

NWB Annual Report

Year being reported: 2011

License No: 2BB-BOS0712 Issued Date: July 6, 2007
 Expiry Date: July 31, 2012

Project Name: Boston Advanced Exploration Project

Licensee: Hope Bay Mining Ltd.

Mailing Address: 300-889 Harbourside Dr.
 North Vancouver, BC
 V7P 3S1

Name of Company filing Annual Report (if different from Name of Licensee please clarify relationship between the two entities, if applicable):

The licence was reassigned in 2008 from Miramar Hope Bay Limited to Hope Bay Mining Ltd.

General Background Information on the Project (*optional):

The Boston site supports advanced mineral exploration in the south end of the Hope Bay Greenstone Belt.

Licence Requirements: the licensee must provide the following information in accordance with

Part B ▼ Select ▼

A. A summary report of water use and waste disposal activities, including, but not limited to: methods of obtaining water; sewage and greywater management; drill waste management; solid and hazardous waste management.

Water Source(s): Aimaokatuk (Spyder) Lake for domestic use and drilling purposes. The total quantity of water allowable by the license is 36,500 m³/yr or 100 m³/day. There is no differentiation between quantities to be used domestically or for drilling.

Water Quantity:	not specified	Quantity Allowable Domestic (m ³)
	1435	Actual Quantity Used Domestic (m ³)
	not specified	Quantity Allowable Drilling (m ³)
	900	Total Quantity Used Drilling (m ³)

Waste Management and/or Disposal

- ☒ Solid Waste Disposal
- ☒ Sewage
- ☒ Drill Waste
- ☒ Greywater
- ☒ Hazardous
- ☒ Other:

Fuel Farm Berm and Mine Portal discharges

Additional Details:

Water for domestic use at Boston Camp is obtained from Aimaokatalok Lake via a 2 inch diameter submerged pipe with a DFO compliant fish screen. This intake pipe is linked to a pump house located approximately 30 metres from shore. In winter, the pump house is moved onto the ice to decrease the length of heat-traced line required to reach the location where the water is open under the ice. Boston camp was operational from January 1 to November 12, 2011.

Waste produced on site is treated according to Part D of the license.

-Food waste, paper waste and untreated wood waste is burned in the incinerator as per Part D Item 3.

-Solid waste that cannot be burned is transferred to the Roberts Bay waste management facility for packaging and offsite for disposal.

-Drill cuttings produced during 2011 were disposed of at the approved cuttings disposal area at Boston.

-Sewage and greywater produced on site is processed in the sewage treatment plant as per Part D Item 11. No Sludge was removed from the sewage treatment plant. Approximately 3 m³ of Doris Camp sewage sludge was burned in the Boston incinerator in April 2011 to help eliminate the backlog created when the Doris incinerator was out of service due to a mechanical malfunction.

-Hazardous materials such as waste oil, glycol, and contaminated soil are being shipped to Doris North either to be reclaimed or shipped offsite on the 2012 summer sealift for disposal in an approved facility as per Part D Item 5.

-Fuel berm effluent is sampled for water quality against the discharge criteria of the licence. Effluent that meets the standards for discharge is released in accordance with the licence following a notification to the Inspector; effluent that does not meet the licence criteria is treated onsite until it is remediated to acceptable levels for discharge, or it is removed offsite for treatment/disposal.

-Effluent from the landfarm is sampled in accordance with the licence criteria for discharge - no discharges occurred from the facility in 2011.

- Effluent from the mine portal/decline is sampled in accordance with the criteria specified for Monitoring Station BOS-2 (Containment Pond). Approximately 207 cu.m. of water was pumped from the mine portal to the tundra in 2011.

B. A list of unauthorized discharges and a summary of follow-up actions taken [see Part B Item 7(ix)].

Spill No.: (as reported to the Spill Hot-line)


Date of Spill:

Date of Notification to an Inspector:

Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

Please see Item 9 of attached supplement for a list, including details, of all unauthorized discharges that occurred in 2011 under licence 2BB-BOS0712.

C. Revisions to the Spill Contingency Plan [see Part B Item 7(x)]

Other: (see additional details) 

Additional Details:

The NWB approved the revised Spill Contingency Plan in October 2010. Since then, updates have been made to the contact numbers, as well as tank location information and drawings showing tank locations. An updated copy of this plan is included with the submission of the annual report.

D. Revisions to the Abandonment and Restoration Plan [see Part B Item 7(x)]

Other: (see additional details)

Additional Details:

The Abandonment and Restoration Plan submitted in October 2007 has not been modified or revised.

E. Summary of Drilling Activities and Progressive Reclamation Work Undertaken of Drill Sites [see Part B Item 7(xii)]

Additional Details (i.e., work completed and future works proposed)

See the attached supplement at Item 12 for details.

F. Results of the Monitoring Program including [see Part B Item 7(vii)]

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where sources of water are utilized;

Details attached

Additional Details:

The coordinates for the freshwater intake (BOS-1) are in the attached coordinates file.

Drilling water source coordinates are maintained on file by the Geology Department for all water sources utilized proximal to the drill targets. Pertaining to 2BB-BOS0712, only Aimaokatalok (Spyder) Lake was utilized as a drill water source in 2011.

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are deposited;

Details attached

Additional Details:

The coordinates for waste discharge locations (BOS-2, 3, 4, 5, 6) are in the attached coordinates file.

Results of any additional sampling and/or analysis that was requested by an Inspector or the Board (as per Part B Item 7(xvii))

Additional Details: (date of request, analysis of results, data attached, etc)

N/A

G. Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported [see Part B Item 7(xvii)].

Additional Details: (Attached or provided below)

N/A

H. Any responses or follow-up actions on inspection/compliance reports [see Part B Item 7(xi)]

Additional Details: (Dates of Report, Follow-up by the Licensee)

See Item 11 of attached supplement for details on inspection action items and how these were addressed.

I. Any additional comments or information for the Board to consider

Please see attached supplement for additional information requirements set out in Licence No. 2BB-BOS0712.

Date Submitted:

March 31, 2012

Submitted/Prepared by:

Chris Hanks

Contact Information:

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Fax: (604) 980-0731

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GPS Coordinates for water sources utilized

Source Description	Latitude			Longitude		
	Deg °	Min ,	Sec "	Deg °	Min ,	Sec "
BOS-1 - Raw water supply intake at Spyder Lake	67	39	34.7	106	23	39.9

Source Description	UTM Easting	UTM Northing
Spider Lake	E440916	N7505123
Spider Lake	E440855	N7504594
Spider Lake	E440862	N7504751
Stickleback Lake	E441460	N7504362
Stickleback Lake	E441660	N7504820
Unnamed Lake	E433630	N7521420

GPS Locations of areas of waste disposal

[illegible]



**2011 2BB-BOS0712 Type B Water License
Annual Report
Supplemental Document**

Boston Camp

Nunavut Water Board

Prepared by
Hope Bay Mining Ltd.
North Vancouver, BC

Prepared for
Nunavut Water Board
Gjoa Haven, NU

March 2012

Executive Summary

2BB-BOS0712 Annual Report

Hope Bay Mining Ltd. (“HBML”) has filed its Annual Report on its activities during 2011 under Water Licence No. 2BB-BOS0712 issued by the Nunavut Water Board on July 20, 2007. Note in 2008 this licence was transferred from the previous owner, Miramar Hope Bay Mining Ltd., to HBML. As set out in Part B, Item 7 of the Licence, the report includes information with respect to the following topics:

- a summary of water use and waste disposal activities
- a summary of data generated under the Monitoring Program
- a list of unauthorized discharges and a summary of follow-up actions taken
- a brief description of follow-up actions taken to address concerns detailed in inspection and compliance reports prepared by the Inspector
- up to date contact information with respect to the Spill Contingency Plan
- A description of all progressive and/or final reclamation work undertaken
- A summary of modification and/or major maintenance work carried out on the water supply and waste disposal facilities
- A summary of consultation with local organizations and residents of nearby communities
- A brief description of future studies currently planned or proposed

**Aolapkaeyin Naetomik Okaohen
2BB-BOS0712 Ukeogoagaagan Unipkaak**

Hope Bay Mining Ltd. (“HBML”) tonihihimaliktun Ukeotoagaagan Unipkamiknik havaamigun 2011-mi ukeommi ilagani Imaknik Atogeagani Laeseoyum Napaa 2BB-BOS0712 toniyaohimayok Nunavumi Imalikiyin katimayenin July 20-mi 2007-mi. Kaoyimalogo 2008-mi una laeseoyok nuhimayok hivoagun nanminikaktugaloamin, Miramar-konin Kapihiliktumi Oyagaktakvik-kunin ukunuga HBML-kunin. Okakhimayumi Naonaepkun B-mi, Ilikuktok 7 Laeseoyumi, unipkak ilakaktok hivunikhiyotikhanik ukununa:

- naetomik okaoheoyonik imaknik atoknigagun ikagolikiyotilo
- naetomik okaoheoyonik hivunikhiyotikhan ilagani Amigiyotinun Havaam
- titigakhimayonik agiktaohimagitun kuvigaeyun naetomilo okaoheoyonik upiyotinik kigoagun
- naetomik okaoheoyonik upiyotinik ihoakhiyaagani ihomalutaoyun titigakhimayun ilitokhaeyutinin maligoateakmagaalunen makpigaagini ihoakhakhimayaeni Ilitokhaeyim
- nutaanik okakatikhanik hivunikhiyumanikan Kuveyokakan Havaagiyakhaenun Upalogaeyonmik
- okateaklogin tamaeta hivumuginaktun kigolelo nunan utiktitpaleayagani ilitkuhenun havaagiyaovaleayun
- naetomik okaoheoyonik notaguktitiyutinik ihoakhaotiniklunen imiktakvikon havaoheoyun ikagukvelo pikotaoyunik
- naetomik okaoheoyonik okakatigegutinun nunalikni timeoyuni inoelo haneanetun nunalikni
- naetomik okaoheoyonik hivunikhami ilitokhaotikhanik taya ihoakhaktaoliktun atoktaoyumayolunen

[illegible]

- [illegible]

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Appendix A: Annual Monitoring Report – 2BB-BOS0712

1. The monthly and annual quantities in cubic meters of all freshwater obtained from Aimaokatalok (Spyder) Lake at Monitoring Station BOS-1 [as per Part B Item 7(i)]

Boston Camp was open from January 1, 2011 to November 12, 2011. Exploration drilling supported out of Boston Camp occurred between March and October. Table 1 summarizes the 2011 monthly and annual quantities of freshwater obtained for domestic and drilling use under licence 2BB-BOS0712 at monitoring station BOS-1 from Aimaokatalok Lake and drill water sources proximal to drill sites. Records of geographical coordinates for water extraction for drilling are maintained on file.

The volumes shown in Table 1 differ from those submitted in the monthly monitoring reports for licence 2BB-BOS0712 due to calculation errors identified once the monthly numbers were reviewed in preparation for this annual report. After a careful review of all data for 2011, it was determined that there were errors in the meter readings for the domestic raw water used for the first three months of 2011. A calibration check of the water meter revealed that it read approximately 13% too low. The water meter was recalibrated March 29, 2011 and steps were taken to ensure scheduled calibrations occurred throughout the year to verify that the values were accurate. Furthermore, an error in the spreadsheet calculations resulted in the conversion from gallons to cubic metres instead of litres to cubic metres during the first quarter of 2011. An additional error in September resulted in the total cumulative usage by month, reported in the monthly monitoring reports to the end of the year, to under-report the true cumulative total by 340 m³. All values presented in Table 1 represent the corrected values for 2011.

All water used under Boston Licence 2BB-BOS0712 was in compliance with specified values.

Table 1 – Monthly and annual quantities of all freshwater obtained from Aimaokatalok Lake at BOS-1, and sources proximal to drill Sites in 2011, in cubic meters (m³).

Month	Domestic Usage	Drilling Usage	Total Cumulative Usage by Month
January	14	No Drilling	14
February	21	No Drilling	35
March	56	38	129
April	93	132	354
May	141	167	662
June	199	253	1114
July	265	111	1490
August	252	28	1770
September	209	142	2121
October	152	28	2301
November	34	No Drilling	2335
December	Camp Closed	No Drilling	
Total	1436	899	2335

2. The monthly and annual quantities in cubic meters of Mine water pumped from the underground [as per Part B Item 7(ii)]

A total of 207 m³ of water was discharged from the Boston Portal during August, 2011. The water was discharged onto the tundra to the west of the portal at UTM 7505312 N, 441358 E as per the approval of the Inspector.

3. The monthly and annual quantities in cubic meters of treated Mine water and surface drainage discharged at Monitoring Station Number BOS-2 [as per Part B Item 7(iii)]

No discharges occurred from the monitoring station BOS-2 during 2011.

4. The monthly and annual quantities in cubic meters of treated Sewage effluent discharged at Monitoring Station Number BOS-3 [as per Part B Item 7(iv)]

Boston Camp was open from January 1 to November 12, 2011. The results in Table 2 reflect the discharge volume data collected for this period by month. After a careful review of the discharge data, it was determined that there were errors in the meter readings, along with errors in the spreadsheet used to record the data. A calibration check of the meter revealed that it was out of calibration. As a result of the errors discovered, Table 2 shows the values for the first three months reported as equivalent to the domestic water usage; the issues with the meters on both the intake and discharge lines were repaired in March 2011.

An error was made in the calculation of the cumulative annual sewage effluent discharge volume in May; therefore, the monthly SNP report under-reported the discharge by 6 m³. This error is corrected below.

Table 2 – Monthly and annual quantities of treated sewage effluent discharged from BOS-3 in 2011, in cubic meters (m³).

Month	Monthly Discharge Volume	Annual Cumulative Volume Discharged
January	14	14
February	21	35
March	56	91
April	93	184
May	153	337
June	191	528
July	253	781
August	233	1014
September	197	1211
October	134	1345
November	34	1379

December	Camp Closed	
Total annual volume recorded	~	1379

5. The monthly and annual quantities in cubic meters of Sludge removed from the Sewage Disposal Facility [as per Part B Item 7(v)]

No sludge was removed from the Sewage Disposal Facility during 2011.

6. The annual quantities in cubic meters of all soil and types of contaminants from all locations that are placed within the Land farm facility [as per Part B Item 7(vi)]

In 2011, no new material was deposited in the Land farm facility at Boston Camp. The area is being used as temporary storage for drums which have been prepared to be moved to Doris Camp in winter 2012 for proper categorization prior to their backhaul to an approved waste handling facility for disposal/treatment.

7. Tabular summary of all data generated under the Monitoring Program [as per Part B Item 7(vii) and Part J Item 24]

Tables setting out data generated under the Monitoring Program appear at Appendix A of this document.

8. A summary of modifications and/or major maintenance work carried out on the Water Supply and the Waste Disposal Facilities, including all associated structures, and an outline of any work anticipated for the next year [as per Part B Item 7(viii)]

No changes were made to the water supply or waste disposal facilities in 2011. No work is anticipated for 2012.

9. A list of unauthorized discharges and follow-up action taken [as per Part B Item 7(ix)]

Date of Spill: February 20, 2011

Spill No: N/A

Date of Notification to an Inspector: N/A

Product Spilled: Diesel

Details of Spill: During fuelling of the camp generator day tank, the operator temporarily left the nozzle unattended and approximately 20L of diesel overflowed onto the floor of the generator room. No fluid escaped the building to the environment. The spill was cleaned up with sorbent pads.

Date of Spill: March 21, 2011

Spill No: 11-087

Date of Notification to an Inspector: April 1, 2011

Product Spilled: Brine (salt water)

Details of Spill: A spill of approximately 400 liters of brine (salt water) spilled onto the ice at Aimaokataluk (Spyder) Lake as a result of an incorrectly positioned brine tank. The cause is therefore human error. The spilled brine was immediately cleaned up and contained. The surface of the ice was scraped to remove residual brine. The incident was reported to the NT-NU Spill Line (Spill # 11-087).

Date of Spill: March 26, 2011

Spill No: 11-088

Date of Notification to an Inspector: April 1, 2011

Product Spilled: Brine (salt water)

Details of Spill: A spill of approximately 400 liters of Brine (salt water) spilled onto the ice at Aimaokataluk (Spyder) Lake as a result of a malfunctioning over-pressure valve. The cause of this spill was deemed mechanical in nature. Because this was the second incident at this location, the drill crew was instructed to do a complete inspection on all components to ensure similar incidents did not occur. Additionally, the crew was refreshed on all procedures and operations at this drill by the supervisor. This spill was immediately cleaned up and contained, and the ice surface scraped over. When the drill rig was moved, the area was once again cleaned up.

Date of Spill: May 7, 2011

Spill No: N/A

Date of Notification to an Inspector: N/A

Product Spilled: Diesel Oil

Details of Spill: Approximately 2 litres of diesel oil was spilled as a result of a leaking drain plug on a tank in the pump shack on Orbit 24 at Spyder Lake. The spill was cleaned up and the plug was repaired.

Date of Spill: May 7, 2011

Spill No: N/A

Date of Notification to an Inspector: N/A

Product Spilled: Diesel

Details of Spill: Approximately 4-5 litres of diesel oil spilled as a result of a crack in a containment tray at the sloop on Orbit 24 at Spyder Lake. The spill was cleaned up and the leak was repaired.

Date of Spill: July 14, 2011

Spill No: 11-281

Date of Notification to an Inspector: July 14, 2011

Product Spilled: Brine (salt water) and Drill Cuttings

Details of Spill: Drilling contractor spilled an unspecified amount of brine solution and drill cuttings during the drilling process, leaching brine from the drill rig to the shore of Spyder Lake. This was reported to the Nunavut Spill Line by the drilling contractor and an investigation was

started (#11-281). The drill has been removed and HBML is developing plans to remediate the site.

Date of Spill: July 25, 2011

Spill No: N/A

Date of Notification to an Inspector: N/A

Product Spilled: N/A

Details of Spill: The Sewage Treatment Facility was non-compliant with the Water Licence for fecal coliform counts for two sampling events in July, likely due to an increase in camp loading numbers and a lag time in bacterial functioning to adequately digest the effluent. Subsequent sampling in August indicated the plant came back into compliance with the criteria of the licence.

Date of Spill: September 14, 2011

Spill No: N/A

Date of Notification to an Inspector: N/A

Product Spilled: Hydraulic Oil

Details of Spill: Approximately 40 litres of hydraulic oil spilled on the Boston Camp airstrip (67° 39' 16" N; 112° 22' 56" W) as a result of a blown hydraulic hose on a skid-steer that was unloading an aircraft. The contaminated gravel was removed and placed in 45 gal drums pending off-site disposal. The hydraulic hose was replaced and the skid-steer placed back in service.

Date of Spill: November 14, 2011

Spill No: N/A

Date of Notification to an Inspector: N/A

Product Spilled: Hydraulic Oil

Details of Spill: A spill of approximately 2 litres of hydraulic oil occurred on the airstrip apron (67° 39' 16" N; 112° 22' 56" W) as a result of a ruptured hose fitting on a Cat 277 Skid-Steer that was operating there. The oil contaminated snow was removed and placed in a container pending proper disposal. The hose fitting was replaced and the skid-steer placed back in service.

10. Updates or revisions to the Abandonment and Restoration Plan, QA/QC, Waste Rock and Ore Storage Plan, Spill Contingency Plan, Landfill Plan, and Landfarm Plan [as per Part B Item 7(x)]

In 2011, updates were made to the QA/QC Plan and the Spill Contingency Plan. The QA/QC Plan updates were submitted to the NWB in January 2011. Updates to the Spill Contingency Plan were made in fall 2011 and include updates to contact numbers, tank location information, and drawings that show tank locations. An updated copy of this plan is included with the submission of the annual report.

11. A brief description of follow-up action taken to address concerns detailed in inspection and compliance reports prepared by the Inspector [as per Part B Item 7(xi)]

Two AANDC inspections of Boston Camp took place in 2011: the first on March 15, 2011 and the second between July 11 and 13, 2011. An inspection report was provided for the March 15 inspection only. HBML submitted a follow-up report, regarding the March 15 inspection, to the Inspector and the NWB on June 20, 2011. The following list outlines the issues brought up during the March 15 inspection and includes the follow-up action taken by HBML:

- Water Supply: At the time of the inspection the pump house shack was located on the lake, but will be moved back on land in the spring. The pump house was placed on the lake due to frozen lines. A plan should be developed to resolve this issue.
 - The pumphouse at Boston Camp has always been placed out on the ice in winter. It is unclear what the expectation is with regards to this issue.
- Waste Disposal: To date the recorded sewage effluent was 701,479 Litres. However, it is unknown if this number is a combination of effluent discharge from both the Windy and Boston camps or from Boston alone.
 - The meter that is recording the discharge at the sewage treatment plant has been in place since Boston reopened in June 2010. The monthly average for sewage effluent is ~58 m³/month and this is consistent with the population numbers at Boston since June 2010.
- Solid Waste: Wood materials (pallets etc) will have to be dealt with at some point.
 - Wood clean-up is on-going and the spring clean-up will be performed before the spring AANDC inspection.
- Fuel Storage: Waste oil in the maintenance shack was stored in 5 Gallon containers with no covers. This should be removed and stored properly in the lined area designated for fuel/waste oil storage.
 - The waste oil issue in the maintenance shop was dealt with on the day of the inspection.

The following list outlines the issues brought up during the July 11-13 inspection and includes the follow-up action taken by HBML:

- The landfarm is full and there are drums of soil and sewage sludge piled on top
 - HBML has packaged the drums for transport back to Doris during the winter resupply and backhaul program scheduled for March 2012. Samples were collected from the landfarm in summer 2011. Additional sampling will take place in spring 2012 to determine if the soils could be remediated with proper landfarm management.
- Many old drill sites across the belt require reclamation to remove drill stems and general debris, and to repair vegetation die-off and thermokarsting.
 - HBML has scheduled a belt-wide inventory of drill sites to identify reclamation requirements at each historic hole for 2012. Drill stems will be cut and capped at as many holes as possible in 2012 during the inventory program.
- Blind connection point on diesel tank #7 appears to be leaking
 - HBML had noticed this leak in the days before the inspection. The tank was subsequently emptied and the repair is scheduled for July 2012.
- Hydrocarbon stains visible in various locations around site

- HBML has picked up some of the stained gravel and has scheduled a spring clean-up to remove all visible stains.

12. A summary of drilling activities and progressive reclamation of drill sites [as per Part B Item 7(xii)]

Drilling activities at the Boston deposit took place between March 8 and October 15, 2011. Drilling was located in the Boston Camp area. Drill hole information is tabulated in Table 4.

Table 1 – 2011 drilling summary

Hole ID	Easting	Northing	Length (m)	Lease	Program Phase
11SBD410	440915.26	7505121.69	651.00	Boston 1	Winter
11SBD411	440855.30	7504593.94	194.40	Boston 1	Winter
11SBD411A	440855.47	7504593.88	938.11	Boston 1	Winter
11SBD412	440915.03	7505121.42	864.00	Boston 1	Winter
11SBD413	440469.46	7503793.54	468.00	Boston 4	Winter
11SBD414	440862.93	7504751.68	42.40	Boston 1	Winter
11SBD414A	440861.69	7504750.12	900.00	Boston 1	Winter
11SBD415	441462.30	7504363.38	171.00	Boston 1	Winter
11SBD416	441419.98	7504228.12	195.00	Boston 1	Winter
11SBD417	441660.46	7504819.61	84.00	Boston 1	Winter
11SBD417A	441660.46	7504819.61	893.20	Boston 1	Winter
11SBD417AW1	441660.49	7504819.24	54.00	Boston 1	Summer
11SBD418	441213.00	7505054.00	198.50	Boston 1	Summer
11SBD419	441176.80	7504895.97	243.00	Boston 1	Summer
11SBD420	441264.02	7505040.34	275.00	Boston 1	Summer
11SBD421	441424.29	7504449.38	133.45	Boston 1	Summer
11SBD421A	441430.29	7504459.14	348.30	Boston 1	Summer
11SBD421B	441430.23	7504459.02	249.00	Boston 1	Summer
11SBD422	441397.84	7504535.72	908.00	Boston 1	Summer

Diamond drilling activities were supported using tracked vehicles, such as the Caterpillar Challenger, bulldozers, Nodwell, pickup trucks with tundra tracks, and snowmobiles.

The Polydrill de-silting system was used to facilitate re-circulation of all drill fluids and minimize silt runoff from all ice-based drill holes. Cuttings from on ice drilling were stored in an approved area on site. All drill sites were inspected upon completion of drilling, as part of the standard operating procedures, to ensure that each drill site is properly cleaned up.

a) Progressive reclamation of drill sites

Reclamation of the drill sites above were undertaken in 2011 and this included removing the casing, backfilling the holes with bentonite, placing coco matting around the impacted area and spreading peat moss over the coco matting. Several drill sites from drilling activities that took

place prior to Newmont taking ownership of the site still require reclamation. These sites will be inventoried in 2012 and reclaimed on a case-by-case basis.

13. An updated estimate of the current Boston restoration liability based upon the results of the restoration research, project development monitoring, and any modifications to the site plan [as per Part B Item 7(xiii)]

No adjustments to reclamation liability were required as no modification of the Boston facilities were completed.

14. An estimate of both the current and anticipated volume of waste rock and ore stockpiled on site [as per Part B Item 7(xiv)]

It is estimated that there are approximately 47,400 m³ of ore stockpiled on site at Boston Camp based on digital models of the ore removed historically from the underground workings at Boston. There is no estimate for the anticipated waste rock and ore to be stockpiled, because there is no mining activity occurring or currently planned for Boston.

15. A public consultation/participation with local organizations and residents of the nearby communities, if any were conducted [as per Part B Item 7(xv)]

Community consultation continued in accordance with the Community Relations Plan and is a responsibility of the Environment and Social Responsibility (ESR) department of HBML. Community consultation continued to focus on the construction of the Doris North Project, the proposed changes to Doris North, and providing information to stakeholders on Phase II of staged development of the Hope Bay Belt.

HBML maintained two staff members in Cambridge Bay in 2011: Manager of Community and External Relations, primarily responsible for implementing the Community Relations Plan, with support from the ESR Director and the IIBA Coordinator. The resident HR representative transitioned to Braden Burry Expediting as a Logistics Coordinator for Cambridge Bay. The resident HR Representative position was based out of Doris North for the remainder of the year.

Cambridge Bay Logistics Hub

Cambridge Bay continues to be the logistics hub for HBML in the Kitikmeot. Employees from across the region are flown to Cambridge Bay, and are then transported to Doris North. Under the auspices of the Doris North IIBA Implementation Committee, KIA and HBML have investigated the optimization of travel arrangements for Inuit workers to and from work. Due to improvements in camp load planning and accommodation at Hope Bay it was not necessary to house any workers at Cambridge Bay and shuttle them to work as in previous years.

Alcohol and Drugs

Although security and safety measures cannot ensure a 100% drug and alcohol free workplace, we are confident that our measures against alcohol and drug consumption on site are reasonably effective while respecting the individual privacy rights of our workforce. Safety statistics are a reasonable proxy to measure the success of alcohol and drug interdiction; in 2011 HBML passed the 3 million person hour safety milestone without a lost time accident.

Community Relations Monthly Summary

January

- HBML had 10,000 core boxes for the Hope Bay exploration program built in Cambridge Bay. By building these boxes in Cambridge Bay, it is hoped that local employment can be promoted in favor of southern contractors and freight costs into the Arctic.
- HBML met with the Ekaluktutiak Hunters and Trappers Association (EHTO) to update them on the DNA hair snagging program for both grizzly bears and wolverine at Hope Bay. Ultimately, the EHTO was interested in becoming involved in this program, and provided an experienced hunter as a field assistant for this important wildlife research in 2011.
- HBML ESR staff worked with Rescan Environmental socio-economic consultants to conduct a tour of the Kitikmeot region, gathering information and conducting interviews with key informants in order to update our socio-economic baseline of information in preparation for Phase II development.

February

- Beginning in February, HBML ESR staff began planning for the Doris North Portal Ceremony. The intention of this event was to commemorate, with invited northern stakeholders, HBML going underground at Doris North.
- HBML attended and sponsored the Kitikmeot Trade Show held in Cambridge Bay. Supply Chain personnel were on hand to deliver a 2010 business forecast and ESR delivered a project update to delegates. HBML facilitated a KIA Lands Division inspection of the Hope Bay facilities.
- HBML announced the signing of the KIA Capacity Agreement. HBML also worked with KIA to finalize a Kitikmeot Skills Strategy funding application for mine training under the federal Strategic Partnerships Fund.
- HBML provided Nunavut content for sustainable development and community relations reporting. Our 2010 activities can be viewed at: www.beyondthemine.com.

March

- The primary community relations event for the month was the Doris Portal Ceremony attended by a number of Nunavut politicians and community leaders to celebrate underground mining progress at Hope Bay. A dedication to Saint Barbara was performed, as well as a comprehensive mine tour for all visitors.

- HBML began regularly attending Hamlet of Cambridge Bay Canadian High Arctic Research Station (CHARS) local committee monthly meetings. The purpose of these meetings is to help prepare the community of Cambridge Bay for the construction and operation of this research facility. Significant opportunity exists for partnerships and collaboration between HBML and the Government of Canada in relation to resource development studies and science.
- An IIBA Implementation Committee meeting was held in Cambridge Bay, focusing on human resource issues.
- Our contract archeologist went to both Kugluktuk and Cambridge Bay to deliver public presentations on the archeological fieldwork that is routinely conducted annually at Hope Bay. There was a great deal of interest from the Elders Committee of the Kitikmeot Heritage Society in this work, and informative feedback provided in interpreting various types of heritage sites.
- HBML facilitated a dialogue with Kitikmeot Caterers and Kitikmeot Foods to support more country food being served at Site.
- HBML facilitated a number of sign translations for various site locations and activities into Inuktitut and Inuinnaqtun pursuant to the *Inuit Language Protection Act*.

April

- HBML attended the Government of Nunavut sponsored Uranium Forum held in Cambridge Bay on behalf of the Nunavut/NWT Chamber of Mines.
- HBML supported Kitikmeot Catering in obtaining additional country foods from Kitikmeot Foods to serve at site.
- HBML discussed a draft Wildlife Monitoring MOU with the GN Department of the Environment (DOE). A draft MOU was submitted to HBML from DOE that in part allowed for HBML funding support to regional scale caribou surveys. HBML provided four comments back to DOE on the draft document. Further to this, HBML and other Chamber of Mines members provided industry comment on the draft Nunavut Caribou Study.

May

- Early in May, a face to face meeting was facilitated between Jim Spenceley and Charlie Evalik in Cambridge Bay, primarily to touch base regarding various issues facing the two parties.
- HBML staff worked to fill summer field assistant positions, focused on supporting baseline and monitoring work programs, with interested Inuit from the Kitikmeot who may be considering or were already enrolled in environmental post-secondary training.
- Work was completed on preparation for a community consultation tour in June.
- In mid-May, HBML facilitated another KIA Lands inspection trip to Site.
- At the end of May, work was completed on the redraft of a mine training MOU between the Government of Nunavut, Nunavut Arctic College, the Kitikmeot Economic Development Commission, the Kitikmeot Inuit Association, and HMBL. The purpose of this redraft was to update the document originally signed in 2007.

June

- At the beginning of June, HBML conducted a community consultation tour of the Kitikmeot Region. All communities were visited except for Gjoa Haven, which could not be reached due to poor weather. The purpose of the tour was to provide a Doris North project update and provide the public with information on HBML proposals to amend the Doris North Type A water licence and to mine at other locations in the Hope Bay district (Phase II).
- A meeting was held in the middle of June in Edmonton between the KIA and HBML to discuss technical aspects of water licence Amendment 3 and the Phase II Project Proposal.

July

- HBML provided logistical and camp support to joint DOE/GNWT caribou aerial survey teams conducting post calving aerial surveys of Bathurst and Ahlak caribou.
- Two Inuit elders participated in the 2011 archeological field program with Gabriella Prager, a contract archeologist for HBML. This participation was facilitated by Cambridge Bay ESR.
- A brine spill was discovered emanating from a diamond drill adjacent to the Boston Camp. Details of this accident were reported to our project stakeholders as part of crisis management communications.
- In addition to staffing regular environmental field assistants, additional Inuit assistants were hired in order to conduct the fish out of Tail Lake.

August

- A crisis response training exercise was held at site this month. The purpose of this training was to ensure timely and effective communications at times when emergency events occur at any Newmont site.
- HBML responded to a request from Cambridge Bay RCMP to use a Hope Bay helicopter to rescue a boat in distress in the Coronation Gulf area. Upon investigation, it was concluded that the distress call was too far away for helicopters at site to respond.
- During August and into September, HBML transported lake trout harvested from Tail Lake to Cambridge Bay for consumption. The EHTO and local Elders were consulted as to which fish were fit for human consumption, and which fish were to be used for dog food. All fish considered fit for people to eat were distributed to the Cambridge Bay Food Bank for use by food bank recipients. Fish fit for dogs only were stored at the Cambridge Bay expediting building and distributed to dog owners upon request.

September

- During the first part of the month, HBML contracted two fishermen through the EHTO in order to catch fish near Hope Bay. The purpose of this harvest was to provide fish tissue samples for baseline purposes.
- HBML Geology staff provided a presentation to Kilinik High School students in Cambridge Bay. The presentation focused on geology, how to find gold, and careers in geology.
- At the end of the month, HBML facilitated the annual NIRB Site Inspection of Doris North Mine.

November

- In the middle of the month, a focus group of hunters met in Cambridge Bay to provide HBML with land use information related to the Hope Bay project area. The focus group was well attended and provided useful information that contributed to the Phase II project proposal.
- A significant amount of effort was placed in developing Traditional Knowledge research options for Phase II environmental assessment.
- HBML attended a Nunavut Mine Training Strategy session in Rankin Inlet.
- At the end of the month, HBML made a presentation to the Kitikmeot Mayor's Meeting. The purpose of this meeting was to provide local administrators and mayors with a project update and answer any questions that they had regarding the Hope Bay Project.

16. Summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year [as per Part B Item 7(xvi)]

No abandonment and restoration work was completed in 2011 at Boston.

17. Summary of any specific studies or reports requested by the Board, and a brief description of any future studies planned or proposed [see Part B Item 7(xvii)]

No specific studies or reports were requested by the Board in 2011 and no studies are planned or proposed for 2011.

18. Reporting of all artesian flow occurrences, including the location (GPS coordinates) and dates [as per Part F Item 3]

No artesian flow occurrences were encountered in 2011.

Appendix A

Annual Monitoring Report – 2BB-BOS0712

a) Tabular Summary of Monitoring Information

The following tables summarize the results of sampling undertaken in 2011 as part of the monitoring program detailed in Part J of licence 2BB-BOS0712.

Table 1 summarizes the results of sampling undertaken at monitoring station BOS-3. Effluent at BOS-3 was compliant for discharge for all parameters with the exception of fecal coliform in July and pH in October. Additionally, there was visible oil and grease reported in the April sample. Oil and Grease visibility assessment in the November monthly compliance sampling was not undertaken due to an error. Adjustments in the process were made in July to bring the fecal coliforms back within acceptable levels and by the end of July, the plant showed signs of recovery. The pH non-compliance was immediately rectified upon receipt of lab analysis. The oil and grease visibility assessment for April was also rectified.

Table 1 – Summary of monitoring information gathered from BOS-3 in 2011, in mg/L, unless specified otherwise

Months	Parameters	Sampling Date	BOS-3
January	Biochemical Oxygen Demand (BOD ₅)	05/01/11	5.3
	Total Suspended Solids		7.0
	Fecal Coliform (CFU/100mL)		4
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		<1.0
	pH (pH unit)		6.48
February	Biochemical Oxygen Demand (BOD ₅)	04/02/11	7.5
	Total Suspended Solids		<3.0
	Fecal Coliform (CFU/100mL)		6
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		1.6
	pH (pH unit)		6.59
March	Biochemical Oxygen Demand (BOD ₅)	06/03/11	2.1
	Total Suspended Solids		9.0
	Fecal Coliform (CFU/100mL)		16
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		<1.0
	pH (pH unit)		6.31
April	Biochemical Oxygen Demand (BOD ₅)	01/04/11	9.7
	Total Suspended Solids		8.0
	Fecal Coliform (CFU/100mL)		23
	Oil and Grease (Visibility)		Visible
	Oil and Grease		2.4
	pH (pH unit)		6.71
May	Biochemical Oxygen Demand (BOD ₅)	09/05//11	23.8
	Total Suspended Solids		11.0
	Fecal Coliform (CFU/100mL)		1540
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		1.4
	pH (pH unit)		6.62
June	Biochemical Oxygen Demand (BOD ₅)	05/06//11	18.8
	Total Suspended Solids		11.0
	Fecal Coliform (CFU/100mL)		9700
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		<1.0

Months	Parameters	Sampling Date	BOS-3
	pH (pH unit)		6.81
July	Biochemical Oxygen Demand (BOD ₅)	03/07/11	37.1
	Total Suspended Solids		49.0
	Fecal Coliform (CFU/100mL)		22,400
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		1.4
	pH (pH unit)		6.96
July	Biochemical Oxygen Demand (BOD ₅)	18/07/11	17.1
	Total Suspended Solids		36.0
	Fecal Coliform (CFU/100mL)		14,200
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		<1.0
	pH (pH unit)		7.04
August	Biochemical Oxygen Demand (BOD ₅)	03/08/11	33.3
	Total Suspended Solids		54.0
	Fecal Coliform (CFU/100mL)		5000
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		<1.0
	pH (pH unit)		6.90
September	Biochemical Oxygen Demand (BOD ₅)	11/09/11	8.0
	Total Suspended Solids		20.0
	Fecal Coliform (CFU/100mL)		320
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		<1.0
	pH (pH unit)		6.70
October	Biochemical Oxygen Demand (BOD ₅)	03/10/11	28.7
	Total Suspended Solids		80.0
	Fecal Coliform (CFU/100mL)		270
	Oil and Grease (Visibility)		NVS*
	Oil and Grease		<1.0
	pH (pH unit)		4.46
November	Biochemical Oxygen Demand (BOD ₅)	03/11/11	10.1
	Total Suspended Solids		31.0
	Fecal Coliform (CFU/100mL)		420
	Oil and Grease (Visibility)		n/a
	Oil and Grease		<1.0
	pH (pH unit)		6.35
December	Biochemical Oxygen Demand (BOD ₅)	Camp Closed 12/11/11	-
	Total Suspended Solids		-
	Fecal Coliform (CFU/100mL)		-
	Oil and Grease (Visibility)		-
	Oil and Grease		-
	pH (pH unit)		-

* NVS = no visible sheen

Monitoring station BOS-4, located at the point where treated sewage effluent enters Aimaokatalok Lake, was sampled during July, August, and September. No fecal coliform results were obtained for August due to a sampling error. A summary of sampling results for BOS-4 is provided in Table 2.

Table 2 - Summary of monitoring information gathered from BOS-4 in 2011, in mg/L, unless specified otherwise

Parameters	BOS-4	BOS-4	BOS-4
ALS Lab Reference #	L1026366-1	L1039840-3	L1057117-1
Sample Date and Time	02/07/11@ 15:30	02/08/11 @ 11:20	11/09/11 @ 6:30
pH	7.23	7.31	7.24
Oil & Grease	<1.0	<1.0	1.4
Oil & Grease (Visibility)	NVS	NVS	NVS
Fecal Coliforms	<1 CFU/100 ml	n/a	<1 CFU/100 ml
Total Suspended Solids	<3.0 mg/l	5.0	<3.0
BOD	<2.0 mg/l	<2.0	<2.0

In September, samples were collected from the bulk fuel storage facility monitoring station BOS-5. The effluent exceeded the licence discharge criteria for lead. Results of this sampling are provided in Table 3. During September, discharge from BOS-5 was directed into the containment pond (BOS-2) pending treatment.

Table 3 – Results of 2011 Water Quality Sampling from Bulk Fuel Storage Facility BOS-5, in mg/L, unless specified otherwise

Parameters	BOS-5
ALS Lab Reference #	L1059074-1
Sample Date and Time	14/09/11@8:45
pH	8.03
Oil & Grease	<1.0
Oil & Grease (Visibility)	NVS*
Benzene	<0.00050
Toluene	<0.00050
Ethylbenzene	<0.00050
Total Lead	0.0107

*NVS = no visible sheen

Effluent water quality sampling was conducted at monitoring station BOS-2 on August 2, 2011. Samples were taken before and after treatment through an oil/water activated carbon media separator process. Neither sample met the licence effluent discharge criteria for lead, though a reduction in lead values was achieved through the process after 5 hours of recirculation; further treatment will be required. No discharges occurred from the facility in 2011.

Table 4 – Results of 2011 water quality sampling from containment pond monitoring station BOS-2, in mg/L, unless specified otherwise

Parameters	BOS-2 (Pre-Treatment)	BOS-2 (Post Treatment)
ALS Lab Reference #	L1039840-1	L1039840-2
Sample Date and Time	02/08/11@8:28	02/08/11@13:30
Total Arsenic	0.143	0.0812
Total Copper	0.0075	<0.0012
Total Lead	0.00229	0.00114
Total Nickel	0.0617	0.0102
Total Zinc	0.0049	0.0102
Total Suspended Solids	<3.0	<3.0
Oil and Grease	<1.0	<1.0
Oil and Grease (visible sheen)	NVS*	NVS*
pH	n/a	n/a

*NVS = no visible sheen

During August 2011, approximately 207 m³ of mine water, per Part D Item 7, was pumped from the Boston portal area to the tundra at UTM 7505312 N, 441358 E. With the exception of nickel, all other parameters met discharge criteria during discharge. The cause of the elevated nickel in the August 22, 2011 sample was not determined. Table 5 shows the water quality results for the water discharged.

Table 5 – Results of 2011 water quality sampling from Boston Portal, in mg/L, unless specified otherwise

Parameters	Boston Portal	Boston Portal
ALS Lab Reference #	L1049720-1	L1049728-1
Sample Date and Time	17/08/11@16:30	22/08/11@16:00
Total Arsenic	0.0756	0.222
Total Copper	0.0025	0.0323
Total Lead	0.00023	0.00013
Total Nickel	0.0633	1.40
Total Zinc	<0.0103	0.0432
Total Suspended Solids	<3.0	4.0
Oil and Grease	<1.0	<1.0
Oil and Grease (visible sheen)	NVS	NVS
pH	7.58	7.54

**NVS = no visible sheen*

Sampling was not conducted at monitoring station BOS-6 during 2011 as there was negligible accumulated effluent for sampling.

In July 2011, flow was observed at monitoring station BOS-7 and water quality samples were collected. Results are provided in Table 6. Note, however, that there is no landfill at the Boston facility. The water sample, called “landfill leachate”, taken at monitoring station BOS-7, was taken to ensure that general site run-off water quality was meeting license requirements.

Table 6 – Results of 2011 water quality sampling from Boston “Landfill Leachate” monitoring station BOS-7, in mg/L, unless specified otherwise

Parameters	BOS-7
ALS Lab Reference #	L1026366-2
Sample Date and Time	03/07/11@12:45
pH	7.19
Oil & Grease	<1.0
Oil & Grease (Visibility)	NVS*
Benzene	<0.00050
Toluene	<0.00050
Ethylbenzene	<0.00050
Xylene	<0.00050
F1 (C6-C10)	<0.10
F2 (>C10-C16)	<0.25
F3 (C16-C34)	<0.25
F4 (C34-C50)	<0.25
Phenols (4AAP)	0.0065
Conductivity (EC) (uS/cm)	35.9
Total Hardness (as CaCO ₃)	11.1
Nitrate-Nitrite as N	<0.071
Nitrate (as N)	<0.050
Nitrite (as N)	<0.050
Calcium	4.75
Potassium	0.568
Magnesium	1.58
Sodium	2.86
Sulphate	1.26
Total Alkalinity (as CaCO ₃)	6.9
Total Arsenic	0.00219
Total Cadmium	0.000019
Total Chromium	0.00083
Total Copper	0.00276
Total Nickel	0.00353
Total Lead	0.00146
Total Iron	0.568
Total Mercury	n/a

*NVS = no visible sheen

During July 2011, opportunistic sampling was undertaken at three locations where seepage was detected at monitoring station BOS-8 (as three distinct seepage points can be identified during periods of runoff, this monitoring point has been sub-categorized into individual monitoring stations BOS-8A, BOS-8B, and BOS-8C; the geographical references for each of the sampling locations are maintained on file). Table 7 provides the results of this sampling

Table 7 – Results of opportunistic sampling at the Boston waste rock and ore storage pad monitoring station BOS-8, where flow was observed in 2011, in mg/L, unless specified otherwise

Parameters	BOS-8A	BOS-8B	BOS-8C
ALS Lab Reference #	L1026374-1	L1026374-2	L1026374-3
Sample Date and Time	03/07/11@11:50	03/07/11@12:00	03/07/11@12:10
pH	7.99	7.60	7.51
Sulfate	233	254	150
Total Ammonia	<0.050	<0.050	<0.050
Conductivity (EC) (uS/cm)	1050	1850	1450
Total Suspended Solids	n/a	n/a	n/a
Aluminum	0.0461	0.0145	0.0087
Antimony	0.00124	0.00614	0.00214
Barium	0.0386	0.0803	0.0612
Beryllium	<0.0050	<0.00050	<0.00050
Cadmium	0.000015	0.000039	0.000014
Chromium	0.00045	0.00018	0.00013
Cobalt	0.00064	0.00893	0.00130
Copper	0.00278	0.00165	0.0094
Iron	0.173	0.478	0.025
Lead	0.00014	<0.000050	<0.000050
Lithium	<0.0050	0.0387	0.0227
Molybdenum	0.000604	0.000609	0.000818
Manganese	0.0136	0.0432	0.0109
Nickel	0.00804	0.0454	0.00885
Selenium	0.00041	0.00238	0.00137
Tin	<0.00010	<0.00010	<0.00010
Thallium	<0.000050	<0.000050	<0.000050
Titanium	0.00066	<0.00044	<0.00030
Uranium	0.000047	0.000020	<0.000010
Vanadium	0.00021	0.00016	0.00011
Zinc	0.0038	0.0055	<0.0030
Arsenic	0.00274	0.00164	0.00151
Silver	0.000093	0.000032	<0.000010

b) Quantities of water utilized for camp, drilling and other purposes

Table 8 summarizes the daily quantities of water (both recorded and estimated) utilized for camp, drilling and other purposes from all sources. Further details regarding water use calculations for 2011 can be found at Item 1 of the Annual Report Supplement. Boston Camp was open from January 1, 2011 to November 12, 2011.

Table 8 – 2011 daily water consumption for domestic and drill water use, in cubic meters (m³), where ** represents volumes that were calculated or estimated due to issues with water metre (see Item 1 of Annual Report Supplement for details)

Date	Domestic Use Daily Total	Water Usage by Drill Rig			Daily Drill Usage Total	Daily Total for All Uses
		Orbit 22	Orbit 24	Orbit 25		
01/01/11	**0.55	-	-	-	-	0.55
02/01/11	**0.57	-	-	-	-	0.57
03/01/11	**0.45	-	-	-	-	0.45
04/01/11	**0.57	-	-	-	-	0.57
05/01/11	**0.39	-	-	-	-	0.39
06/01/11	**0.43	-	-	-	-	0.43
07/01/11	**0.21	-	-	-	-	0.21
08/01/11	**0.03	-	-	-	-	0.03
09/01/11	**0.29	-	-	-	-	0.29
10/01/11	**0.5	-	-	-	-	0.5
11/01/11	**0.41	-	-	-	-	0.41
12/01/11	**0.35	-	-	-	-	0.35
13/01/11	**0.6	-	-	-	-	0.6
14/01/11	**0.47	-	-	-	-	0.47
15/01/11	**0.45	-	-	-	-	0.45
16/01/11	**0.35	-	-	-	-	0.35
17/01/11	**0.41	-	-	-	-	0.41
18/01/11	**0.31	-	-	-	-	0.31
19/01/11	**0.69	-	-	-	-	0.69
20/01/11	**0.55	-	-	-	-	0.55
21/01/11	**0.41	-	-	-	-	0.41
22/01/11	**0.47	-	-	-	-	0.47
23/01/11	**0.53	-	-	-	-	0.5
24/01/11	**0.31	-	-	-	-	0.3
25/01/11	**0.39	-	-	-	-	0.4
26/01/11	**0.37	-	-	-	-	0.4
27/01/11	**0.45	-	-	-	-	0.5
28/01/11	**0.68	-	-	-	-	0.7
29/01/11	**0.54	-	-	-	-	0.5
30/01/11	**0.35	-	-	-	-	0.4
31/01/11	**0.82	-	-	-	-	0.8
01/02/11	**0.41	-	-	-	-	0.4
02/02/11	**0.41	-	-	-	-	0.4
03/02/11	**0.43	-	-	-	-	0.4
04/02/11	**0.54	-	-	-	-	0.5
05/02/11	**0.42	-	-	-	-	0.4
06/02/11	**0.25	-	-	-	-	0.3
07/02/11	**0.63	-	-	-	-	0.6
08/02/11	**0.63	-	-	-	-	0.6
09/02/11	**0.36	-	-	-	-	0.4
10/02/11	**0	-	-	-	-	0.0
11/02/11	**1.04	-	-	-	-	1.0
12/02/11	**0.57	-	-	-	-	0.6

Date	Domestic Use Daily Total	Water Usage by Drill Rig			Daily Drill Usage Total	Daily Total for All Uses
		Orbit 22	Orbit 24	Orbit 25		
13/02/11	**0.5	-	-	-	-	0.5
14/02/11	**0.8	-	-	-	-	0.8
15/02/11	**0	-	-	-	-	**0.0
16/02/11	**0.47	-	-	-	-	**0.5
17/02/11	**0.71	-	-	-	-	**0.7
18/02/11	**0.54	-	-	-	-	**0.5
19/02/11	**0.65	-	-	-	-	**0.7
20/02/11	**1.99	-	-	-	-	**2.0
21/02/11	**0.94	-	-	-	-	**0.9
22/02/11	**2.05	-	-	-	-	**2.1
23/02/11	**2.86	-	-	-	-	**2.9
24/02/11	**0.57	-	-	-	-	**0.6
25/02/11	**1.05	-	-	-	-	**1.1
26/02/11	**0.51	-	-	-	-	**0.5
27/02/11	**0.86	-	-	-	-	**0.9
28/02/11	**0.87	-	-	-	-	**0.9
01/03/11	**0.7	-	-	-	-	**0.7
02/03/11	**1	-	-	-	-	**1.0
03/03/11	**1.2	-	-	-	-	**1.2
04/03/11	**1.1	-	-	-	-	**1.1
05/03/11	**1	-	-	-	-	**1.0
06/03/11	**1.4	-	-	-	-	**1.4
07/03/11	**1.4	-	-	-	-	**1.4
08/03/11	**1.3	1.5	-	-	1.5	**2.8
09/03/11	**1.3	1.9	-	-	1.9	**3.2
10/03/11	**1.8	-	-	-	-	**1.8
11/03/11	**1.8	-	-	-	-	**1.8
12/03/11	**2.3	1.2	-	-	1.2	**3.5
13/03/11	**1.9	0.9	-	-	0.9	**2.8
14/03/11	**2.4	0.7	-	-	0.7	**3.1
15/03/11	**2.4	0.6	-	-	0.6	**3.0
16/03/11	**2.4	0.5	-	-	0.5	**2.9
17/03/11	**2	0.5	-	-	0.5	**2.5
18/03/11	**2	0.3	4.2	-	4.5	**6.5
19/03/11	**2	0.5	4.1	-	4.6	**6.6
20/03/11	**2.1	0.3	3.6	-	3.9	**6.0
21/03/11	**2.8	0.3	4.6	-	4.9	**7.7
22/03/11	**2	0.3	3.3	-	3.6	**5.6
23/03/11	**3.2	0.5	0.3	-	0.8	**4.0
24/03/11	**2.3	1	0.3	-	1.3	**3.6
25/03/11	**1	0.4	2.1	-	2.5	**3.5
26/03/11	**1.6	0.4	0.5	-	0.9	**2.5
27/03/11	**2.7	0.4	0.1	-	0.5	**3.2
28/03/11	**1.8	0.5	0.2	-	0.7	**2.5
29/03/11	**1.8	0.5	0.03	-	0.5	**2.3
30/03/11	**1.8	0.5	0.2	-	0.7	**2.5
31/03/11	**1.8	0.5	0.2	-	0.7	**2.5
01/04/11	2.7	2.6	0.0	-	2.6	5.3
02/04/11	2.6	3.1	0.4	-	3.6	6.2
03/04/11	3.4	2.4	2.7	-	5.0	8.4
04/04/11	3.4	3.5	0.7	-	4.2	7.6
05/04/11	3.3	3.3	2.2	-	5.5	8.8
06/04/11	3.1	3.7	2.2	-	5.9	9.0
07/04/11	2.8	5.2	1.8	-	7.0	9.8
08/04/11	3.1	4.1	4.1	-	8.2	11.3
09/04/11	1.6	8.2	0.4	-	8.6	10.2
10/04/11	2.7	6.4	1.5	-	7.9	10.6
11/04/11	3.0	6.3	1.3	-	7.6	10.6
12/04/11	2.8	7.3	1.9	-	9.2	12.0
13/04/11	3.1	2.0	1.1	-	3.1	6.2

Date	Domestic Use Daily Total	Water Usage by Drill Rig			Daily Drill Usage Total	Daily Total for All Uses
		Orbit 22	Orbit 24	Orbit 25		
14/04/11	3.6	1.7	5.3	-	7.0	10.6
15/04/11	4.1	0.5	0.1	-	0.6	4.8
16/04/11	2.4	0.4	0.2	-	0.6	3.0
17/04/11	2.3	0.6	0.6	-	1.2	3.5
18/04/11	2.3	4.7	1.1	-	5.8	8.1
19/04/11	3.0	6.8	1.4	-	8.1	11.1
20/04/11	3.3	2.0	2.3	-	4.3	7.6
21/04/11	2.3	1.6	3.8	-	5.4	7.7
22/04/11	3.3	1.9	2.0	-	3.9	7.2
23/04/11	3.1	1.5	0.8	-	2.4	5.5
24/04/11	4.2	1.3	0.0	-	1.3	5.5
25/04/11	2.7	1.0	1.4	-	2.4	5.1
26/04/11	3.1	1.0	2.0	-	3.0	6.0
27/04/11	3.6	1.0	1.0	-	2.1	5.7
28/04/11	3.6	0.6	1.3	-	1.9	5.5
29/04/11	4.2	2.4	0.1	-	2.5	6.6
30/04/11	4.3	0.9	0.4	-	1.3	5.5
01/05/11	4.4	0.1	2.7	-	2.8	7.2
02/05/11	5	-	3.4	-	3.4	8.4
03/05/11	4.9	0.5	2.5	-	3.0	7.9
04/05/11	4.1	0.4	3.3	-	3.7	7.8
05/05/11	3.7	0.4	2.8	-	3.2	6.9
06/05/11	4.6	1.3	3	-	4.3	8.9
07/05/11	4.6	1.9	1.4	-	3.3	7.9
08/05/11	3.7	2.1	2	-	4.1	7.8
09/05/11	3.9	0.6	2.2	7.4	10.2	14.1
10/05/11	3.5	-	0.5	8.8	9.3	12.8
11/05/11	4.2	-	1.1	0.7	1.8	6.0
12/05/11	4.1	-	0.3	0.5	0.8	4.9
13/05/11	3.5	-	2	11.8	13.8	17.3
14/05/11	4.3	-	1.5	7.8	9.3	13.6
15/05/11	4.3	-	2.2	12	14.2	18.5
16/05/11	4.8	-	1.8	4.5	6.3	11.1
17/05/11	4.5	-	2.1	5.5	7.6	12.1
18/05/11	4.4	-	-	4.9	4.9	9.3
19/05/11	4.3	-	-	4.1	4.1	8.4
20/05/11	5.3	-	-	3.1	3.1	8.4
21/05/11	4.3	-	-	1.7	1.7	6.0
22/05/11	0	-	-	2.8	2.8	2.8
23/05/11	8.4	-	-	3.5	3.5	11.9
24/05/11	1.4	-	-	8.2	8.2	9.6
25/05/11	6.7	-	-	5.2	5.2	11.9
26/05/11	4.4	-	-	10	10.0	14.4
27/05/11	6.4	-	-	3.9	3.9	10.3
28/05/11	5.6	-	-	5.5	5.5	11.1
29/05/11	5.5	-	-	5.4	5.4	10.9
30/05/11	6	-	-	2	2.0	8.0
31/05/11	6	-	-	5.9	5.9	11.9
01/06/11	4.7	0.1	-	4	4.1	8.8
02/06/11	5.8	-	-	12.4	12.4	18.2
03/06/11	6.3	0.5	-	4.6	5.1	11.4
04/06/11	5.9	-	-	2.8	2.8	8.7
05/06/11	6	8.2	-	5.8	14.0	20.0
06/06/11	5.8	5	-	4.4	9.4	15.2
07/06/11	6.8	10.1	3.3	3.8	17.2	24.0
08/06/11	4.8	6.5	0.8	3.2	10.5	15.3
09/06/11	7.6	0.5	2.7	1	4.2	11.8
10/06/11	6.8	1.9	2.7	2.1	6.7	13.5
11/06/11	5.2	3.1	4.7	0.2	8.0	13.2
12/06/11	5.9	4.1	3.8	2.3	10.2	16.1

Date	Domestic Use Daily Total	Water Usage by Drill Rig			Daily Drill Usage Total	Daily Total for All Uses
		Orbit 22	Orbit 24	Orbit 25		
13/06/11	5.7	6.7	2.4	2.1	11.2	16.9
14/06/11	5.6	3.6	0.3	1.4	5.3	10.9
15/06/11	4.9	19.3	4.2	1.9	25.4	30.3
16/06/11	6	5.3	7	2.6	14.9	20.9
17/06/11	6.8	2.2	1.2	0.3	3.7	10.5
18/06/11	7.1	5.5	1.3	0.4	7.2	14.3
19/06/11	5.6	4.3	1.3	4.5	10.1	15.7
20/06/11	6.6	5.3	5.5	0.9	11.7	18.3
21/06/11	6.8	3.5	-	-	3.5	10.3
22/06/11	6.2	4.7	-	-	4.7	10.9
23/06/11	7.1	0.3	-	1	1.3	8.4
24/06/11	13	-	-	1.1	1.1	14.1
25/06/11	5.5	5.2	-	1.7	6.9	12.4
26/06/11	6.6	0.4	-	1.6	2.0	8.6
27/06/11	7.6	1.8	1.7	2.4	5.9	13.5
28/06/11	6.4	3	3	1.7	7.7	14.1
29/06/11	6.8	1.8	16.7	1.4	19.9	26.7
30/06/11	13	0.6	3.7	2	6.3	19.3
01/07/11	7.4	-	3.6	-	3.6	11.0
02/07/11	6.8	-	3.66	3.05	6.7	13.5
03/07/11	7.7	4.8	1.95	3.05	9.8	17.5
04/07/11	7.2	4.8	1.96	3.05	9.8	17.0
05/07/11	8.7	4.8	2.27	3.05	10.1	18.8
06/07/11	10.5	3.5	4.09	0	7.6	18.1
07/07/11	8.1	2.6	3.64	0.6	6.8	14.9
08/07/11	9.1	1.2	1.22	1.4	3.8	12.9
09/07/11	9.2	3.6	9.62	0.2	13.4	22.6
10/07/11	9.7	4.3	3.29	0.1	7.7	17.3
11/07/11	8.8	4.3	2.2	0.2	6.7	15.5
12/07/11	9.5	6.8	8.1	-	14.9	24.4
13/07/11	7.6	0.2	9.9	-	10.1	17.7
14/07/11	7.1	-	-	-	-	7.1
15/07/11	10.7	-	-	-	-	10.7
16/07/11	7.9	-	-	-	-	7.9
17/07/11	9.8	-	-	-	-	9.8
18/07/11	9.7	-	-	-	-	9.7
19/07/11	9.6	-	-	-	-	9.6
20/07/11	10.0	-	-	-	-	10.0
21/07/11	10.2	-	-	-	-	10.2
22/07/11	10.0	-	-	-	-	10.0
23/07/11	7.3	-	-	-	-	7.3
24/07/11	8.4	-	-	-	-	8.4
25/07/11	8.0	-	-	-	-	8.0
26/07/11	8.1	-	-	-	-	8.1
27/07/11	6.3	-	-	-	-	6.3
28/07/11	8.1	-	-	-	-	8.1
29/07/11	8.8	-	-	-	-	8.8
30/07/11	8.2	-	-	-	-	8.2
31/07/11	6.5	-	-	-	-	6.5
01/08/11	9.5	-	-	-	-	9.5
02/08/11	7.9	-	-	-	-	7.9
03/08/11	8.7	-	-	-	-	8.7
04/08/11	9.5	-	-	-	-	9.5
05/08/11	8.0	-	-	-	-	8.0
06/08/11	9.3	-	-	-	-	9.3
07/08/11	5.0	-	-	-	-	5.0
08/08/11	6.5	-	-	-	-	6.5
09/08/11	14.5	-	-	-	-	14.5
10/08/11	6.1	-	-	-	-	6.1
11/08/11	7.7	-	-	-	-	7.7

Date	Domestic Use Daily Total	Water Usage by Drill Rig			Daily Drill Usage Total	Daily Total for All Uses
		Orbit 22	Orbit 24	Orbit 25		
12/08/11	9.7	-	-	-	-	9.7
13/08/11	6.9	-	-	-	-	6.9
14/08/11	7.6	-	-	-	-	7.6
15/08/11	6.3	-	-	-	-	6.3
16/08/11	6.3	-	-	-	-	6.3
17/08/11	6.1	-	-	-	-	6.1
18/08/11	8.4	-	-	-	-	8.4
19/08/11	7.5	-	-	-	-	7.5
20/08/11	7.9	-	-	-	-	7.9
21/08/11	5.6	-	2.1	-	2.1	7.7
22/08/11	12.0	-	1.8	-	1.8	13.8
23/08/11	8.6	-	3.1	-	3.1	11.7
24/08/11	9.3	-	0.5	-	0.5	9.8
25/08/11	8.0	-	1.7	-	1.7	9.7
26/08/11	10.3	-	2.6	-	2.6	12.9
27/08/11	7.2	-	-	-	-	7.2
28/08/11	8.6	-	-	-	-	8.6
29/08/11	8.0	-	1	-	1	9.0
30/08/11	7.0	-	9.2	-	9.2	16.2
31/08/11	7.6	-	5.9	-	5.9	13.5
01/09/11	8	-	4.5	-	4.5	12.5
02/09/11	7.3	-	9.1	-	9.1	16.4
03/09/11	7.5	-	1.7	-	1.7	9.2
04/09/11	7.7	-	-	-	-	7.7
05/09/11	6.9	-	8.9	-	8.9	15.8
06/09/11	7.8	-	5.2	-	5.2	13.0
07/09/11	6.3	-	3.5	-	3.5	9.8
08/09/11	6.8	-	4.6	-	4.6	11.4
09/09/11	6.1	-	5	-	5	11.1
10/09/11	5.8	-	9.1	-	9.1	14.9
11/09/11	5.8	-	14.9	-	14.9	20.7
12/09/11	5.6	-	7.2	-	7.2	12.8
13/09/11	7.4	-	4.4	-	4.4	11.8
14/09/11	5.9	-	1.6	-	1.6	7.5
15/09/11	8.2	-	2	-	2	10.2
16/09/11	6.4	-	3	-	3	9.4
17/09/11	6.4	-	4.5	-	4.5	10.9
18/09/11	9.2	-	2.2	-	2.2	11.4
19/09/11	7.1	-	1.4	-	1.4	8.5
20/09/11	6.6	-	8.8	-	8.8	15.4
21/09/11	7.6	-	2.8	-	2.8	10.4
22/09/11	7.4	-	4.2	-	4.2	11.6
23/09/11	6.7	-	4	-	4	10.7
24/09/11	8.2	-	9.3	-	9.3	17.5
25/09/11	6.2	-	8.1	-	8.1	14.3
26/09/11	6.8	-	2.9	-	2.9	9.7
27/09/11	6.2	-	1.5	-	1.5	7.7
28/09/11	7.2	-	2.7	-	2.7	9.9
29/09/11	5.7	-	2.8	-	2.8	8.5
30/09/11	8.1	-	2.5	-	2.5	10.6
01/10/11	5.4	-	3.2	-	3.2	8.6
02/10/11	4.7	-	3.4	-	3.4	8.1
03/10/11	4.1	-	2.8	-	2.8	6.9
04/10/11	5.5	-	1.7	-	1.7	7.2
05/10/11	4.5	-	3.1	-	3.1	7.6
06/10/11	6.1	-	1.1	-	1.1	7.2
07/10/11	7.5	-	2.1	-	2.1	9.6
08/10/11	4.0	-	1.3	-	1.3	5.3
09/10/11	4.6	-	2.5	-	2.5	7.1
10/10/11	3.6	-	3.2	-	3.2	6.8

Date	Domestic Use Daily Total	Water Usage by Drill Rig			Daily Drill Usage Total	Daily Total for All Uses
		Orbit 22	Orbit 24	Orbit 25		
11/10/11	5.0	-	3.2	-	3.2	8.2
12/10/11	4.9	-	0.1	-	0.1	5.0
13/10/11	5.5	-	-	-	-	5.5
14/10/11	7.5	-	-	-	-	7.5
15/10/11	4.6	-	-	-	-	4.6
16/10/11	5.3	-	-	-	-	5.3
17/10/11	5.8	-	-	-	-	5.8
18/10/11	6.4	-	-	-	-	6.4
19/10/11	6.6	-	-	-	-	6.6
20/10/11	7.1	-	-	-	-	7.1
21/10/11	6.2	-	-	-	-	6.2
22/10/11	5.3	-	-	-	-	5.3
23/10/11	4.6	-	-	-	-	4.6
24/10/11	4.7	-	-	-	-	4.7
25/10/11	2.9	-	-	-	-	2.9
26/10/11	3.8	-	-	-	-	3.8
27/10/11	4.0	-	-	-	-	4.0
28/10/11	3.1	-	-	-	-	3.1
29/10/11	2.9	-	-	-	-	2.9
30/10/11	3.1	-	-	-	-	3.1
31/10/11	2.7	-	-	-	-	2.7
01/11/11	**5.88	-	-	-	-	**5.88
02/11/11	**5.88	-	-	-	-	**5.88
03/11/11	4.1	-	-	-	-	4.1
04/11/11	3.7	-	-	-	-	3.7
05/11/11	2.2	-	-	-	-	2.2
06/11/11	1.8	-	-	-	-	1.8
07/11/11	2.7	-	-	-	-	2.7
08/11/11	1.7	-	-	-	-	1.7
09/11/11	2.9	-	-	-	-	2.9
10/11/11	1.1	-	-	-	-	1.1
11/11/11	0.7	-	-	-	-	0.7
12/11/11	1.4	-	-	-	-	1.4
13/11/11- 30/11/11	Camp Closed/No Drilling					
December	Camp Closed/No Drilling					
Total	1,435	264.1	422.3	213.5	900	2,335

c) Results of Toxicity Testing

HBML carried out the following toxicity testing in July and August 2011 to demonstrate non-acute toxicity of the treated sewage effluent at the point prior to entry into Aimaokatalok Lake at monitoring station BOS-4, conducted in accordance with the following test procedures:

- i. Acute lethality to Rainbow Trout, *Oncorhynchus mykiss* (as per Environment Canada's Environmental Protection Series Biological Test Method EPS/1/RM/13); and
- ii. Acute lethality to the crustacean, *Daphnia magna* (as per Environment Canada's Environmental Protection Series Biological Test Method EPS/1/RM/14).

Effluent was found to be non-acutely toxic to Rainbow Trout or *Daphnia magna*. Results are provided in Table 9.

Table 9 – 2011 annual toxicity testing on treated sewage effluent from BOS-4

Parameters	First Toxicity Test	Second Toxicity Test
ALS Lab Reference #	L1026366-1	L1039840-3
Sample Date and Time	02/07/11@15:30	02/08/11@11:20
Trout Bioassay - LC50	No sub-lethal biological effects observed. No toxicity observed.	No sub-lethal biological effects observed. No toxicity observed.
Daphnia Magna – LC50	No toxicity observed.	No toxicity observed.