resources Regional Coordinator Aboriginal Affairs and Northern Development Canada	YOUR REFERENCE 2BB-BOS1217  DATE October 7, 2012
<b>SUBJECT</b>	<b>Water Licence 2BB-BOS1217 – Hope Bay Mining Ltd. – Hope Bay Regional Exploration Project – Submission of Boston Camp Revised Interim Closure Plan – Kitikmeot Region</b>	

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### A. PROJECT DESCRIPTION

On August 8, 2012 the Nunavut Water Board (NWB or Board) distributed Hope Bay Mining Ltd.'s (HBML) June 2012 Boston Camp Revised Interim Closure Plan to interested parties for review and comment. This plan was submitted pursuant to Part I, Item 1 of their Type water licence, 2BB-BOS1217. This term and condition states,

The Licensee shall submit to the Board for approval in writing, within ninety (60) days of issuance of this Licence, a revised Abandonment and Reclamation Plan that is specific to the scope of this Licence and prepared in accordance with the Mine Site Reclamation Guidelines for the Northwest Territories (INAC), 2006 and consistent with the INAC Mine Site Reclamation Policy for Nunavut, 2002.

The submitted plan is an update to the 2007 Closure Plan developed by Miramar Hope Bay Ltd. (previous licensee). The Boston Camp provided support services for exploration in the southern portion of the Hope Bay Greenstone Belt and is now in care and maintenance (effective January 31, 2012). Closure and reclamation activities presented in section 2 of the submitted plan include:

- Demolition and removal of remaining site structures;
- Decommissioning and demolition of containment structures;
- Decommissioning the existing portal to underground workings;
- Consolidating and covering ore piles;
- Reclaiming drill sites;
- Collecting and disposing of hazardous wastes;

- Collecting and disposing of non-hazardous wastes;
- Stabilizing permafrost degradation areas;
- Remediating hydrocarbon contaminated soils; and,
- Drainage control and revegetation, where appropriate.

According to section 3.10 of this plan, a Phase 3 Environmental Site Assessment was scheduled to occur in the summer of 2012 and a subsequent field investigation will be completed (date not specified) to define the nature and extend of hydrocarbon contamination following the demolition and removal of debris. Consistent with HBML's Final Closure Plan for the former Windy Camp and Patch Lake Facilities, hydrocarbon impacted soils will be remediated in accordance with the Government of Nunavut Environmental Guidelines for Contaminated Site Remediation using the Tier-1 criteria-based approach for industrial land use and coarse grained soils. Soils that exceed these criteria will be remediated in an existing land farm, relocated to an approved off-site facility, or remediated in-situ through bioremediation techniques. In addition, HBML wants to maintain the option to encapsulate impacted soils in place should, "it be demonstrated that hydrocarbon risk is minimal and/or other remediation methods are ineffective or inappropriate for a given area."

A post-closure monitoring program is included in the submitted plan. This program details HBML's commitment to have professional geotechnical engineer and arctic vegetation specialist site inspections, an annual seep sampling program at the reclaimed waste rock and ore stockpiles, and soil-quality monitoring in the land farm and/or hydrocarbon impacted areas where in-situ bioremediation will be applied.

Hope Bay Mining Ltd.'s total estimated closure cost for the Boston Camp site is \$4,700,000 in undiscounted 2012 Canadian dollars. Details of the estimated closure cost are included in an appendix to the plan.

## **B. RESULTS OF REVIEW**

On behalf of Aboriginal Affairs and Northern Development Canada (AANDC), the following comments/ recommendations are submitted for the Board's consideration,

### **Issue 1: Closure Cost Estimate**

**Context:** Appendix B of the submitted plan provides a \$4,700,000.00 closure cost estimate to reclaim the project area. This amount is supported by a series of tables that outline the direct costs associated with activities

considered necessary for the closure and reclamation of outstanding land and water liabilities.

**Recommendation:** Although the submitted closure cost estimate appears to be complete and has been approved by the professional engineers who prepared the plan, HBML should provide the following information:

- Identify the model used to calculate the cost estimate (the recognized methodology for calculating reclamation costs for purposes of financial security assessment is the RECLAIM or other similar, appropriate models);
- Confirm that the estimate is based on the principle of having the necessary reclamation work implemented by a third party;
- Identify the individuals who prepared this cost estimate and their qualifications; and,
- A revised copy of the cost estimate signed and sealed by a professional engineer.

## **Issue 2: Remediation of metal contaminated soils**

**Context:** The submitted plan does not reference the need to identify and remediate metal contaminated soils.

**Recommendation:** AANDC anticipates that the Boston Camp's Phase 3 Environmental Site Assessment will confirm whether metal contaminated soils are present on site. As a minimum, HBML should either remediate or relocate to an appropriate treatment facility any soils that do not satisfy the Canadian Soil Quality Guidelines (these guidelines have been adopted by the Government of Nunavut's Environmental Guidelines for Contaminated Site Remediation). Furthermore, subsequent revisions to the submitted revised interim closure plan should incorporate this information.

## **Issue 3: Land use criteria for the remediation of hydrocarbon and metal contaminated soils**

### **Context:**

Section 3.10 of the submitted plan states that soil hydrocarbon concentrations will be compared to the Government of Nunavut's Environmental Guideline for Contaminated Site Remediation Tier-1 criteria-based approach for industrial land use and coarse grained soils. Soils that do not meet these criteria will be remediated whereas those that do may be used for reclamation purposes.

**Recommendation:**

HBML should explain why they plan to apply the industrial land use criteria from the Government of Nunavut's Environmental Guideline for the remediation of petroleum hydrocarbon contaminated soils. Accordingly, any soils used for reclamation purposes must satisfy the remediation criteria approved by the Board.

**Issue 4: Methods of Remediating Hydrocarbon and Metal Impacted Soils**

**Context:** Section 3.10 of the submitted plan provides the remediation alternatives that HBML intend to implement on hydrocarbon impacted soils. Soils that exceed the Government of Nunavut's Environmental Guideline for Contaminated Site Remediation Tier 1 criteria-based approach for industrial land use and coarse grained soils will either be remediated in the existing land farm, relocated to an off-site facility, or remediated in situ (bioremediation). In addition, HBML wants to maintain the option to encapsulate impacted soils in place should "it be demonstrated that hydrocarbon risk is minimal and/or other remediation methods are ineffective or inappropriate for a given area." The submitted plan provides little information on the in-situ bioremediation techniques that will be applied and the criteria for off-site disposal.

**Recommendation:** AANDC recommends that HBML describe their planned in-situ bioremediation method (e.g., aeration, application of nutrients, etc.) and the criteria that will be followed to determine whether in-situ bioremediation or excavation will be implemented. Furthermore, prior to encapsulating any contaminated soils HBML should submit a written proposal to the NWB and obtain their written approval.

**Issue 5: Use of wood waste for reclamation purposes**

**Context:** Section 3.9 of the submitted plan states that wood chips may be used as fill material in combination with rock, overburden, and drill cuttings when reclaiming depressions (e.g., diamond drill cuttings and sedimentation pond).

**Recommendation:** AANDC recommends that HBML clarify what types of wood wastes can be considered hazardous and non-hazardous. As a minimum, wood treated with pentachlorophenol, inorganic preservatives, lead paint, or PCB-amended paint should be classified as hazardous wastes.

## **Issue 6: Revegetation and minimizing sedimentation of receiving water bodies**

**Context:** Section 3.11 of the submitted plan provides a brief description of the work that HBML will carry-out to ensure positive drainage and promote revegetation of disturbed locations throughout the Boston Camp project area. Natural revegetation will be promoted through scarification of applicable surfaces and appropriate revegetation technology will be applied to areas that have sufficient soil substrate.

**Recommendation:** When carrying out their post-closure monitoring program HBML should ensure that all areas being revegetated do not pose risks to the quality of receiving water bodies in the event of erosion. Mitigation measures should be implemented where erosion attributed to past project activities or revegetation efforts is observed.

## **Issue 7: Submission of plans and drawings for engineered structures**

**Context:** Engineered structures will be required to close several components of the Boston Camp site. Specific components include the decommissioning of the underground portal which will entail the installation of a 15 m thick rockfill plug, the capping of the underground decline's vent raise, and covering the ore stockpile with an HDPE liner and protective layer of waste rock.

**Recommendation:** HBML should submit design plans and drawings issued for construction at least sixty (60) days prior to the construction of any engineered structures necessary for submitted closure plan's implementation. In addition, HBML should submit all corresponding as-built plans and drawings within ninety (90) days of completion. These plans and drawings should be stamped by a professional engineer.

Prepared by David Abernethy