Issue	Recommendation	HBML Action
Issue 1: Closure Estimate 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.	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:	N/A
	1. 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:	Our consultant, SRK, used their own spreadsheet to calculate reclamation costs. It closely resembles the RECLAIM model. A memo comparing SRK's model to the RECLAIM model was submitted to the NWB with the closure estimate calculations on Jan. 14, 2013.
	2. Confirm that the estimate is based on the principle of having the necessary reclamation work implemented by a third party;	The estimate is based on having the reclamation work implemented by a third party.
	3. Identify the individuals who prepared this cost estimate and their qualifications; and,	The estimate was prepared by Tom Sharp (Ph. D, P. Eng), and reviewed by Maritz Rykaart (Ph. D, P. Eng), both with SRK Consulting.
	4. A revised copy of the cost estimate signed and sealed by a professional engineer.	The closure estimate has been signed and stamped by SRK. Copies of the closure estimate calculations were provided to the NWB Jan. 14, 2013.
Issue 2: Remediation of metal contaminated soils The submitted plan does not reference the need to identify and remediate metal contaminated soils.	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	We have included the EBA Phase III Environmental Site Assessment (ESA) report with this submission for your information. This report includes recommendations for remediation of hydrocarbon contaminated areas. The Boston Water and Ore/Waste Rock Management Plan presents information on heavy metals on site. This plan is available at: ftp://nunavutwaterboard.org/1%20PRUC/

	Guidelines for Contaminated Site Remediation). Furthermore, subsequent revisions to the submitted revised interim closure plan should incorporate this information.	2%20MINING%20MILLING/2B/2BB%20-%20Bulk%20Sampling/2BB-BOS1217/3%20TECH/12%20C%20A%20I%20O%20%28E%29/E8%20Waste%20Rock%20Mgmt%20Plan/090731%202BB-BOS0712%20FINAL%20Water%20and%20Ore-Waste%20Rock%20Mgmt%20Plan-IMLE.pdf
Issue 3: Land use criteria for the remediation of hydrocarbon and metal contaminated soils 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.	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.	The site is currently considered an industrial site because, as defined in the GN's Guideline for Contaminated Site Remediation, the site is "Land on which the primary activity is the production, manufacture, construction or storage of goods. Public access is restricted and children are not permitted continuous access or occupancy." At this time, the Boston site could be reopened for exploration or mining so it is still considered as industrial land.
Issue 4: Methods of Remediating Hydrocarbon and Metal Impacted Soils 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	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.	Please refer to the EBA Phase III Environmental Site Assessment (ESA) report, included with this submission, for details on planned in-situ bioremediation methods. Specifically, see sections 5 and 6.

(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.		
Issue 5: Use of wood waste for reclamation purposes 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).	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.	In terms of deciding whether wood waste is considered hazardous or non-hazardous waste, HBML will follow the GN *Guideline for the Burning and Incineration of Solid Waste* and the *Environmental Guideline for Industrial Waste Discharges* (particularly Schedules III and IV). Wood that meets the criteria for burning and landfilling will be considered for use in reclamation. Any wood waste that meets the criteria outlined in the *Guideline for the General Management of Hazardous Waste in Nunavut* will be considered hazardous waste and will be remove from site for disposal at a facility that accepts hazardous waste.
Issue 6: Revegetation and minimizing sedimentation of receiving water bodies 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	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.	Noted.

promoted through scarification of applicable surfaces and appropriate revegetation technology will be applied to areas that have sufficient soil substrate.		
Issue 7: Submission of plans and drawings for engineered structures 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.	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.	These recommendations are similar to current requirements of 2AM-DOH0713. HBML would be able to provide design plans, issued for construction drawings and as-built plans at the suggested schedule.
KIA		
Issue 1: Closure Objective Requires Clarification	Hope Bay Mining Ltd. (HBML) clarifies the overall objective (goal) with respect to no adverse effects to human or ecological receptors.	The stated objective was updated to make the closure plan more achievable and to make the targets more measurable. The goal stated in the Closure Plan is adequate.
Issue 2: Decommissioning of Camp Structures and Ancillary Facilities	A Conceptual Site Model (CSM) should be presented that identifies the assessment status of all COPC relevant to site activities. This should include not only the PHC currently identified in the 2012 Interim Closure Plan, but also COPC typical of identified site activities and materials used on site.	Please refer to EBA Phase III Environmental Site Assessment (ESA) report that is included with this submission for details. Other COPC's are listed in the Water and Ore/Waste Rock Management Plan available. See AANDC Issue 2 above for link.
Issue 3: Airstrip Decommissioning	HBML should clarify the extent of airstrip decommissioning. The closure plan should be internally reconciled with regard to the final status of the site and eliminate contradictions on the final status of facilities and materials.	In this case, "decommissioned" means that the airstrip will no longer be in regular use or maintained, but that it will remain in place should it be needed.

Issue 4: Drill Core Storage	All rock materials derived from exploration or mining activities should be tested for acid generation and metals leaching potential. If the drill cuttings are confirmed to be PAG rock, the material should be removed from site. Drill core pallets should be monitored for nesting birds and pallets moved only when nests are not present or when young are not present in nests.	Please refer to the Water and Ore/Waste Rock Management Plan for the Boston Site for details on the chemical characteristics of the rock stored at Boston. See AANDC Issue 2 above for link.
Issue 5: Decommissioning and Demolition of Containment Structures	Extensive soil testing should be done of berm soils using wild land criteria for all COPC. Material exceeding, wild land criteria should be removed from site for disposal at a licensed facility.	Please refer to EBA Phase III Environmental Site Assessment (ESA) report that is included with this submission for details of suggested soil remediation techniques to be used and for an explanation of why the industrial land use criteria were selected versus the wildland criteria. See the AANDC Issue 3 above for further explanation.
Issue 6: Decommissioning of Mine Workings	HBML should provide additional drawings of the underground workings, showing the extent of development and the areas now sealed by the ice plug. Details should be provided on the extent and grading of the rock fill plug proposed for the portal area. HBML should provide further details on the material they propose to use for backfilling the portal. The material should be geochemically stable and not result in the development of acidic drainage of leaching of metals into the environment.	HBML does not need to provide drawings of the underground at Boston as part of the closure plan as this type of documentation is outside the scope of the water licence. Material that will be used to backfill the portal will come from available waste rock material on site as described in section 3.5.1 of the closure plan. Details of the waste rock geochemistry can be found in the Water and Ore/Waste Rock Management Plan (link can be found at KIA Issue 4 above).
Issue 7: Ore Stockpile Closure	Acid generation and metals leaching potential	Please refer to the Water and Ore/Waste

	should be addressed for all rock materials derived from exploration or mining activities. Detail design of long-term ore stockpile disposal should be based on the acid generating potential of the stockpile along with monitoring of seepage.	Rock Management Plan for the Boston Site for details on the chemical characteristics of the rock stored at Boston (link can be found at KIA Issue 4 above).
Issue 8: Decommission of Camp Rock Fill Pad	Details of acid neutralization potential should be available for other materials discussed in the closure plan.	Please refer to the Water and Ore/Waste Rock Management Plan for the Boston Site for details on the acid neutralization potential of rock at Boston (link can be found at KIA Issue 4 above).
Issue 9: Collection and Disposal of Waste	Clarity should be provided on which existing waste management plans are to be followed in handling incinerator ashes.	Please refer to section 6.9 of the incinerator Management Plan for details on handling of incinerator ash. (ftp://nunavutwaterboard.org/1%20PRUC/2%20MINING%20MILLING/2B/2BB%20-%20Bulk%20Sampling/2BB-BOS1217/3%20TECH/4%20WASTE%20DISP%20(D)/120321%202BB-BOS0712%20Hope%20Bay%20MAR12%20Incinerator%20Management%20Plan%20R1.1-IMLE.pdf)
Issue 10: Remediation of Hydrocarbon Impacted Soils	HBML should use wild land criteria for phase 3 ESA for assessment of COPC impacts to the environment. HBML should develop contingency plans in the event the remediation process is not observed in follow-up monitoring of the site. KIA should have input on the decision of what type of remediation approach is used on the site.	HBML agrees that the KIA should have input on the decision of what type of remediation approach is to be used at Boston. As described in previous comments, the industrial land use criteria were used because, as defined in the GN's Guideline for Contaminated Site Remediation, the site is "Land on which the primary activity is the production, manufacture, construction or storage of goods. Public access is restricted

		and children are not permitted continuous access or occupancy." At this time, the Boston site could be reopened for exploration or mining so it is still considered as industrial land.
Issue 11: Drill Site Reclamation	Drill hole casings should be filled with grout, cut flush to the ground and capped to prevent cross contamination of aquifers and geological units.	HBML completed a drill site inventory in 2012 and will use this inventory in planning drill site reclamation. It is our plan to grout, cut, and cap drill holes where this has not already been done.
Issue 12: Re-vegetation of Tundra	HBML should establish clear objectives, timelines, and monitoring approaches to re-vegetation of tundra with particular attention to areas affected by salt. Risk-based assessment should be done for remediation goals and objectives to provide justification for the remediation approach, timelines, and post-closure monitoring. HBML should clarify the type of native Arctic plant species that are salt tolerant by providing more details on them.	We have been working with a consultant from ABR Inc. to help us determine the effects of salts on different areas throughout Hope Bay. With ABR Inc.'s recommendations we will be able to prepare a plan for remediating these areas.
Issue 13: Cost Estimating	Cost estimates should be based on the use of wild land criteria in the assessment and remediation of the site including other COPC in addition to PHC, and geochemical assessments for ARD and metals leaching potential.	As described in previous comments, the industrial land use criteria were used because, as defined in the GN's Guideline for Contaminated Site Remediation, the site is "Land on which the primary activity is the production, manufacture, construction or storage of goods. Public access is restricted and children are not permitted continuous access or occupancy." At this time, the Boston site could be reopened for exploration or mining so it is still considered

		as industrial land. The cost estimates are appropriate for the closure plans at this time.