Appendix J1

Report: *Inspection Reports*

AGNICO EAGLE

February 12, 2014

Mr. Luis Manzo
Director of Lands
Kivalliq Inuit Association
PO Box 340
Rankin Inlet, Nunavut
X0C 0G0

RE: Response to Environmental Legal Compliance Audit Report - Agnico-Eagle Meadowbank Mine

Mr. Manzo,

Please find the below updates in regards to the inspection and audit performed by KIA and EEM and the associated report dated, November 2012. This letter is an update to the letter sent to Stephane Hartman dated February 26, 2013 (attached).

Environmental Compliance Evaluation Findings and Observations

1) Project Certificate, condition 8: *The certificate requires that semi-annual groundwater sampling be conducted. Sampling is conducted annually. Of the 4 wells, only 1 is currently operational. Recommendations: Repair and reinstate the three (3) broken wells). Conduct sampling semi-annually or document approval from NIRB to sample on an annual basis only.*

Action: AEM completed a 2013 groundwater sampling program. AEM now has 2 operating wells. Repair and restoration attempts on the other wells were unsuccessful. However, AEM has begun taking samples of water appearing in production drill holes within the open pit mine. A full report on the 2013 Groundwater program will be available in the 2013 Annual Report. Our sampling this year took place in August, September and October.

2) Project Certificate, condition 21: *The facility's weather station does not collect precipitation data. Baker Lake precipitation data is used. Recommendations: Document that this substitution is acceptable to NIRB.*

Action: The AEM Meteorological Monitoring Plan has been updated and now states that AEM will collect on site precipitation data at the Meadowbank site, using manual precipitation gauges. These gauges have been installed.

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4) Project Certificate, condition 28: *The facility is not yet a signatory to the International Cyanide Code. The current target for implementation is 2013. The certificate requested that the facility be compliant prior to storing or handling cyanide at the facility. Recommendations: Continue implementation of ICMC.*

Action: AEM is in fact a signatory of the International Cyanide Management Code (ICMC); we have been a signatory since August 31, 2011. AEM has 3 years to implement all principals of the cyanide code. In Q2 of 2013 an internal audit took place at the Meadowbank site to determine what further requirements need to be met for the Cyanide Code prior to a 2014 audit by the ICMC. The Meadowbank Mine site now has an ICMC facilitator who works with all departments to ensure all outstanding items from the external audit are completed prior to the external audit which is tentatively scheduled for August 2014.

5) Project Certificate, condition 32: *There is an absence of signage on the access road at every 10 km, in English and Inuktitut, prohibiting public use. In addition, there is an absence of signage along the access road to identify when one is entering and leaving crown land. Recommendations: Signs prohibiting public use have been printed and now need to be posted. Print and post signs indicating when entering and leaving crown land or obtain permission from NIRB to be exempt from this condition.*

Action: Signs have been posted depicting when entering and exiting Crown and Inuit owned land. The signs prohibiting public are erected in numerous locations. However, these signs will be installed every 10 km as requested in the project certificate in Q2 2014

7) WL, Part E, s. 3: *AEM has exceeded the maximum annual water consumption of 700,000m3 since 2010. However, the facility has, with the acceptance of the Board, implemented an action plan that is aimed at reducing the facility's consumption below the maximum annual consumption limit by the end of 2012. Should planned actions prove unsuccessful; a request to increase consumption will be requested. Recommendations: Continue with approved action plan.*

Action: Amendment for fresh water consumption: NWB technical meeting and pre-hearing conference completed in Baker Lake on October 16th and 17th, 2013. Final written hearing took placeonr January 17th, 2014. Currently waiting for final NWB decision.

8) WL, Part F, s. 9: *Signage was not posted at sampling locations as required by the permit. Corrective actions were being initiated at the time of the audit. Recommendations: Continue with ongoing actions.*

Action: All signage is now in place.

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AGNICO EAGLE

12) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (Fed): *Three (3) instances were observed where the storage of fuel delivery nozzles was weak. That is, after use the nozzles were simply laid on drums or equipment in a manner that allows residual product to drip out. The observations were made at the airport and fuel farm. Recommendations: Develop and communicate a procedure for storage of fuel delivery nozzles. Consider installing appropriate supports for fuel dispensing nozzles.*

Action: Please find the attached 3 fueling procedures that have been implemented on the Meadowbank site and associated facilities since the time of the Audit.

13) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (Fed): *The underground fuel line between the fuel farm and the power plant is not equipped with secondary containment or cathodic protection as per the requirements of the Regulation regarding Storage Tank Systems for Petroleum Products and Allied Petroleum Products. The diameter of the pipe is 4 inches (10.2 cm). Flow meters are, however, installed at both ends of the pipe system. Recommendations: Either: Modify the underground fuel line such that it complies with the requirements of the Code; or, Request an exemption to the Code requirements from the Nunavut Impact Review Board.*

Action: On September 18, 2013 a contractor came to the meadowbank site and preformed a hydrostatic test on the fuel line. I have attached the original report completed in French as well as a supplemental report in English. No leakage was detected. AEM is committed to performing this test annually. The flow meters are still in operation and weekly dip tests are performed on our main fuel tank – there is no indication of any product loss. AEM is currently reviewing further options which include the assessment of installing a double walled above ground fuel line to the power plant.

20) Environmental Protection Act - 5.1.3: *A mound of contaminated soil was observed at quarry 22 without any measures to prevent the discharge of a contaminant into the environment. Contaminated soils have historically been stockpiled at quarry 5, 6, and 22 without such measures. Recommendations: In the future, consider asking for KIA permission prior to storing contaminated soils on IOL. Future stockpiles of contaminated material should be stored to prevent the discharge of a contaminant to the environment. Ensure contaminated material is removed to an approved facility and analytical testing for residual hydrocarbon impact completed at each decommissioned quarry location.*

Action: All soil has been removed from Quarry 22 and moved to the AEM Landfarm. A completed version of AEM's Landfarm Design and Management Plan ver3 (Feb 2013) has been attached to this letter for your information.

In 2014, confirmatory sampling will be conducted on the surface area of Quarry 22.

I trust this course of action meets with your approval. Should you have any questions or concerns please feel free to contact me at jeffrey.pratt@agnico-eagle.com.

Sincerely,

Jeffrey Pratt
Environmental Coordinator
Agnico-Eagle Mines Ltd.
Meadowbank Division
(867) 793-4610 ext. 6728
jeffrey.pratt@agnico-eagle.com

CC: Kevin Buck – AEM
Stephane Robert – AEM

Appendix A

February 26, 2013

Stephen Hartman
Environmental Officer
Kivalliq Inuit Association
PO Box 340
Rankin Inlet, Nunavut
X0C 0G0

RE: Response to Environmental Legal Compliance Audit Report - Agnico-Eagle Meadowbank Mine

Mr. Hartman,

Thank you for the inspection and audit performed by KIA and EEM and the associated report dated, November 2012.

Please note the following Action Plan in response to the findings of the audit:

Environmental Compliance Evaluation Findings and Observations

1) Project Certificate, condition 8: *The certificate requires that semi-annual groundwater sampling be conducted. Sampling is conducted annually. Of the 4 wells, only 1 is currently operational. Recommendations: Repair and reinstate the three (3) broken wells). Conduct sampling semi-annually or document approval from NIRB to sample on an annual basis only.*

Action: AEM will be performing a groundwater sampling program in 2013 following recommendations from Golder Associates technical Memorandum entitled **2012 GROUNDWATER MONITORING AND WATER QUALITY RESULTS** (I have attached a copy of this) This information was provided to NIRB in Jan, 2013 (Response to NIRB Attached). AEM plans to use non-conventional method as alternative to permanent wells such as: Collecting groundwater infiltrated into production holes at base of pit, collection of water from horizontal boreholes drilled in pit wall, collect groundwater seeps in pit, etc. Also, it is the intent of AEM to reinstate two wells: MW 11-02 & MW 08-03. AEM staff will be leading all Groundwater Sampling in 2013. – This work will be performed and completed prior to October 15, 2013
AEM will implement Golder recommendations from the afore mentioned memorandum. In 2013, we will conduct 2 sampling events.

2) Project Certificate, condition 21: *The facility's weather station does not collect precipitation data. Baker Lake precipitation data is used. Recommendations: Document that this substitution is acceptable to NIRB.*

Action: This will be documented in the AEM Meteorological Monitoring Plan which will be updated by June 30, 2013; and submitted with the 2013 NIRB Annual report.

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3) Project Certificate, condition 25: *Waste segregation was generally observed to be good. However, 3 bags of waste food were found in a non-food bin near the incinerator and 2 bags of food were found in a non-food bin located near the kitchen. Recommendations: Communicate to all departments that food waste bags should be placed in the yellow containers.*

Action: AEM environmental department has conducted 24 departmental meetings since the time of the audit. At these meetings waste segregation was the main topic.. Also a memo went out in early 2013 regarding the feeding of wildlife which included waste segregation (memo attached). **Complete.**

4) Project Certificate, condition 28: *The facility is not yet a signatory to the International Cyanide Code. The current target for implementation is 2013. The certificate requested that the facility be compliant prior to storing or handling cyanide at the facility. Recommendations: Continue implementation of ICMC.*

Action: AEM is in fact a signatory of the International Cyanide Management Code; we have been a signatory since August 31, 2011. AEM has 3 years to implement all principals of the cyanide code. In Q2 of 2013 an internal audit will take place at the Meadowbank site to determine what further requirements need to be met for the Cyanide Code prior to a 2014 audit by the ICMC.

5) Project Certificate, condition 32: *There is an absence of signage on the access road at every 10 km, in English and Inuktitut, prohibiting public use. In addition, there is an absence of signage along the access road to identify when one is entering and leaving crown land. Recommendations: Signs prohibiting public use have been printed and now need to be posted. Print and post signs indicating when entering and leaving crown land or obtain permission from NIRB to be exempt from this condition.*

Action: Signs had been posted every 10 km's on Emergency Shelter's, until the Emergency Shelters were removed. Signs will be re-erected every 10 km's in the summer of 2013.. Also, signs for entering and exiting crown land will be made and erected by July 15, 2013.

6) Project Certificate, condition 28 & NWB Water License 2AM-MEA0815 PART F: An on-site laboratory was not put in place as specified in the certificate. Rather, samples are sent to accredited labs for analysis. The facility is, however, accredited for the analysis of pH, TSS and gold. Recommendations: Document that this substitution is acceptable to NIRB.

Action: AEM has an NWB approved QA/QC plan which includes the use of a third party lab as required by Water License No. 2AM-MEA0815, specified under Part I, Condition 19:
"The Licensee shall submit within six (6) months of License approval to an Analyst for approval, a Quality Assurance/ Quality Control Plan that includes requirements for independent third party sampling and analysis"
NIRB and NWB are aware of this; NIRB Technical Advisor and AANDC Inspectors have performed inspections on site and are well aware of this. We consider this a non-issue.

7) WL, Part E, s. 3: *AEM has exceeded the maximum annual water consumption of 700,000m3 since 2010. However, the facility has, with the acceptance of the Board, implemented an action plan that is aimed at reducing the facility's consumption below the maximum annual consumption limit by the end of 2012. Should planned actions prove unsuccessful; a request to increase consumption will be requested. Recommendations: Continue with approved action plan.*

Action: AEM has substantially decreased the freshwater intake. As of January 3, 2013 AEM had reduced water consumption by almost $40m^3$/hr. However, a recent Water Management Plan forecasted a reclaim water shortage. AEM will submit an application to increase the water usage on site. The amendment application will be submitted prior to August, 2013.

8) WL, Part F, s. 9: *Signage was not posted at sampling locations as required by the permit. Corrective actions were being initiated at the time of the audit. Recommendations: Continue with ongoing actions.*

Action: At the time of this audit more than 85% of the sample locations in fact did have signage in place. Some locations that did not have signage were in the process of being shut down for the winter. Currently, all sample locations now have signage indicating that a sampling location is present. Signage is posted in Inuktitut, English, and French languages. **Complete.**

9) Transportation of Dangerous Goods Regulations (Federal): *An Arctic Fuel truck driver was unable to produce his TDG training certificate (i.e.TDG card). Recommendations: Communicate the requirement to carry TDG cards to all those transporting regulated dangerous goods by road vehicle.*

Action: Arctic Fuel was contacted regarding this particular incident. Arctic Fuel manager re-assured that all drivers do in fact have their TDG certification. And that it is standard practice for drivers to have their TDG certificates with them. **Complete**

10) Transportation of Dangerous Goods Regulations (Federal): *The TDG certificate of one employee was not signed by the employer. Recommendations: Ensure all TDG certificates are signed by the employer.*

Action: Unsure which company's employee is being referred to in this instance. There are numerous contractors on site. See item #9.

11) Transportation of Dangerous Goods Regulations (Federal): *A sea-can used for the storage of dangerous goods that will subsequently be used for the transport of these had a hole along one of its bottom edges. Recommendations: Ensure sea-cans are not damaged prior to using them to store and transport dangerous goods.*

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Action: Prior to shipment of HAZMAT south each sea can will be examined and documented to ensure the seacan is suitable for transportation south (to be completed July/August 2013). In addition, any seacan used in the HAZMAT storage area will also be examined and documented as to the suitability of the seacan for storage. In effect February 2013 – **Complete.**

12) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (Fed): *Three (3) instances were observed where the storage of fuel delivery nozzles was weak. That is, after use the nozzles were simply laid on drums or equipment in a manner that allows residual product to drip out. The observations were made at the airport and fuel farm. Recommendations: Develop and communicate a procedure for storage of fuel delivery nozzles. Consider installing appropriate supports for fuel dispensing nozzles.*

Action: A new procedure is currently being developed to alleviate this concern. Appropriate storage for delivery nozzles will be installed. Procedure and storage system will be in place by March 31, 2013.

13) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (Fed): *The underground fuel line between the fuel farm and the power plant is not equipped with secondary containment or cathodic protection as per the requirements of the Regulation regarding Storage Tank Systems for Petroleum Products and Allied Petroleum Products. The diameter of the pipe is 4 inches (10.2 cm). Flow meters are, however, installed at both ends of the pipe system. Recommendations: Either: Modify the underground fuel line such that it complies with the requirements of the Code; or, Request an exemption to the Code requirements from the Nunavut Impact Review Board.*

Action: AEM has scheduled an expert in corrosion to attend the Meadowbank site in 2013 to give recommendations to address this problem. Once the recommendations are received AEM will implement them. In the interim the flow meters are monitored on a daily basis.

14) Work Site Hazardous Materials Information System Regulations (NU): *Certain departments (Met. Lab, Warehouse, Dyno-Nobel) use paper copies of Material Safety Data Sheets; these were not found to be maintained current. Recommendations: Implement a process to ensure that MSDS are maintained current.*

Action: MSDS found in Met. Lab, Warehouse, Dyno-Nobel are not official documents. These MSDS are just for reference. The official MSDS's are found on our local Intranet server, on all computers on site. These MSDS's are kept current and updated automatically by 3E Services, a service company that keeps all AEM's MSDS's valid. **Complete**

15) General Nuclear Safety and Control Regulations (Federal): *Nuclear gauge license not posted. Recommendations: Post a copy of the license at the entrance of the mill.*

<u>**Action**</u>: Nuclear Gauge License is posted in the Mill at the 3rd floor control area in a visible location, as this is an area that any individual going to the mill must go to prior to entering the mill. Also the inventory is posted at the front door of the mill from the Arctic Corridor going into the mill. **Complete**

16) Nuclear Substances and Radiation Devices Regulations (Federal): *The label for the gauge in the mill was covered in splatter and was not visible. Recommendations: Clean the label or relocate it to an area where it will not be affected by splatter.*

Action: The labels for the gauges were cleaned of splatter, by mill operations. The cleaning of these labels is completed during regular inspections. The movement of these signs will be evaluated. **Complete**

17) Incinerator Waste Management Plan: *Two instances were observed where food waste was in the wrong type of bin (one near the incinerator, one near the warehouse). Recommendations: Communicate requirement to all affected personnel.*

<u>**Action**</u>: As was completed for Item #3 -- AEM environmental department has attended 24 departmental meetings since the time of the audit. At these meetings waste segregation was the main topic. Also, a memo went out in early 2013 regarding the feeding of wildlife which included waste segregation (memo attached). **Complete.**

18) Wildlife Protection and Response Plan: *An arctic fox was observed at the landfill during the site visit. It was not clear at the time if the sighting would be recorded in the wildlife log. Recommendations: Ensure that all wildlife sightings are in the wildlife log.*

<u>**Action**</u>: All wildlife sightings, reports, and deterrent instances are documented in the wildlife log. **Complete**.

19) Production Lease (KVPL08D280): *The Kivalliq Inuit Association does not have a signed survey map for the Meadowbank project. Recommendations: Provide the Kivalliq Inuit Association with the certified copy of the*

<u>**Action**</u>: On October 22, 2012, a letter was sent to Mr. Luis Manzo, Director of Lands, Kivalliq Inuit Association, which was entitled Meadowbank Production Lease KVPL08D280 – Amendment Request. This letter included an up to date map of the Meadowbank Project.

20) Environmental Protection Act - 5.1.3: *A mound of contaminated soil was observed at quarry 22 without any measures to prevent the discharge of a contaminant into the environment. Contaminated soils have historically been stockpiled at quarry 5, 6, and 22 without such measures. Recommendations: In the future, consider asking for KIA permission prior to storing contaminated soils on IOL. Future stockpiles of contaminated material should be stored to prevent the discharge of a contaminant to the environment. Ensure contaminated material is removed to an approved facility and analytical testing for residual hydrocarbon impact completed at each decommissioned quarry location.*

Action: All contaminated material will be removed from quarry 22 before Oct 15, 2013. AEM has completed a Landfarm Design and Management Plan. The intent is to store all contaminated soil generated as a result of operations at the Meadowbank Landfarm Facility in the future.. AEM has monitored this situation with soils in quarries and there are no indications of discharge (i.e. surface). The Landfarm Design & Management Plan was submitted October 22, 2013 to NWB. Currently this plan is under review and revisions will be submitted to the NWB by March 15, 2013.

Opportunities for Improvement (EH&S)

During the time of the audit 12 opportunities for improvement were noted by EEM and KIA. These 12 items for improvement will be reviewed and taken under advisement by AEM and will be implemented as time permits.

In regard to KIA's request to be kept informed in with respect to asbestos on site, AEM's Health and Safety Department is completing an Asbestos Management Plan. Please contact Mr. Norm Ladouceur for more information and any updates pertaining to asbestos at Meadowbank. He can be reached at 819-759-3555 ext. 6720.

I trust this course of action meets with your approval. Should you have any questions or concerns please feel free to contact me at jeffrey.pratt@agnico-eagle.com.

Sincerely,

Jeffrey Pratt
Environmental Coordinator
Agnico-Eagle Mines Ltd.
Meadowbank Division
(867) 793-4610 ext. 6728
jeffrey.pratt@agnico-eagle.com

CC: Kevin Buck – AEM
Stephane Robert – AEM
Simeon Mikkungwak – KIA

TECHNICAL MEMORANDUM

DATE	October 19, 2012	**DOCUMENT No.**	Doc. 1386-1212210081 Ver0.
TO	Kevin Buck Agnico-Eagle Mines Limited Meadowbank Division		
CC	Dan Walker, Stéphane Robert		
FROM	Valerie Bertrand, Dale Holtze	**EMAIL**	vbertrand@golder.com

2012 GROUNDWATER MONITORING AND WATER QUALITY RESULTS
MEADOWBANK MINE, NUNAVUT

1.0 INTRODUCTION

This document provides a summary of the 2012 groundwater monitoring program carried out at the Meadowbank mine site and a summary of water quality results obtained in 2012.

Completion of the groundwater monitoring program is a condition of the Meadowbank Project Certificate No.004 issued by the Nunavut Impact Review Board (NIRB) in December 2006 and of the Water License No. 2AM-MEA0815 issued by the Nunavut Water Board (NWB) June 09, 2008. Maintenance and replacement of defective monitoring wells is also a condition of the Meadowbank NIRB project certificate and Water Licence.

1.1 Background

The proposed Goose Island and Portage open pits will be developed in a through talik (unfrozen ground that extends to the base of the permafrost) underneath Third Portage Lake. The tailings storage facility located in the basin of the north arm of Second Portage Lake is also believed to be situated over a through talik. Groundwater monitoring wells have been installed to provide information on groundwater quality in these taliks prior to and during mine operation. The objective of the groundwater sampling program, initiated in 2003, is two-fold:

- To monitor the salinity and quality of the deep groundwater to validate the pit groundwater inflow component of the site water quality model; and,
- To benchmark pre-mining and pre-tailing deposition groundwater quality against which to measure effects of mining on groundwater quality, if any.

To this end, groundwater flow and quality data has been collected from the Portage area since 2003 and has been used to verify and validate the water quality model results for the site. Groundwater in the Vault area is not monitored because the talik present under Vault Lake is not anticipated to extend through the permafrost to the deep aquifer.

Four monitoring wells were installed at the site in 2003. Three of these wells MW-03-02, MW03-03 and MW03-04) were damaged by frost action between 2004 and 2006. The fourth (MW03-01) was operable until 2010 when it was also damaged by frost action. The three defective wells were replaced in 2006 (MW06-05, MW06-06 and MW-06-07) but were again damaged by frost action. MW06-05 and MW06-06 were replaced in 2008 with a more robust design (MW08-02 and MW08-03). Well MW11-01 was installed on Goose Island adjacent to the Goose open pit outline, to replace well MW03-01, and well MW11-02 was installed at the tailings storage facility to replace MW06-07, to monitor shallow groundwater quality below the basin where tailings will be deposited. Monitoring well MW11-01 was decommissioned in July 2012 after being damaged during site operations in early 2012. Monitoring well MW11-02 became obstructed with development materials during the 2012 groundwater monitoring program and therefore could not be sampled. The well MW08-03 is also blocked and attempts to unblock the well in 2010, 2011 and 2012 were not successful.

Monitoring well MW08-02 was sampled in 2012. The locations of all groundwater monitoring wells and the instrumented borehole BH10-1 are shown in Figure 1. BH10-1 was sampled in 2010 prior to instrumenting the borehole with a thermistor to monitor ground temperature. This borehole is no longer available for groundwater monitoring.

2.0 MONITORING WELL DEVELOPMENT AND SAMPLE COLLECTION

The 2012 groundwater monitoring program aimed to collect groundwater samples from wells MW08-02, MW08-03 and MW11-02. Prior to sampling, each monitoring well was thawed by energizing the heating cable. Once completely thawed, each well was purged using compressed air and flexible 5/8-inch (o.d.) high density polyethylene (HDPE) WaTerra® tubing to remove melt water from the casing, which is not representative of formation water. Well development involved purging a minimum of 3 well volumes or until field-indicator chemical parameters stabilized (electrical conductivity, temperature and pH). Stabilization was considered to have been achieved when field-indicator readings varied by less than approximately 10% for three consecutive readings. Measurements obtained during well development are included in Appendix A.

Well MW11-01

Well MW11-01 was buried under crushed rock in early 2012 as a result of site operations. The well was subsequently uncovered, however the heat trace cable required to thaw the ice in the well was damaged and the ice could not be thawed. On July 28, 2012 well MW11-01 was decommissioned by sealing the well casing and annular space with well abandonment materials and bentonite pellets to the measured ice plug at 37 metres below the top of the casing.

Well MW11-02

The heating cable at MW11-02 were energized on July 23, 2012 by Agnico-Eagle staff with Golder personnel present. On July 24 the well was ice free and the water level was measured at 31 m below the top of the casing. As part of the well development procedure, WaTerra® tubing was installed in the well to remove melt water using compressed air. During purging, a portion of the tubing that touched the well casing, melted and stuck to the inside of the casing. A short circuit in the heat trace cable caused the cable to become energized beyond its design capacity and overheat the well casing. The melted WaTerra® tubing caused a blockage preventing access to formation water. In the afternoon of July 24, Agnico-Eagle staff adjusted the amperage of the cable. Actions were taken on July 24, 25 and 26 to remove the blockage but the blockage remained at approximately 25 depth, preventing access to formation groundwater. This well could not be sampled in 2012.

Well MW08-02

The heating cables at MW08-02 were energized on July 14, 2012 by Agnico-Eagle staff with Golder personnel present. On July 16 the well was free of ice and the water level was 22 m below the top of the casing. Purging was initiated on July 14 and carried through until July 22nd. A total of 963 litres or 4 well volumes were removed prior to sampling. The purge water was relatively free of sediment and beige-brown. The well remained in good condition throughout the purging process. On July 23, 2012 a nitrogen-operated Solinst® stainless steel Double

Valve Pump (DVP) attached to ¼-inch low density polyethylene (LDPE) tubing was lowered to approximately 135m below the top of the casing. To obtain a sample, the pump was controlled by a Solinst® Model 466 Electronic Pump Control Unit set at a sampling rate of approximately 100 mL/min. The water was color free at the time of sampling. The change in colour is attributed to the sample water passing gently through the LDPE tubing as opposed to turbulently travelling up the casing as it did during the purging process.

Well MW08-03

The heating cable at MW08-03 was energized on July 14, 2012 by Agnico-Eagle staff with Golder personnel present. The ice melted to a depth of 150 meters coinciding with the end of the heating cable. To remove the remaining ice bridge, heated lake water was recirculated in the well above the ice using WaTerra® tubing. On July 18th the well was free of ice to approximately 151 m and the water level had risen to 30 m below the top of the casing. Purging was initiated on July 18 and carried through until July 25th. A total of 657 litres or 3 well volumes were removed. The purge water was relatively free of sediment and beige, however, no sample was collected because field conductivity measurements of the purge water were consistently representative of melt water and not formation water. The ice bridge below 151 meters could not be removed because a longer hose (to recirculate heated water) was not available.

2.1 Sample Shipping

Samples from monitoring well MW08-02 were collected in triplicate. A duplicate pair of samples was shipped to Multilab of Val-d'Or within 24 hours of sampling in a cooler with ice packs and chain-of-custody form. One sample was retained in refrigeration on site for possible future analysis.

3.0 2012 GROUNDWATER MONITORING RESULTS

3.1 Comparative Guidelines

Groundwater quality data is compared to Third Portage Effluent Discharge Limits stated in the Meadowbank Water Licence for illustrative purposes only, since these regulated parameters apply to effluent, not site contact or groundwater quality. Constituent concentrations in the Licence are defined for total rather than dissolved phases and groundwater quality data is provided for both total and dissolved components.

3.2 Quality Assurance/Quality Control

Guideline procedures provided by the USEPA (2002) were followed during the sampling program to ensure that the samples collected from the wells were representative of water flowing through the targeted rock formations. These procedures included the following:

- Measurement of field parameters at selected intervals until stable readings (within 10% of each other) were acquired;
- Minimizing the exposure of the sampled water to the atmosphere;
- Using compressed, inert gas (nitrogen) to lift water from the well for sampling to avoid changing the redox properties of the formation water;
- Conducting in-situ measurements of sensitive chemical parameters (temp. pH, conductivity);
- Keeping the samples refrigerated from the time of collection until shipment to the laboratory; and,
- Shipping the samples to the laboratory in temperature-regulated coolers within the specified sample holding times.

Groundwater samples were collected in triplicate for monitoring well MW08-02. A duplicate pair of samples was shipped to the laboratory after collection. Analytical repeatability was tested by assessing the similarity between duplicate pairs of results. For each duplicate pairs of analysis where both results were higher than 5 times the method detection limit (MDL), the relative percent difference (RPD) was calculated as follows:

$$\text{RPD} = \frac{\text{absolute [difference (concentration of a given parameter)]}}{\text{[average (concentration of a given parameter)]}} \times 100$$

Per USEPA recommended methods (USEPA, 1994), an RPD of 20% or less was considered acceptable. Where one or both results of the duplicate pair were less than 5 times the MDL, a margin of +/- MDL was considered acceptable.

4.0 RESULTS

4.1 Groundwater Chemistry

The results of the groundwater analyses collected during the 2003, 2004 and 2006 through 2012 sampling events are presented in Table 2 at the end of the text. The 2012 quality assurance/quality control results are presented in Table 3. Laboratory analytical certificates from the 2012 sampling event are included in Appendix B.

Since salinity of groundwater is of interest in open pit inflow water quality, the concentration of salinity constituents measured are summarized in Table 1.

Table 1: Concentration of Constituents that Relate to Groundwater Salinity

Location	Monitoring Well	Lithology	Sample Year	TDS[1] (mg/L)	Conductivity (µS/cm)	Chloride (mg/L)
Goose Island	MW03-01	Ultramafic	2003	793	*1855*	626
			2004	1335	2900	845
			2006	315*	460*	81*
			2007	389	588	126
			2008	1100	3200	950
			2009	1900*	3350*	970*
			2010	340	335*	5.7
	MW11-01	Intermediate Volcanic	2011	14,840	*3999*	10,271
Third Portage	MW08-02	Intermediate Volcanic	2008	510*	*808**	160
			2009	520*	705*	160*
			2010	450	*690**	160
			2011	523	*782**	169
			2012	307**	*616**	111
South basin of Second Portage Arm	BH10-01	Intermediate Volcanic	2010	670*	935*	17
	MW11-02	Intermediate Volcanic	2011	263	*400**	20.9

Notes: 1. Laboratory measurement except for in 2011 which reported values as dissolved solids;
2. *Italic* field measured value;
3. * average value;
4. ** TDS value calculated from laboratory measured values of dissolved constituents.

Well MW08-02

Three groundwater sample including two duplicates were collected from MW08-02 in 2012. Table 2 shows that concentrations of salinity components in 2012 are the lowest since monitoring was initiated in 2008, but nonetheless, are of similar magnitude to previous values measured at this location. Exceptions include alkalinity and ammonia, where increased concentrations are observed. Concentrations of manganese observed in 2011 and 2012 are consistently elevated compared to results previously obtained in 2008, 2009 and 2010. All parameter concentrations observed in 2012 met Portage effluent quality criteria.

The other wells MW08-03, MW22-01 and MW11-02 could not be sampled.

4.2 Quality Assurance/Quality Control

Table 3 presents the Relative Percent Difference (RPD) or +/- MDL value calculated from the duplicated pair of results.

Approximately 40% of duplicate pairs of analyses had one or both results below the method detection limit and consequently could not be assessed for repeatability. Mercury was the only parameter to exceed the 20% RPD QA/QC criteria, all other remaining duplicate pairs were within the +/- MDL guidance or below the 20% RPD. Trace components and major elements for all samples are considered adequately repeatable.

5.0 CONCLUSION

The groundwater monitoring program was conducted in July 2012. Monitoring well MW08-02 was successfully sampled in triplicate. Monitoring well MW08-03 could not be sampled because of an ice bridge inside the well pipe that could not be removed. This prevented formation groundwater from entering the well. Monitoring well MW11-01 was damaged in spring 2012 and was deemed inoperable, therefore no groundwater samples were collected and the well was subsequently decommissioned in July 2012. Monitoring well MW11-02 located east of the tailings storage facility could not be sampled due to a blockage comprised of well development tubing which prevented access to the formation groundwater.

Groundwater chemistry at MW08-02 was similar to results previously obtained except for lower concentrations of salinity parameters, however concentrations are within the same magnitude as historic values. Groundwater quality results met the Portage effluent quality criteria.

6.0 RECOMMENDATIONS

Consideration should be given to replacing the damaged groundwater wells from around the Portage and Goose open pits with horizontal drain holes, rather than traditional monitoring wells. The reliability of the traditional groundwater well design is undermined by its fragility in the permafrost environment and in this active mine site. Further, to access the talik water, wells must be installed close to the open pit in areas of high traffic and near the active blasting radius making them, at times, difficult to access and operate safely.

Horizontal borehole drilled in open pit walls into the talik may achieve the same purpose of taping groundwater for sampling and analysis of water quality. Instrumenting the borehole with a piezometer could also facilitate monitoring of inflow to the open pit. The location of the boreholes would need to be designed to target locations and geological features that augment the likelihood of encountering water. New holes could be drilled and instrumented as the pit expands, to replace those lost when pit walls are pushed back.

Actions should be taken in 2013 to remove the WaTerra® tubing blockage in MW11-02 to allow sampling of this well, and similarly for MW08-03, to remove the ice blockage below 151 metres.

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n:\active\2012\0_mining\12-1221-0081 meadowbank groundwater sampling\report\doc -1212210081 1019_12 tm 2012 gw monitoring and results - ver 0.docx

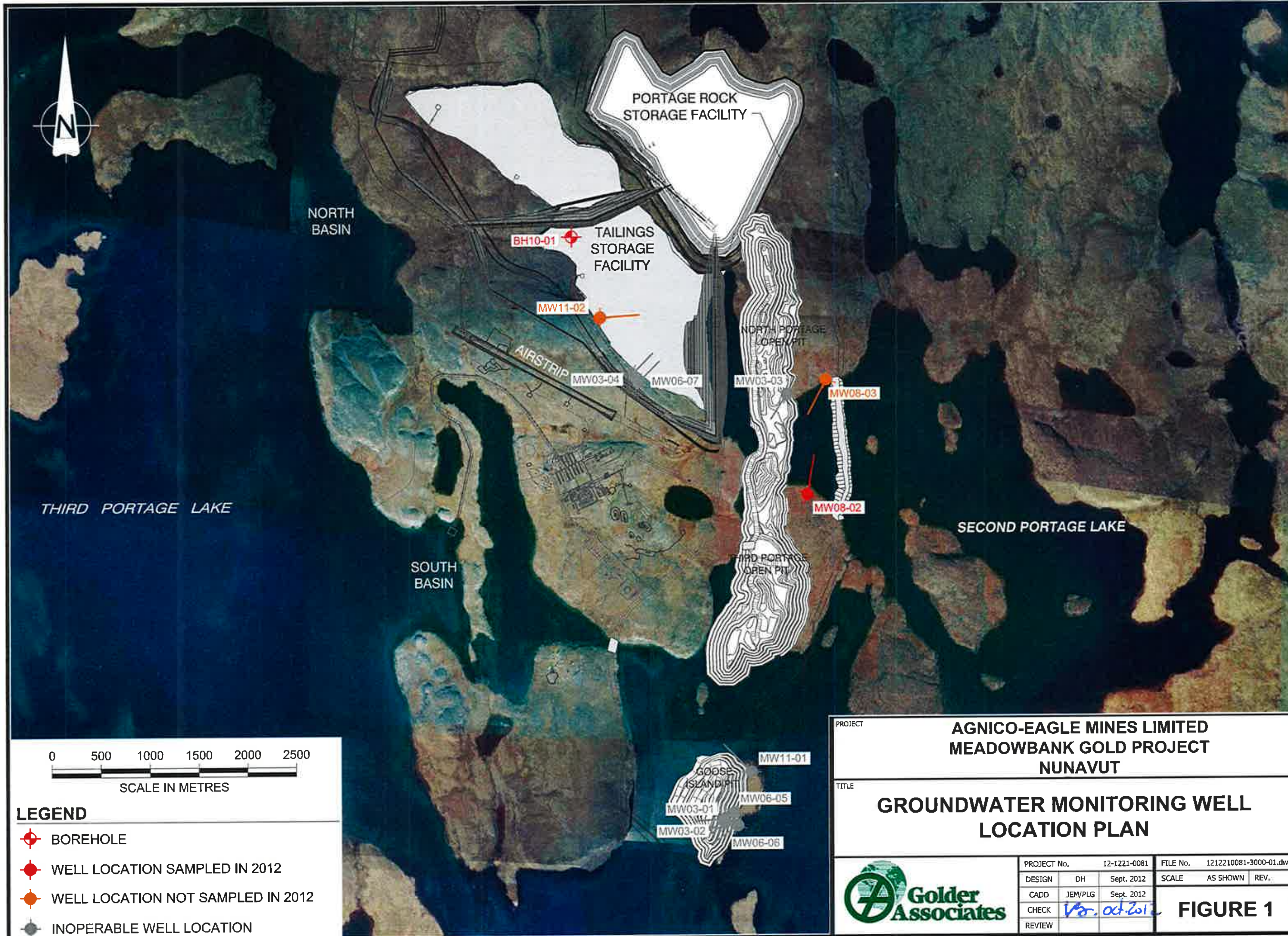
Attachments: Figure 1
Tables 2, 3
Appendix A - Well development logs
Appendix B - Laboratory Analytical Certificates

REFERENCES

USEPA, 1994. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, DC, February 1994.

USEPA, 2002. USEPA Guidance on Choosing a Sampling Design for Environmental Data Collection. Office of Environmental Information, U.S. Environmental Protection Agency, Washington, DC, December 2002.

PLOT DATE: September 25, 2012
FILENAME: N:\Active\2012\0_Mining\12-1221-0081 Meadowbank Groundwater Sampling\Spatial_IM\CAD\1212210081-3000-01.dwg



LEGEND

- BOREHOLE
- WELL LOCATION SAMPLED IN 2012
- WELL LOCATION NOT SAMPLED IN 2012
- INOPERABLE WELL LOCATION

PROJECT
AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE
GROUNDWATER MONITORING WELL LOCATION PLAN

Golder Associates

PROJECT No.		12-1221-0081	FILE No.	1212210081-3000-01.dwg
DESIGN	DH	Sept. 2012	SCALE	AS SHOWN REV.
CADD	JEM/PLG	Sept. 2012		
CHECK	VB.	oct 2012		**FIGURE 1**
REVIEW				

Table 2
Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

	Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcaniclastic		Method Detection Limit	Ultramafic Rock					
			Goose Island			Goose Island					
			MW11-01			MW03-01					
Laboratory sample number			15979	15980		9755-2	9755-3	9044-01	12393-01	12393-02	12395-01
Sampling date			29-Sep-11	29-Sep-11	29-Sep-11	7-Sep-03	7-Sep-03	Aug-7-04	Aug-8-06	Aug-8-06	Aug-14-06
QA/QC				FD			FD			FD	
FIELD-MEASURED PARAMETERS											
pH	s.u.	**6.0-9.0**	10.30	-		7.36	7.36	8.03	7.93	-	7.58
Conductivity	uS/cm		3999	-		1855	1855	2500	382	-	538
Alkalinity (mg/L as CaCO3)			-	-		19 - 22	19 - 22	27	33.9	-	48.8
LABORATORY PARAMETERS											
Calculated TDS	mg/L		-	-		793	793	1335	125	126	292
pH	s.u.	**6.0-9.0**	8.11	8.93	--	7.24	7.30	7.46	-	-	7.36
Conductivity	uS/cm		-	-		-	-	2900	-	-	634
Total Alkalinity	mg/L		23	37	2	30	30	27.3	-	-	51
Bicarbonate Alkalinity HCO3			-	-		36.6	36.6	33.3	-	-	62.2
Carbonate Alkalinity CO3			-	-		< 0.5	< 0.5	< 0.5	-	-	< 0.5
Hydroxide Alkalinity OH			-	-		< 0.5	< 0.5	< 0.5	-	-	< 0.5
Dissolved Sulphate	mg/L		29	30	1	15.6	15.8	15.9	42.8	43.1	51.1
Hardness CaCO3*			-	-		262	267	380	75.9	77.3	150
Hardness (Total)	mg/L		13264	14759	1	318	388	391	82	81.6	148
Total Suspended Solids	mg/L	**15**	-	-		-	-	13	-	-	4
Total Dissolved Solids	mg/L		14840	14620	1	793	-	1335	193	-	405
Turbidity	NTU	**15**	**18.1**	**25.7**		-	-	-	-	-	-
Total Metals											
Aluminum[1]	mg/L		0.248	0.256	0.002	4.16	1.2	0.25	0.4	0.48	0.13
Antimony	mg/L		-	-		<0.001	<0.001	0.0004	<0.0002	<0.0002	< 0.001
Arsenic	mg/L	**0.5**	0.128	0.142	0.0005	<0.001	0.017	0.004	0.0005	0.0006	0.002
Barium	mg/L		0.1484	0.1991	0.0005	0.18	0.2	0.301	0.027	0.028	0.052
Beryllium	mg/L		-	-		<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Bismuth	mg/L		-	-		<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Boron	mg/L		-	-		0.59	1.07	2.43	0.11	0.11	0.27
Cadmium[3]	mg/L		<0.00002	0.00009	0.00002	0.00024	0.00037	<0.00004	<0.00004	<0.00004	< 0.0002
Calcium	mg/L		5263	5857	0.03	72	87.1	95.4	19.1	19.1	33.4
Chromium[2]	mg/L		-	-		0.049	0.32	0.004	0.0017	0.0021	< 0.001
Cobalt	mg/L		-	-		0.004	0.016	0.0009	0.0005	0.0005	< 0.001
Copper[3]	mg/L	**0.3**	0.0237	0.0357	0.0005	0.044	0.071	0.0035	0.0022	0.002	< 0.001
Iron	mg/L		1.3	1.9	0.01	6.05	10.7	1.14	1.02	1.11	1.1
Lead[3]	mg/L	**0.2**	<0.0003	0.0031	0.0003	0.013	0.03	0.0025	0.0015	0.0013	< 0.001
Lithium	mg/L		-	-		0.025	0.031	0.04	0.0031	0.0032	0.006
Magnesium	mg/L		29.9	32.6	0.02	33.2	41.5	37.1	8.29	8.2	15.6
Manganese	mg/L		0.0433	0.05	0.0005	0.073	0.72	0.415	0.309	0.304	0.93
Mercury	mg/L		0.00073	0.00077	0.00001	-	-	<0.00002	<0.00002	<0.00002	< 0.00002
Molybdenum	mg/L		<0.0005	<0.0005	0.0005	<0.0005	0.011	0.0083	0.013	0.013	0.012
Nickel[3]	mg/L	**0.5**	0.2	0.2	0.0005	0.056	0.13	0.0045	0.002	0.0022	< 0.001
Phosphorus	mg/L		-	-		0.069	0.075	0.16	<0.03	<0.03	< 0.15
Potassium	mg/L		201	225	0.05	7.31	9.1	9.13	3.63	3.68	6.1
Selenium	mg/L		0.564	0.594	0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Silicon	mg/L		-	-		0.4	4.12	5.07	2.31	2.71	2.7
Silver	mg/L		0.01230	0.01460	0.00020	0.0064	0.011	0.00028	<0.00005	<0.00005	< 0.00025
Sodium	mg/L		344	550	0.05	22	25	357	16	15.9	50.5
Strontium	mg/L		-	-		0.68	0.79	1.56	0.119	0.12	0.28
Tellurium	mg/L		-	-		<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Thallium	mg/L		<0.005	<0.005	0.005	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	< 0.0001
Thorium	mg/L		-	-		<0.0005	0.0038	<0.0001	0.0005	0.0006	< 0.0005
Tin	mg/L		-	-		<0.001	0.002	0.0009	<0.0002	<0.0002	< 0.001
Titanium	mg/L		-	-		0.01	0.22	0.01	0.024	0.029	0.006
Uranium	mg/L		-	-		0.0012	0.0017	0.0003	0.0006	0.0006	< 0.0005
Vanadium	mg/L		-	-		<0.001	0.029	0.0004	0.0007	0.0008	< 0.001
Zinc	mg/L	**0.5**	0.038	0.091	0.001	0.063	0.087	0.007	0.005	0.005	< 0.005
Zirconium	mg/L		-	-		<0.0010	<0.0010	<0.002	<0.002	<0.002	< 0.01

Table 2
Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

	Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcaniclastic		Method Detection Limit	Ultramafic Rock					
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			MW11-01			MW03-01					
Laboratory sample number			15979	15980		9755-2	9755-3	9044-01	12393-01	12393-02	12395-01
Sampling date			29-Sep-11	29-Sep-11	29-Sep-11	7-Sep-03	7-Sep-03	Aug-7-04	Aug-8-06	Aug-8-06	Aug-14-06
QA/QC				FD			FD			FD	
Dissolved Metals											
Aluminum	mg/L		0.15	0.01	0.01	0.051	0.011	0.005	0.3	0.3	< 0.005
Antimony	mg/L		-	-		<0.001	<0.001	0.0002	<0.0002	<0.0002	< 0.001
Arsenic	mg/L	**0.3**	0.137	0.130	0.005	<0.001	0.003	0.0038	0.0005	0.0005	0.003
Barium	mg/L		0.13	0.136	0.005	0.12	0.13	0.3	0.025	0.025	0.051
Beryllium	mg/L		-	-		<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Bismuth	mg/L		-	-		<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Boron	mg/L		-	-		0.53	1.03	2.39	0.1	0.1	0.27
Cadmium	mg/L	**0.002**	<0.005	<0.005	0.005	0.00007	0.00012	<0.00004	<0.00004	<0.00004	< 0.0002
Calcium	mg/L		5136	5099	0.05	65.6	67	94.2	17.6	17.9	33.7
Chromium[2]	mg/L		-	-		<0.001	<0.001	0.0002	0.0012	0.0012	< 0.001
Cobalt	mg/L		-	-		0.001	0.001	0.0008	0.0004	0.0004	< 0.001
Copper	mg/L	**0.1**	0.021	0.015	0.005	0.002	0.002	0.0004	0.0016	0.0016	< 0.001
Iron	mg/L		1.3	0.97	0.05	<0.05	0.07	0.08	0.84	0.85	0.2
Lead	mg/L	**0.1**	<0.005	<0.005	0.005	<0.001	<0.001	<0.0002	0.0014	0.0012	< 0.001
Lithium	mg/L		-	-		0.017	0.017	0.033	0.0028	0.0027	0.005
Magnesium	mg/L		22.5	25.8	0.05	23.4	24.3	35.1	7.76	7.92	16.1
Manganese	mg/L		0.029	0.029	0.005	0.06	0.28	0.381	0.286	0.293	0.980
Mercury	mg/L		0.0006	0.0006	0.0005	-	-	<0.00002	<0.00002	<0.00002	< 0.00002
Molybdenum	mg/L		<0.005	<0.005	0.005	<0.0005	0.0057	0.0076	0.012	0.012	0.013
Nickel	mg/L	**0.2**	0.2	0.2	0.005	0.006	0.005	0.0026	0.0019	0.0019	< 0.001
Phosphorus	mg/L		-	-		0.1	0.15	0.04	<0.03	<0.03	< 0.15
Potassium	mg/L		183	192	0.05	5.71	5.95	8.56	3.27	3.28	6.1
Selenium	mg/L		0.637	0.606	0.005	<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Silicon	mg/L		-	-		0.32	3.27	3.89	1.96	1.98	2.50
Silver	mg/L		<0.005	<0.005	0.005	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	< 0.00025
Sodium	mg/L		283.0	338.0	0.05	20	22	327.0	15.0	15.6	52.5
Strontium	mg/L		-	-		0.58	0.59	1.46	0.111	0.114	0.29
Tellurium	mg/L		-	-		<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Thallium	mg/L		<0.01	<0.01	0.01	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	< 0.0001
Thorium	mg/L		-	-		<0.0005	<0.0005	<0.0001	0.0004	0.0004	< 0.0005
Tin	mg/L		-	-		<0.001	<0.001	<0.0002	<0.0002	<0.0002	< 0.001
Titanium	mg/L		-	-		<0.001	<0.001	0.0003	0.019	0.018	< 0.001
Uranium	mg/L		-	-		0.0006	0.0006	0.0003	0.0006	0.0006	< 0.0005
Vanadium	mg/L		-	-		<0.001	<0.001	<0.0002	0.0006	0.0006	< 0.001
Zinc	mg/L	**0.4**	0.020	0.013	0.005	0.006	<0.005	0.002	0.005	0.005	< 0.005
Zirconium	mg/L		-	-		<0.0010	<0.0010	<0.002	<0.002	<0.002	< 0.01
Anions											
Dissolved Fluoride	mg/L		0.55	0.62	0.02	< 0.05	< 0.05	0.12	0.16	0.17	0.16
Dissolved Chloride	mg/L	**1000**	**10271**	**9859**	**0.5**	626	621	845	34.7	33.7	128
Nutrients											
Total Nitrogen	mg/L		-	-		-	-	-	-	-	-
Ammonium	mg/L		0.07	0.27	0.05	-	-	-	-	-	-
Nitrate and Nitrite	mg/L	**20***	-	-		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Nitrate	mg/L		0.28	0.29	0.01	-	-	< 0.05	< 0.05	< 0.05	< 0.1
Nitrite	mg/L		<0.01	<0.01	0.01	-	-	-	0.003	0.004	0.002
Ammonia Nitrogen	mg/L	**16**	-	-		0.38	0.37	-	0.21	0.19	-
Total Kjeldahl Nitrogen	mg/L		-	-		0.7	0.6	0.3	0.3	0.3	-
Total Phosphorus	mg/L		-	-		0.07	0.08	0.05	0.04	0.04	-
Cyanide (mg/L)											
Total	mg/L	**1.0**	<0.005	-	0.005	-	-	<0.01	-	-	-
Free	mg/L		<0.005	-	0.005	-	-	<0.1	-	-	-

FD = Field Duplicate
\- Not analyzed

			Ultramafic Rock								
		Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Goose Island								
			MW03-01								
Laboratory sample number	Units		8581-01	8581-02	F66745	F68109	154321	154321	154359	L51870 L51884	L51870
Sampling date			Aug-17-07	Aug-17-07	15-Sep-08	15-Sep-08	7-Sep-09	7-Sep-09	7-Sep-09	26-Aug-10	26-Aug-10
QA/QC				FD		FD		Lab-dup	FD		Lab-dup
FIELD-MEASURED PARAMETERS											
pH	s.u.	**6.0-9.0**	7.43	-	6.70	-	6.97	-	-	7.13	-
Conductivity	uS/cm		776	-	2100	-	2436	-	-	340	-
Alkalinity (mg/L as CaCO3)			39	-	-	-					
LABORATORY PARAMETERS											
Calculated TDS	mg/L		249	250	-						-
pH	s.u.	**6.0-9.0**	6.78	6.96	7.90	7.80	6.71	-	7.20	6.90	-
Conductivity	uS/cm		588	583	3200	3100	3300	3400	3400	350	-
Total Alkalinity	mg/L		36.7	36.7	24	33	15	17	18	49	-
Bicarbonate Alkalinity HCO3			44.8	44.8	-	-				345	-
Carbonate Alkalinity CO3			< 0.5	< 0.5	-	-					-
Hydroxide Alkalinity OH			< 0.5	< 0.5	-	-					-
Dissolved Sulphate	mg/L		46.5	46.3	6	5.7	3.9	-	3.6	87	-
Hardness CaCO3*			107	109	-	-					-
Hardness (Total)	mg/L		116	112	310	320	450	-	440	77	-
Total Suspended Solids	mg/L	**15**	2	3	5	7	-	-	-	-	-
Total Dissolved Solids	mg/L		389	-	1100	-	1900	-	1900	-	-
Turbidity	NTU	**15**	-	-	3.3	4.1	2.1	-	8.2	210	-
Total Metals											
Aluminum[1]	mg/L		0.053	0.059	-	-	-	-	-	<0.03	-
Antimony	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Arsenic	mg/L	**0.5**	< 0.001	< 0.001	-	-	-	-	-	<0.002	-
Barium	mg/L		0.053	0.052	-	-	-	-	-	<0.03	-
Beryllium	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Bismuth	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Boron	mg/L		0.23	0.23	-	-	-	-	-	-	-
Cadmium[3]	mg/L		< 0.0002	< 0.0002	-	-	-	-	-	<0.001	-
Calcium	mg/L		26.1	25.1	73	-	-	-	-	21	-
Chromium[2]	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Cobalt	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Copper[3]	mg/L	**0.3**	0.001	0.001	-	-	-	-	-	<0.003	-
Iron	mg/L		0.94	0.93	-	-	-	-	-	0.6	-
Lead[3]	mg/L	**0.2**	0.001	0.001	-	-	-	-	-	-	-
Lithium	mg/L		< 0.005	< 0.005	-	-	-	-	-	-	-
Magnesium	mg/L		12.4	12.1		-	-	-	-	6.1	-
Manganese	mg/L		0.77	0.75	-	-	-	-	-	0.55	-
Mercury	mg/L		< 0.00002	< 0.00002	-	-	-	-	-	<0.0001	-
Molybdenum	mg/L		0.0084	0.0084	-	-	-	-	-	<0.03	-
Nickel[3]	mg/L	**0.5**	0.001	0.001	-	-	-	-	-	<0.01	-
Phosphorus	mg/L		< 0.15	< 0.15	-	-	-	-	-	-	-
Potassium	mg/L		4.7	4.5	-	-	-	-	-	2.1	-
Selenium	mg/L		< 0.001	< 0.001	-	-	-	-	-	<0.001	-
Silicon	mg/L		1.4	1.3	-	-	-	-	-	-	-
Silver	mg/L		< 0.00025	< 0.00025	-	-	-	-	-	0.0014	-
Sodium	mg/L		39.1	37.5	-	-	-	-	-	2.5	-
Strontium	mg/L		0.24	0.24	-	-	-	-	-	-	-
Tellurium	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Thallium	mg/L		< 0.0001	< 0.0001	-	-	-	-	-	<0.01	-
Thorium	mg/L		< 0.0005	< 0.0005	-	-	-	-	-	-	-
Tin	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Titanium	mg/L		0.003	0.003	-	-	-	-	-	-	-
Uranium	mg/L		< 0.0005	< 0.0005	-	-	-	-	-	-	-
Vanadium	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Zinc	mg/L	**0.5**	0.009	0.009	-	-	-	-	-	0.009	-
Zirconium	mg/L		< 0.01	< 0.01	-	-	-	-	-	-	-

Laboratory sample number / Sampling date / QA/QC	Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Ultramafic Rock — Goose Island — MW03-01								
Laboratory sample number			8581-01	8581-02	F66745	F68109	154321	154321	154359	L51870 L51884	L51870
Sampling date			Aug-17-07	Aug-17-07	15-Sep-08	15-Sep-08	7-Sep-09	7-Sep-09	7-Sep-09	26-Aug-10	26-Aug-10
QA/QC				FD		FD		Lab-dup	FD		Lab-dup
Dissolved Metals											
Aluminum	mg/L		< 0.005	0.011	0.0013	0.0068	<0.0001	-	<0.0001	0.03	-
Antimony	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Arsenic	mg/L	**0.3**	< 0.001	< 0.001	0.0001	<0.0001	<0.002	-	<0.002	<0.002	-
Barium	mg/L		0.048	0.051	0.25	0.25	0.42	-	0.39	<0.03	-
Beryllium	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Bismuth	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Boron	mg/L		0.2	0.21	-	-	-	-	-	-	-
Cadmium	mg/L	**0.002**	< 0.0002	< 0.0002	0.0002	<0.0002	<0.001	-	<0.001	<0.001	-
Calcium	mg/L		24	24.5	73	75	100	-	99	18	-
Chromium[2]	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Cobalt	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Copper	mg/L	**0.1**	< 0.001	0.001	0.0015	0.0023	<0.003	-	<0.003	<0.003	-
Iron	mg/L		< 0.05	< 0.05	0.03	<0.03	<0.1	-	<0.1	<0.1	-
Lead	mg/L	**0.1**	< 0.001	< 0.001	0.00021	0.00020	<0.001	-	0.001	<0.001	-
Lithium	mg/L		< 0.005	< 0.005	-	-	-	-	-	-	-
Magnesium	mg/L		11.4	11.6	31	32	46	-	47	4.1	-
Manganese	mg/L		0.700	0.720	0.430	0.44	0.22	-	0.22	0.36	-
Mercury	mg/L		< 0.00002	< 0.00002	<0.00001	<0.00001	<0.0001	-	<0.0001	<0.0001	-
Molybdenum	mg/L		0.0079	0.0079	0.0082	0.0078	<0.03	-	<0.003	<0.03	-
Nickel	mg/L	**0.2**	0.001	0.001	0.0015	0.0015	<0.01	-	<0.01	<0.01	-
Phosphorus	mg/L		< 0.15	< 0.15	-	-		-	-	-	-
Potassium	mg/L		4.3	4.4	8.4	8.5	11	-	11	1.5	-
Selenium	mg/L		< 0.001	< 0.001	0.001	<0.001	<0.001	-	<0.001	<0.001	-
Silicon	mg/L		1.20	1.20	-	-	-	-	-	-	-
Silver	mg/L		< 0.00025	< 0.00025	0.0001	<0.0001	<0.0003	-	<0.0003	<0.0003	-
Sodium	mg/L		34.2	35.0	-	-	420	-	430	1.8	-
Strontium	mg/L		0.22	0.22	-	-	-	-	-	-	-
Tellurium	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Thallium	mg/L		< 0.0001	< 0.0001	0.002	<0.002	<0.01	-	<0.01	<0.01	-
Thorium	mg/L		< 0.0005	< 0.0005	-	-	-	-	-	-	-
Tin	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Titanium	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Uranium	mg/L		< 0.0005	< 0.0005	-	-	-	-	-	-	-
Vanadium	mg/L		< 0.001	< 0.001	-	-	-	-	-	-	-
Zinc	mg/L	**0.4**	< 0.005	0.005	0.017	0.014	<0.003	-	<0.003	0.011	-
Zirconium	mg/L		< 0.01	< 0.01	-						-
Anions											
Dissolved Fluoride	mg/L		0.18	0.18	<0.1	<0.1	0.1	-	<0.1	0.2	-
Dissolved Chloride	mg/L	**1000**	126	126	950	980	990	-	950	5.7	-
Nutrients											
Total Nitrogen	mg/L		< 0.2	0.3	0.53	0.49	-	-	-	-	-
Ammonium	mg/L		-	-	-	-	-	-	-	-	-
Nitrate and Nitrite	mg/L	**20***	-	-	<0.2	<0.4	<0.42	-	<0.42	0.09	-
Nitrate	mg/L		< 0.01	0.09	<0.02	<0.02	<0.02	-	<0.02	-	-
Nitrite	mg/L		0.002	< 0.002	<0.2	<0.4					
Ammonia Nitrogen	mg/L	**16**	0.14	0.15	-	-	0.54	-	0.51	0.08	0.08
Total Kjeldahl Nitrogen	mg/L		< 0.2	0.2	-	-	-	-	-	-	-
Total Phosphorus	mg/L		0.01	0.02	-	-	-	-	-	-	-
Cyanide (mg/L)											
Total	mg/L	**1.0**	-	-	-	-	-	-	-	-	-
Free	mg/L		-	-	-	-	-	-	-	-	-

FD = Field Duplicate
- Not analyzed

	Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Iron Formation Rock					
			Goose Island					
			MW03-02				MW06-06	
Laboratory sample number			9756-03	9043-01	9043-01	9043-02	12567-01	12567-02
Sampling date			28-Sep-03	Jul 31-04	Jul 31-04	Jul 31-04	24-Aug-06	24-Aug-06
QA/QC					Decant [8]	FD		FD
FIELD-MEASURED PARAMETERS								
pH	s.u.	**6.0-9.0**	7.68	7.19	-	-	7.59	-
Conductivity	uS/cm		660	1104	-	-	1306	-
Alkalinity (mg/L as CaCO3)			96 - 100	51	-	-	46.3	-
LABORATORY PARAMETERS								
Calculated TDS	mg/L		387	499	-		588	678
pH	s.u.	**6.0-9.0**	7.04	7.25	-	7.34	7.33	7.29
Conductivity	uS/cm		-	1270	-	1280	1210	1200
Total Alkalinity	mg/L		103	41.6	-	42.9	49.9	49.9
Bicarbonate Alkalinity HCO3			125	50.8	-	52.4	60.9	60.9
Carbonate Alkalinity CO3			< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Hydroxide Alkalinity OH			< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dissolved Sulphate	mg/L		263	38.4	-	38.2	65.1	56
Hardness CaCO3*			290	308	-	-	345	347
Hardness (Total)	mg/L		316	313	292	-	326	316
Total Suspended Solids	mg/L	**15**	-	96	-	90	16	28
Total Dissolved Solids	mg/L		-	-	-	-	650	-
Turbidity	NTU	**15**	-	-	-	-	-	-
Total Metals								
Aluminum[1]	mg/L		1.07	2.31	0.37	-	0.16	0.13
Antimony	mg/L		<0.001	0.0003	0.0002	-	<0.001	<0.001
Arsenic	mg/L	**0.5**	0.002	0.0038	0.002	-	0.003	0.003
Barium	mg/L		0.028	0.096	0.076	-	0.024	0.024
Beryllium	mg/L		<0.001	< 0.0002	< 0.0002	-	<0.001	<0.001
Bismuth	mg/L		<0.001	< 0.0002	< 0.0002	-	<0.001	<0.001
Boron	mg/L		0.06	0.97	0.87	-	0.36	0.31
Cadmium[3]	mg/L		<0.0002	0.00018	0.0001	-	<0.0002	<0.0002
Calcium	mg/L		68.3	74.7	72.5	-	89.3	86.1
Chromium[2]	mg/L		0.003	0.008	0.0012	-	<0.001	<0.001
Cobalt	mg/L		0.004	0.0072	0.0045	-	0.002	0.002
Copper[3]	mg/L	**0.3**	0.004	0.007	0.002	-	0.001	0.005
Iron	mg/L		2.96	4.72	0.68	-	0.57	0.57
Lead[3]	mg/L	**0.2**	0.002	0.0035	0.0005	-	<0.001	<0.001
Lithium	mg/L		0.021	0.021	0.017	-	0.029	0.028
Magnesium	mg/L		35.2	30.7	27	-	25	24.5
Manganese	mg/L		1.04	0.517	0.417	-	0.41	0.43
Mercury	mg/L		<0.00002	< 0.00002	< 0.00002	-	<0.00002	<0.00002
Molybdenum	mg/L		0.022	0.015	0.013	-	0.0087	0.009
Nickel[3]	mg/L	**0.5**	0.008	0.017	0.011	-	0.007	0.01
Phosphorus	mg/L		0.19	0.34	0.09	-	1.2	1.2
Potassium	mg/L		5.94	7.8	6.9	-	6.7	6.5
Selenium	mg/L		<0.001	< 0.0002	< 0.0002	-	<0.001	<0.001
Silicon	mg/L		10.7	13.8	7.57	-	4.7	4.6
Silver	mg/L		<0.0001	0.00067	0.00016	-	<0.00025	<0.00025
Sodium	mg/L		6.81	91.9	84.9	-	59	55.9
Strontium	mg/L		0.26	0.759	0.691	-	0.75	0.72
Tellurium	mg/L		<0.001	< 0.0002	< 0.0002	-	<0.001	<0.001
Thallium	mg/L		<0.0001	0.00006	< 0.00002	-	<0.0001	<0.0001
Thorium	mg/L		0.0007	< 0.0001	< 0.0001	-	<0.0005	<0.0005
Tin	mg/L		<0.001	0.0003	< 0.0002	-	<0.001	<0.001
Titanium	mg/L		0.063	0.158	0.02	-	0.005	0.005
Uranium	mg/L		0.0084	0.002	0.0013	-	0.0018	0.0018
Vanadium	mg/L		0.002	0.0039	0.0006	-	0.002	0.002
Zinc	mg/L	**0.5**	0.014	0.042	0.015	-	<0.005	<0.005
Zirconium	mg/L		<0.0010	< 0.002	< 0.002	-	<0.01	<0.01

			Iron Formation Rock					
		Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Goose Island					
			MW03-02				MW06-06	
Laboratory sample number	Units		9756-03	9043-01	9043-01	9043-02	12567-01	12567-02
Sampling date			28-Sep-03	Jul 31-04	Jul 31-04	Jul 31-04	24-Aug-06	24-Aug-06
QA/QC					Decant [8]	FD		FD
Dissolved Metals								
Aluminum	mg/L		0.47	0.019	-	-	<0.005	<0.005
Antimony	mg/L		<0.001	0.0003	-	-	<0.001	<0.001
Arsenic	mg/L	**0.3**	0.002	0.002	-	-	0.002	0.002
Barium	mg/L		0.023	0.086	-	-	0.018	0.019
Beryllium	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Bismuth	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Boron	mg/L		0.06	0.94	-	-	0.37	0.44
Cadmium	mg/L	**0.002**	<0.0002	0.00016	-	-	<0.0002	<0.0002
Calcium	mg/L		63.1	73.5	-	-	87.1	85.3
Chromium[2]	mg/L		0.001	0.0004	-	-	<0.001	<0.001
Cobalt	mg/L		0.004	0.0060	-	-	<0.001	<0.001
Copper	mg/L	**0.1**	0.004	0.0014	-	-	0.001	<0.001
Iron	mg/L		1.91	0.05	-	-	<0.05	<0.05
Lead	mg/L	**0.1**	0.001	< 0.0002	-	-	<0.001	<0.001
Lithium	mg/L		0.019	0.016	-	-	0.028	0.025
Magnesium	mg/L		32.1	30.2	-	-	24.0	23.6
Manganese	mg/L		0.96	0.492	-	-	0.006	0.003
Mercury	mg/L		<0.00002	< 0.02	-	-	<0.00002	<0.00002
Molybdenum	mg/L		0.018	0.014	-	-	0.0081	0.0069
Nickel	mg/L	**0.2**	0.007	0.012	-	-	0.005	0.004
Phosphorus	mg/L		0.16	< 0.03	-	-	0.9	0.8
Potassium	mg/L		5.36	7.43	-	-	6.6	5.8
Selenium	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Silicon	mg/L		7.98	5.88	-	-	4.1	3.8
Silver	mg/L		<0.0001	< 0.00005	-	-	<0.00025	<0.00025
Sodium	mg/L		6.29	89.5	-	-	58.2	55.9
Strontium	mg/L		0.24	0.736	-	-	0.72	0.76
Tellurium	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Thallium	mg/L		<0.0001	< 0.00002	-	-	<0.0001	<0.0001
Thorium	mg/L		<0.0005	< 0.0001	-	-	<0.0005	<0.0005
Tin	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Titanium	mg/L		0.024	0.0008	-	-	<0.001	<0.001
Uranium	mg/L		0.0077	0.0013	-	-	0.0016	0.0014
Vanadium	mg/L		<0.001	< 0.0002	-	-	0.001	0.001
Zinc	mg/L	**0.4**	0.012	0.029	-	-	<0.005	<0.005
Zirconium	mg/L		<0.0010	< 0.002	-	-	<0.01	<0.01
Anions								
Dissolved Fluoride	mg/L		0.35	0.6	-	0.57	0.55	0.63
Dissolved Chloride	mg/L	**1000**	5.4	251	-	259	304	331
Nutrients								
Total Nitrogen	mg/L		-	-	-	-	-	-
Ammonium	mg/L		-	-	-	-	-	-
Nitrate and Nitrite	mg/L	**20***	< 0.05	< 0.05	-	< 0.05	-	-
Nitrate	mg/L		< 0.05	< 0.05	-	< 0.05	< 0.25	< 0.25
Nitrite	mg/L		0.005	0.006	-	0.007	0.005	0.004
Ammonia Nitrogen	mg/L	**16**	0.19	0.07	-	0.05	-	-
Total Kjeldahl Nitrogen	mg/L		-	0.4	-	-	0.6	0.6
Total Phosphorus	mg/L		0.10	0.23	-	0.25	-	-
Cyanide (mg/L)								
Total	mg/L	**1.0**	-	<0.01	-	-	-	-
Free	mg/L		-	<0.1	-	-	-	-

FD = Field Duplicate
- Not analyzed

Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

	Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcanic Rock				Intermediate Volcanic			Method Detection Limit
			North Portage			Goose Island	Second Portage Arm (tailings disposal area)			
			MW03-03			MW06-05	MW03-04	MW06-07		
Laboratory sample number			9756-02	9045-01	9045-02		9756-01	12568-01	12568-02	
Sampling date			25-Sep-03	Aug-9-04	Aug-9-04		18-Sep-03	30-Aug-06	30-Aug-06	26-Aug-10
QA/QC					FD				FD	
FIELD-MEASURED PARAMETERS										
pH	s.u.	**6.0-9.0**	8.63	7.77	-		7.67	8.00	8.00	-
Conductivity	uS/cm		350	627	-		370 - 450	440	440	-
Alkalinity (mg/L as CaCO3)			87	102	-	-	-	84	84	-
LABORATORY PARAMETERS										
Calculated TDS	mg/L		254	239			154	172**	162**	-
pH	s.u.	**6.0-9.0**	7.83	7.96	-	-	-	7.54	7.57	-
Conductivity	uS/cm		-	640	-			281	285	0.001
Total Alkalinity	mg/L		93.8	133	-	-	-	89	89	1
Bicarbonate Alkalinity HCO3			114	162	-	-	-	108	108	0.5
Carbonate Alkalinity CO3			< 0.5	< 0.5	-	-	-	< 0.5	< 0.5	0.5
Hydroxide Alkalinity OH			< 0.5	< 0.5	-	-	-	< 0.5	< 0.5	0.5
Dissolved Sulphate	mg/L		26.6	6.2	-	-	63.8	4	3.76	0.1
Hardness CaCO3*			136	210	-	-	53	106	107	1
Hardness (Total)	mg/L		144	216	-	-	-	124	128	1
Total Suspended Solids	mg/L	**15**	-	1	-	-	-	11	11	1
Total Dissolved Solids	mg/L		-	-	-	-	-	220	220	0.2
Turbidity	NTU	**15**	-	-	-	-	-	-	-	0.2
Total Metals										
Aluminum[1]	mg/L		0.018	0.12	-	-	-	1.08	1.06	0.03
Antimony	mg/L		0.002	0.0002	-	-	-	< 0.001	< 0.001	0.001
Arsenic	mg/L	**0.5**	0.004	0.015	-	-	-	0.001	0.002	0.002
Barium	mg/L		0.02	0.05	-	-	-	0.11	0.11	0.03
Beryllium	mg/L		<0.001	< 0.0002	-	-	-	< 0.001	< 0.001	0.001
Bismuth	mg/L		<0.001	< 0.0002	-	-	-	< 0.001	< 0.001	0.001
Boron	mg/L		0.09	0.19	-	-	-	< 0.05	< 0.05	0.05
Cadmium[3]	mg/L		<0.0002	0.00006	-	-	-	< 0.0002	< 0.0002	0.001
Calcium	mg/L		28	47.7	-	-	-	34.9	36.4	0.1
Chromium[2]	mg/L		<0.001	0.001	-	-	-	0.006	0.005	0.001
Cobalt	mg/L		<0.001	0.0004	-	-	-	0.001	0.001	0.001
Copper[3]	mg/L	**0.3**	<0.001	0.0014	-	-	-	0.011	0.011	0.003
Iron	mg/L		<0.05	0.46	-	-	-	1.5	1.58	0.1
Lead[3]	mg/L	**0.2**	0.001	0.0006	-	-	-	0.001	0.001	0.001
Lithium	mg/L		0.007	0.0092	-	-	-	0.004	0.004	0.001
Magnesium	mg/L		18	23.5	-	-	-	8.81	9.04	0.1
Manganese	mg/L		0.11	0.131	-	-	-	0.073	0.074	0.003
Mercury	mg/L		<0.00002	< 0.00002	-	-	-	< 0.00002	< 0.00002	0.0001
Molybdenum	mg/L		0.056	0.093	-	-	-	0.005	0.0048	0.03
Nickel[3]	mg/L	**0.5**	0.003	0.0024	-	-	-	0.005	0.005	0.01
Phosphorus	mg/L		0.07	0.08	-	-	-	0.4	0.4	0.01
Potassium	mg/L		3.51	2.65	-	-	-	2.7	2.8	0.1
Selenium	mg/L		<0.001	< 0.0002	-	-	-	< 0.001	< 0.001	0.001
Silicon	mg/L		3.78	5.96	-	-	-	5	5	0.05
Silver	mg/L		<0.0001	0.0001	-	-	-	0.0009	0.0009	0.00030
Sodium	mg/L		17.6	33.6	-	-	-	8.85	9.12	0.03
Strontium	mg/L		0.26	0.581	-	-	-	0.23	0.24	0.001
Tellurium	mg/L		<0.001	< 0.0002	-	-	-	< 0.001	< 0.001	0.001
Thallium	mg/L		<0.0001	< 0.00002	-	-	-	< 0.0001	< 0.0001	0.01
Thorium	mg/L		<0.0005	< 0.0001	-	-	-	< 0.0005	< 0.0005	0.0005
Tin	mg/L		<0.001	< 0.0002	-	-	-	< 0.001	< 0.001	0.001
Titanium	mg/L		<0.001	0.0045	-	-	-	0.032	0.031	0.001
Uranium	mg/L		0.012	0.0088	-	-	-	0.0095	0.0097	0.0005
Vanadium	mg/L		<0.001	0.0002	-	-	-	0.002	0.002	0.001
Zinc	mg/L	**0.5**	<0.005	0.006	-	-	-	0.006	0.006	0.005
Zirconium	mg/L		<0.0010	< 0.002	-	-	-	< 0.01	< 0.01	0.001

	Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcanic Rock				Intermediate Volcanic			Method Detection Limit
			North Portage			Goose Island	Second Portage Arm (tailings disposal area)			
			MW03-03			MW06-05	MW03-04	MW06-07		
Laboratory sample number			9756-02	9045-01	9045-02		9756-01	12568-01	12568-02	
Sampling date			25-Sep-03	Aug-9-04	Aug-9-04		18-Sep-03	30-Aug-06	30-Aug-06	26-Aug-10
QA/QC					FD				FD	
Dissolved Metals										
Aluminum	mg/L		0.018	0.006	-	-	0.72	0.04	0.042	0.03
Antimony	mg/L		0.002	< 0.0002	-	-	0.001	< 0.001	< 0.001	0.001
Arsenic	mg/L	**0.3**	0.004	0.013	-	-	0.007	< 0.001	0.0010	0.0020
Barium	mg/L		0.018	0.048	-	-	0.03	0.086	0.086	0.03
Beryllium	mg/L		<0.001	< 0.0002	-	-	<0.001	< 0.001	< 0.001	0.001
Bismuth	mg/L		<0.001	< 0.0002	-	-	<0.001	< 0.001	< 0.001	0.001
Boron	mg/L		0.08	0.17	-	-	<0.05	< 0.05	< 0.05	0.05
Cadmium	mg/L	**0.002**	<0.0002	0.00004	-	-	<0.0002	< 0.0002	< 0.0002	0.001
Calcium	mg/L		26.3	47.1	-	-	15	31	31.5	0.1
Chromium[2]	mg/L		<0.001	0.0003	-	-	<0.001	< 0.001	< 0.001	0.001
Cobalt	mg/L		<0.001	0.0003	-	-	0.003	< 0.001	< 0.001	0.0010
Copper	mg/L	**0.1**	<0.001	0.0002	-	-	0.006	0.005	0.008	0.003
Iron	mg/L		<0.05	< 0.01	-	-	0.55	< 0.05	0.05	0.1
Lead	mg/L	**0.1**	<0.001	< 0.0002	-	-	0.006	< 0.001	< 0.001	0.001
Lithium	mg/L		0.007	0.0081	-	-	0.015	0.002	0.002	0.001
Magnesium	mg/L		17.1	22.4	-	-	3.81	6.83	6.92	0.1
Manganese	mg/L		0.1	0.130	-	-	0.049	0.032	0.032	0.003
Mercury	mg/L		<0.00002	< 0.02	-	-	<0.00002	< 0.00002	< 0.00002	0.0001
Molybdenum	mg/L		0.052	0.09	-	-	0.024	0.004	0.0042	0.030
Nickel	mg/L	**0.2**	0.003	0.0018	-	-	0.003	0.002	0.002	0.01
Phosphorus	mg/L		0.07	< 0.03	-	-	5.58	0.3	0.3	0.01
Potassium	mg/L		3.33	2.64	-	-	5.44	2.3	2.3	0.1
Selenium	mg/L		<0.001	< 0.0002	-	-	<0.001	< 0.001	< 0.001	0.001
Silicon	mg/L		3.62	5.70	-	-	10.2	2.70	2.70	0.05
Silver	mg/L		<0.0001	< 0.00005	-	-	<0.0001	< 0.00025	< 0.00025	0.0003
Sodium	mg/L		16.5	32.0	-	-	52.9	7.7	7.8	0.1
Strontium	mg/L		0.24	0.556	-	-	0.14	0.2	0.2	0.001
Tellurium	mg/L		<0.001	< 0.0002	-	-	<0.001	< 0.001	< 0.001	0.001
Thallium	mg/L		<0.0001	< 0.00002	-	-	<0.0001	< 0.0001	< 0.0001	0.01
Thorium	mg/L		<0.0005	< 0.0001	-	-	<0.0005	< 0.0005	< 0.0005	0.0005
Tin	mg/L		<0.001	< 0.0002	-	-	<0.001	< 0.001	< 0.001	0.001
Titanium	mg/L		<0.001	0.0003	-	-	0.003	< 0.001	< 0.001	0.001
Uranium	mg/L		0.012	0.0087	-	-	0.013	0.008	0.008	0.0005
Vanadium	mg/L		<0.001	< 0.0002	-	-	<0.001	< 0.001	< 0.001	0.001
Zinc	mg/L	**0.4**	<0.005	0.004	-	-	0.022	< 0.005	< 0.005	0.005
Zirconium	mg/L		<0.0010	< 0.002	-	-	<0.0010	< 0.01	< 0.01	0.001
Anions										
Dissolved Fluoride	mg/L		0.46	0.38	-	-	0.34	0.2	0.11	0.1
Dissolved Chloride	mg/L	**1000**	50.4	121	-	-	13.4	33.3	33.5	0.05
Nutrients										
Total Nitrogen	mg/L		-	-	-	-	-	-	-	<0.02
Ammonium	mg/L		-	-	-	-	-	-	-	-
Nitrate and Nitrite	mg/L	**20***	0.15	< 0.05	< 0.01	-	< 0.05	-	-	0.02
Nitrate	mg/L		0.15	< 0.05	-	-	< 0.05	0.12	0.12	0.05
Nitrite	mg/L		0.003	< 0.002	-	-	0.004	0.003	0.003	0.002
Ammonia Nitrogen	mg/L	**16**	0.08	-	-	-	-	-	-	0.01
Total Kjeldahl Nitrogen	mg/L		-	0.2	0.2	-	-	-	-	0.2
Total Phosphorus	mg/L		0.07	0.05	0.10	-	-	-	-	0.02
Cyanide (mg/L)										
Total	mg/L	**1.0**	-	<0.01	<0.01	-	-	-	-	-
Free	mg/L		-	<0.1	<0.1	-	-	-	-	-

FD = Field Duplicate
- Not analyzed

Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

		Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcanic and Quartzite		Intermediate Volcaniclastic		Method Detection Limit
				Second Portage Lake Arm		Second Portage Lake Arm		
				BH 10-01		MW11-02		
Laboratory sample number				L51892 L51894	L51893 L51895	15870	15871	
Sampling date				27-Aug-10	27-Aug-10	26-Sep-11	26-Sep-11	28-Sep-11
QA/QC					FD		FD	
FIELD-MEASURED PARAMETERS								
Temperature		°C		3.9	-	8.9	-	
pH		s.u.	**6.0-9.0**	7.60	-	8.93	-	
Conductivity		uS/cm		910	-	8.93	-	
LABORATORY PARAMETERS								
Calculated TDS (mg/L)				393	401	123	123	
pH		s.u.	**6.0-9.0**	7.55	7.56	7.19	7.40	--
Conductivity		uS/cm		930	940	-	-	
Total Alkalinity	CaCO3	mg/L		110	110	104	103	2
Bicarbonate Alkalinity HCO3		mg/L				-	-	
Carbonate Alkalinity CO3		mg/L				-	-	
Hydroxide Alkalinity OH		mg/L				-	-	
Dissolved Sulphate	SO4	mg/L		210	210	42	41	1
Hardness CaCO3*		mg/L				167	165	1
Hardness (Total)		mg/L		300	300	-	-	
Total Suspended Solids	TSS	mg/L	**15**	-	-	-	-	
Total Dissolved Solids	TDS	mg/L		650	690	263	259	1
Turbidity		NTU	**15**	56	55	**55.8**	**69.3**	
Total Metals								
Aluminum[1]	Al	mg/L		<0.03	<0.03	1.810	1.23	0.002
Antimony	Sb	mg/L		-	-	-	-	
Arsenic	As	mg/L	**0.5**	0.018	0.018	<0.0005	<0.0005	0.0005
Barium	Ba	mg/L		0.44	0.44	0.2297	0.2097	0.0005
Beryllium	Be	mg/L		-	-	-	-	
Bismuth	Bi	mg/L		-	-	-	-	
Boron	B	mg/L		-	-	-	-	
Cadmium[3]	Cd	mg/L		<0.001	<0.001	0.00004	<0.00002	0.00002
Calcium	Ca	mg/L		71	69	49.7	49.2	0.03
Chromium[2]	Cr	mg/L		-	-	-	-	
Cobalt	Co	mg/L		-	-	-	-	
Copper[3]	Cu	mg/L	**0.3**	<0.003	<0.003	0.0320	0.0247	0.0005
Iron	Fe	mg/L		3.1	3.1	1.9	0.90	0.01
Lead[3]	Pb	mg/L	**0.2**	<0.001	<0.001	0.0030	0.0039	0.0003
Lithium	Li	mg/L		-	-	-	-	
Magnesium	Mg	mg/L		30	30	10.6	10.4	0.02
Manganese	Mn	mg/L		0.17	0.17	0.2274	0.1853	0.0005
Mercury	Hg	mg/L		<0.0001	<0.0001	0.00058	0.00064	0.00001
Molybdenum	Mo	mg/L		<0.03	<0.03	<0.0005	<0.0005	0.0005
Nickel[3]	Ni	mg/L	**0.5**	0.05	0.04	0.0087	0.0065	0.0005
Phosphorus	P	mg/L		-	-	-	-	
Potassium	K	mg/L		7.7	7.7	1.9	2.0	0.05
Selenium	Se	mg/L		<0.001	<0.001	<0.001	<0.001	0.001
Silicon	SiO2	mg/L		-	-	-	-	
Silver	Ag	mg/L		<0.0003	<0.0003	0.0006	0.0002	0.0002
Sodium	Na	mg/L		58	58	10.5	10.3	0.05
Strontium	Sr	mg/L		-	-	-	-	
Tellurium	Te	mg/L		-	-	-	-	
Thallium	Tl	mg/L		<0.01	0.01	<0.005	<0.005	0.005
Thorium	Th	mg/L		-	-	-	-	
Tin	Sn	mg/L		-	-	-	-	
Titanium	Ti	mg/L		-	-	-	-	
Uranium	U	mg/L		-	-	-	-	
Vanadium	V	mg/L		-	-	-	-	
Zinc	Zn	mg/L	**0.5**	<0.003	0.005	0.024	0.019	0.001
Zirconium	Zr	mg/L		-	-	-	-	

Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

			Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcanic and Quartzite		Intermediate Volcaniclastic		Method Detection Limit
				Second Portage Lake Arm		Second Portage Lake Arm		
				BH 10-01		MW11-02		
Laboratory sample number		Units		L51892 L51894	L51893 L51895	15870	15871	
Sampling date				27-Aug-10	27-Aug-10	26-Sep-11	26-Sep-11	28-Sep-11
QA/QC					FD		FD	
Dissolved Metals								
Aluminum	Al	mg/L		<0.03	<0.03	<0.01	<0.01	0.01
Antimony	Sb	mg/L		-	-	-	-	
Arsenic	As	mg/L	**0.3**	0.007	0.007	<0.005	<0.005	0.005
Barium	Ba	mg/L		0.42	0.44	0.160	0.167	0.005
Beryllium	Be	mg/L		-	-	-	-	
Bismuth	Bi	mg/L		-	-	-	-	
Boron	B	mg/L		-	-	-	-	
Cadmium	Cd	mg/L	**0.002**	<0.001	<0.001	<0.005	<0.005	0.005
Calcium	Ca	mg/L		68	73	42.8	43.4	0.05
Chromium[2]	Cr	mg/L		-	-	-	-	
Cobalt	Co	mg/L		-	-	-	-	
Copper	Cu	mg/L	**0.1**	<0.003	<0.003	0.008	0.010	0.005
Iron	Fe	mg/L		0.2	0.2	<0.05	<0.05	0.05
Lead	Pb	mg/L	**0.1**	<0.001	<0.001	<0.005	<0.005	0.005
Lithium	Li	mg/L		-	-	-	-	
Magnesium	Mg	mg/L		30	31	7.7	8.0	0.05
Manganese	Mn	mg/L		0.18	0.18	0.145	0.148	0.005
Mercury	Hg	mg/L		<0.0001	<0.0001	0.0011	0.0010	0.0005
Molybdenum	Mo	mg/L		<0.03	<0.03	<0.005	<0.005	0.005
Nickel	Ni	mg/L	**0.2**	0.05	0.05	<0.005	<0.005	0.005
Phosphorus	P	mg/L		-	-	-	-	
Potassium	K	mg/L		7.8	8	1.3	1.4	0.05
Selenium	Se	mg/L		<0.001	<0.001	<0.005	<0.005	0.005
Silicon	SiO2	mg/L		-	-	-	-	
Silver	Ag	mg/L		<0.0003	<0.0003	<0.005	<0.005	0.005
Sodium	Na	mg/L		59	61	7.6	7.9	0.05
Strontium	Sr	mg/L		-	-	-	-	
Tellurium	Te	mg/L		-	-	-	-	
Thallium	Tl	mg/L		<0.01	<0.01	<0.01	<0.01	0.01
Thorium	Th	mg/L		-	-	-	-	
Tin	Sn	mg/L		-	-	-	-	
Titanium	Ti	mg/L		-	-	-	-	
Uranium	U	mg/L		-	-	-	-	
Vanadium	V	mg/L		-	-	-	-	
Zinc	Zn	mg/L	**0.4**	<0.005	0.012	<0.005	0.013	0.005
Zirconium	Zr	mg/L				-	-	
Anions								
Fluoride	F	mg/L		0.4	0.5	0.13	0.18	0.02
Chloride	Cl	mg/L	**1000**	17	17	20.9	20.7	0.5
Nutrients								
Nitrate and Nitrite	NO3 + NO2	mg/L	**20***	0.57	0.57	1.72	1.73	
Nitrate	NO3	mg/L		-	-	1.70	1.70	0.01
Nitrite	NO2	mg/L				0.02	0.03	0.01
Ammonia Nitrogen	N	mg/L	**16**	3.8	3.8	0.17	0.2	0.05
Total Kjeldahl Nitrogen	N	mg/L			-	-	-	
Total Phosphorus	P	mg/L			-	-	-	
Cyanide (mg/L)								
Weak Acid Dissociable Cyanide (CN-)		mg/L		0.1	-	<0.005	-	0.005
Total	CN	mg/L	**1.0**		-	<0.005	-	0.005
Free	CN	mg/L			-	<0.005	-	0.005

FD = Field Duplicate
- Not analyzed

Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

		Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Iron Formation Rock					
				Goose Island					
				MW03-02				MW06-06	
Laboratory sample number				9756-03	9043-01	9043-01	9043-02	12567-01	12567-02
Sampling date				28-Sep-03	Jul 31-04	Jul 31-04	Jul 31-04	24-Aug-06	24-Aug-06
QA/QC						Decant [8]	FD		FD
FIELD-MEASURED PARAMETERS									
Temperature		°C		3.5	12	-	-	12.4	-
pH		s.u.	**6.0-9.0**	7.68	7.19	-	-	7.59	-
Conductivity		uS/cm		660	1104	-	-	1306	-
LABORATORY PARAMETERS									
Calculated TDS (mg/L)				387	499	-		588	678
pH		s.u.	**6.0-9.0**	7.04	7.25	-	7.34	7.33	7.29
Conductivity		uS/cm		-	1270	-	1280	1210	1200
Total Alkalinity	CaCO3	mg/L		103	41.6	-	42.9	49.9	49.9
Bicarbonate Alkalinity HCO3		mg/L		125	50.8	-	52.4	60.9	60.9
Carbonate Alkalinity CO3		mg/L		< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Hydroxide Alkalinity OH		mg/L		< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dissolved Sulphate	SO4	mg/L		263	38.4	-	38.2	65.1	56
Hardness CaCO3*		mg/L		290	308	-	-	345	347
Hardness (Total)		mg/L		316	313	292	-	326	316
Total Suspended Solids	TSS	mg/L	**15**	-	96	-	90	16	28
Total Dissolved Solids	TDS	mg/L				-	-	-	-
Turbidity		NTU	**15**	-	-	-	-	-	-
Total Metals									
Aluminum[1]	Al	mg/L		1.07	2.31	0.37	-	0.16	0.13
Antimony	Sb	mg/L		<0.001	0.0003	0.0002	-	<0.001	<0.001
Arsenic	As	mg/L	**0.5**	0.002	0.0038	0.002	-	0.003	0.003
Barium	Ba	mg/L		0.028	0.096	0.076	-	0.024	0.024
Beryllium	Be	mg/L		<0.001	< 0.0002	< 0.0002	-	<0.001	<0.001
Bismuth	Bi	mg/L		<0.001	< 0.0002	< 0.0002	-	<0.001	<0.001
Boron	B	mg/L		0.06	0.97	0.87	-	0.36	0.31
Cadmium[3]	Cd	mg/L		<0.0002	0.00018	0.0001	-	<0.0002	<0.0002
Calcium	Ca	mg/L		68.3	74.7	72.5	-	89.3	86.1
Chromium[2]	Cr	mg/L		0.003	0.008	0.0012	-	<0.001	<0.001
Cobalt	Co	mg/L		0.004	0.0072	0.0045	-	0.002	0.002
Copper[3]	Cu	mg/L	**0.3**	0.004	0.007	0.002	-	0.001	0.005
Iron	Fe	mg/L		2.96	4.72	0.68	-	0.57	0.57
Lead[3]	Pb	mg/L	**0.2**	0.002	0.0035	0.0005	-	<0.001	<0.001
Lithium	Li	mg/L		0.021	0.021	0.017	-	0.029	0.028
Magnesium	Mg	mg/L		35.2	30.7	27	-	25	24.5
Manganese	Mn	mg/L		1.04	0.517	0.417	-	0.41	0.43
Mercury	Hg	mg/L		<0.00002	< 0.00002	< 0.00002	-	<0.00002	<0.00002
Molybdenum	Mo	mg/L		0.022	0.015	0.013	-	0.0087	0.009
Nickel[3]	Ni	mg/L	**0.5**	0.008	0.017	0.011	-	0.007	0.01
Phosphorus	P	mg/L		0.19	0.34	0.09	-	1.2	1.2
Potassium	K	mg/L		5.94	7.8	6.9	-	6.7	6.5
Selenium	Se	mg/L		<0.001	< 0.0002	< 0.0002	-	<0.001	<0.001
Silicon	SiO2	mg/L		10.7	13.8	7.57	-	4.7	4.6
Silver	Ag	mg/L		<0.0001	0.00067	0.00016	-	<0.00025	<0.00025
Sodium	Na	mg/L		6.81	91.9	84.9	-	59	55.9
Strontium	Sr	mg/L		0.26	0.759	0.691	-	0.75	0.72
Tellurium	Te	mg/L		<0.001	< 0.0002	< 0.0002	-	<0.001	<0.001
Thallium	Tl	mg/L		<0.0001	0.00006	< 0.00002	-	<0.0001	<0.0001
Thorium	Th	mg/L		0.0007	< 0.0001	< 0.0001	-	<0.0005	<0.0005
Tin	Sn	mg/L		<0.001	0.0003	< 0.0002	-	<0.001	<0.001
Titanium	Ti	mg/L		0.063	0.158	0.02	-	0.005	0.005
Uranium	U	mg/L		0.0084	0.002	0.0013	-	0.0018	0.0018
Vanadium	V	mg/L		0.002	0.0039	0.0006	-	0.002	0.002
Zinc	Zn	mg/L	**0.5**	0.014	0.042	0.015	-	<0.005	<0.005
Zirconium	Zr	mg/L		<0.0010	< 0.002	< 0.002	-	<0.01	<0.01

		Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Iron Formation Rock					
				Goose Island					
				MW03-02				MW06-06	
Laboratory sample number				9756-03	9043-01	9043-01	9043-02	12567-01	12567-02
Sampling date				28-Sep-03	Jul 31-04	Jul 31-04	Jul 31-04	24-Aug-06	24-Aug-06
QA/QC						Decant [8]	FD		FD
Dissolved Metals									
Aluminum	Al	mg/L		0.47	0.019	-	-	<0.005	<0.005
Antimony	Sb	mg/L		<0.001	0.0003	-	-	<0.001	<0.001
Arsenic	As	mg/L	**0.3**	0.002	0.002	-	-	0.002	0.002
Barium	Ba	mg/L		0.023	0.086	-	-	0.018	0.019
Beryllium	Be	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Bismuth	Bi	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Boron	B	mg/L		0.06	0.94	-	-	0.37	0.44
Cadmium	Cd	mg/L	**0.002**	<0.0002	0.00016	-	-	<0.0002	<0.0002
Calcium	Ca	mg/L		63.1	73.5	-	-	87.1	85.3
Chromium[2]	Cr	mg/L		0.001	0.0004	-	-	<0.001	<0.001
Cobalt	Co	mg/L		0.004	0.0060	-	-	<0.001	<0.001
Copper	Cu	mg/L	**0.1**	0.004	0.0014	-	-	0.001	<0.001
Iron	Fe	mg/L		1.91	0.05	-	-	<0.05	<0.05
Lead	Pb	mg/L	**0.1**	0.001	< 0.0002	-	-	<0.001	<0.001
Lithium	Li	mg/L		0.019	0.016	-	-	0.028	0.025
Magnesium	Mg	mg/L		32.1	30.2	-	-	24.0	23.6
Manganese	Mn	mg/L		0.96	0.492	-	-	0.006	0.003
Mercury	Hg	mg/L		<0.00002	< 0.02	-	-	<0.00002	<0.00002
Molybdenum	Mo	mg/L		0.018	0.014	-	-	0.0081	0.0069
Nickel	Ni	mg/L	**0.2**	0.007	0.012	-	-	0.005	0.004
Phosphorus	P	mg/L		0.16	< 0.03	-	-	0.9	0.8
Potassium	K	mg/L		5.36	7.43	-	-	6.6	5.8
Selenium	Se	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Silicon	SiO2	mg/L		7.98	5.88	-	-	4.1	3.8
Silver	Ag	mg/L		<0.0001	< 0.00005	-	-	<0.00025	<0.00025
Sodium	Na	mg/L		6.29	89.5	-	-	58.2	55.9
Strontium	Sr	mg/L		0.24	0.736	-	-	0.72	0.76
Tellurium	Te	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Thallium	Tl	mg/L		<0.0001	< 0.00002	-	-	<0.0001	<0.0001
Thorium	Th	mg/L		<0.0005	< 0.0001	-	-	<0.0005	<0.0005
Tin	Sn	mg/L		<0.001	< 0.0002	-	-	<0.001	<0.001
Titanium	Ti	mg/L		0.024	0.0008	-	-	<0.001	<0.001
Uranium	U	mg/L		0.0077	0.0013	-	-	0.0016	0.0014
Vanadium	V	mg/L		<0.001	< 0.0002	-	-	0.001	0.001
Zinc	Zn	mg/L	**0.4**	0.012	0.029	-	-	<0.005	<0.005
Zirconium	Zr	mg/L		<0.0010	< 0.002	-	-	<0.01	<0.01
Anions									
Fluoride	F	mg/L		0.35	0.6	-	0.57	0.55	0.63
Chloride	Cl	mg/L	**1000**	5.4	251	-	259	304	331
Nutrients									
Nitrate and Nitrite	NO3 + NO2	mg/L	**20***	< 0.05	< 0.05	-	< 0.05	-	-
Nitrate	NO3	mg/L		< 0.05	< 0.05	-	< 0.05	< 0.25	< 0.25
Nitrite	NO2	mg/L		0.005	0.006	-	0.007	0.005	0.004
Ammonia Nitrogen	N	mg/L	**16**	0.19	0.07	-	0.05	-	-
Total Kjeldahl Nitrogen	N	mg/L		-	0.4	-	-	0.6	0.6
Total Phosphorus	P	mg/L		0.10	0.23	-	0.25	-	-
Cyanide (mg/L)									
Weak Acid Dissociable Cyanide (CN-)		mg/L		-		-	-	-	-
Total	CN	mg/L	**1.0**	-	<0.01	-	-	-	-
Free	CN	mg/L		-	<0.1	-	-	-	-

FD = Field Duplicate
- Not analyzed

Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

		Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcanic			
				North Portage			Goose Island
				MW03-03			MW06-05
Laboratory sample number				9756-02	9045-01	9045-02	
Sampling date				25-Sep-03	Aug-9-04	Aug-9-04	
QA/QC						FD	
FIELD-MEASURED PARAMETERS							
Temperature		°C		2.2	10.3	-	
pH		s.u.	**6.0-9.0**	8.63	7.77	-	
Conductivity		uS/cm		350	627	-	
LABORATORY PARAMETERS							
Calculated TDS (mg/L)				254	239		
pH		s.u.	**6.0-9.0**	7.83	7.96	-	-
Conductivity		uS/cm		-	640	-	
Total Alkalinity	CaCO3	mg/L		93.8	133	-	-
Bicarbonate Alkalinity HCO3		mg/L		114	162	-	-
Carbonate Alkalinity CO3		mg/L		< 0.5	< 0.5	-	-
Hydroxide Alkalinity OH		mg/L		< 0.5	< 0.5	-	-
Dissolved Sulphate	SO4	mg/L		26.6	6.2	-	
Hardness CaCO3*		mg/L		136	210	-	
Hardness (Total)		mg/L		144	216	-	-
Total Suspended Solids	TSS	mg/L	**15**	-	1	-	-
Total Dissolved Solids	TDS	mg/L		-	-	-	-
Turbidity		NTU	**15**	-	-	-	-
Total Metals							
Aluminum[1]	Al	mg/L		0.018	0.12	-	-
Antimony	Sb	mg/L		0.002	0.0002	-	-
Arsenic	As	mg/L	**0.5**	0.004	0.015	-	-
Barium	Ba	mg/L		0.02	0.05	-	-
Beryllium	Be	mg/L		<0.001	< 0.0002	-	-
Bismuth	Bi	mg/L		<0.001	< 0.0002	-	-
Boron	B	mg/L		0.09	0.19	-	-
Cadmium[3]	Cd	mg/L		<0.0002	0.00006	-	-
Calcium	Ca	mg/L		28	47.7	-	-
Chromium[2]	Cr	mg/L		<0.001	0.001	-	-
Cobalt	Co	mg/L		<0.001	0.0004	-	-
Copper[3]	Cu	mg/L	**0.3**	<0.001	0.0014	-	-
Iron	Fe	mg/L		<0.05	0.46	-	-
Lead[3]	Pb	mg/L	**0.2**	0.001	0.0006	-	-
Lithium	Li	mg/L		0.007	0.0092	-	-
Magnesium	Mg	mg/L		18	23.5	-	-
Manganese	Mn	mg/L		0.11	0.131	-	-
Mercury	Hg	mg/L		<0.00002	< 0.00002	-	-
Molybdenum	Mo	mg/L		0.056	0.093	-	-
Nickel[3]	Ni	mg/L	**0.5**	0.003	0.0024	-	-
Phosphorus	P	mg/L		0.07	0.08	-	-
Potassium	K	mg/L		3.51	2.65	-	-
Selenium	Se	mg/L		<0.001	< 0.0002	-	-
Silicon	SiO2	mg/L		3.78	5.96	-	-
Silver	Ag	mg/L		<0.0001	0.0001	-	-
Sodium	Na	mg/L		17.6	33.6	-	-
Strontium	Sr	mg/L		0.26	0.581	-	-
Tellurium	Te	mg/L		<0.001	< 0.0002	-	-
Thallium	Tl	mg/L		<0.0001	< 0.00002	-	-
Thorium	Th	mg/L		<0.0005	< 0.0001	-	-
Tin	Sn	mg/L		<0.001	< 0.0002	-	-
Titanium	Ti	mg/L		<0.001	0.0045	-	-
Uranium	U	mg/L		0.012	0.0088	-	-
Vanadium	V	mg/L		<0.001	0.0002	-	-
Zinc	Zn	mg/L	**0.5**	<0.005	0.006	-	-
Zirconium	Zr	mg/L		<0.0010	< 0.002	-	-

Laboratory sample number / Sampling date / QA/QC		Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcanic			
				North Portage			Goose Island
				MW03-03			MW06-05
				9756-02 25-Sep-03	9045-01 Aug-9-04	9045-02 Aug-9-04 FD	
Dissolved Metals							
Aluminum	Al	mg/L		0.018	0.006	-	-
Antimony	Sb	mg/L		0.002	< 0.0002	-	-
Arsenic	As	mg/L	**0.3**	0.004	0.013	-	-
Barium	Ba	mg/L		0.018	0.048	-	-
Beryllium	Be	mg/L		<0.001	< 0.0002	-	-
Bismuth	Bi	mg/L		<0.001	< 0.0002	-	-
Boron	B	mg/L		0.08	0.17	-	-
Cadmium	Cd	mg/L	**0.002**	<0.0002	0.00004	-	-
Calcium	Ca	mg/L		26.3	47.1	-	-
Chromium[2]	Cr	mg/L		<0.001	0.0003	-	-
Cobalt	Co	mg/L		<0.001	0.0003	-	-
Copper	Cu	mg/L	**0.1**	<0.001	0.0002	-	-
Iron	Fe	mg/L		<0.05	< 0.01	-	-
Lead	Pb	mg/L	**0.1**	<0.001	< 0.0002	-	-
Lithium	Li	mg/L		0.007	0.0081	-	-
Magnesium	Mg	mg/L		17.1	22.4	-	-
Manganese	Mn	mg/L		0.1	0.130	-	-
Mercury	Hg	mg/L		<0.00002	< 0.02	-	-
Molybdenum	Mo	mg/L		0.052	0.09	-	-
Nickel	Ni	mg/L	**0.2**	0.003	0.0018	-	-
Phosphorus	P	mg/L		0.07	< 0.03	-	-
Potassium	K	mg/L		3.33	2.64	-	-
Selenium	Se	mg/L		<0.001	< 0.0002	-	-
Silicon	SiO2	mg/L		3.62	5.70	-	-
Silver	Ag	mg/L		<0.0001	< 0.00005	-	-
Sodium	Na	mg/L		16.5	32.0	-	-
Strontium	Sr	mg/L		0.24	0.556	-	-
Tellurium	Te	mg/L		<0.001	< 0.0002	-	-
Thallium	Tl	mg/L		<0.0001	< 0.00002	-	-
Thorium	Th	mg/L		<0.0005	< 0.0001	-	-
Tin	Sn	mg/L		<0.001	< 0.0002	-	-
Titanium	Ti	mg/L		<0.001	0.0003	-	-
Uranium	U	mg/L		0.012	0.0087	-	-
Vanadium	V	mg/L		<0.001	< 0.0002	-	-
Zinc	Zn	mg/L	**0.4**	<0.005	0.004	-	-
Zirconium	Zr	mg/L		<0.0010	< 0.002	-	-
Anions							
Fluoride	F	mg/L		0.46	0.38	-	-
Chloride	Cl	mg/L	**1000**	50.4	121	-	-
Nutrients							
Nitrate and Nitrite	NO3 + NO2	mg/L	**20***	0.15	< 0.05	< 0.01	-
Nitrate	NO3	mg/L		0.15	< 0.05	-	-
Nitrite	NO2	mg/L		0.003	< 0.002	-	-
Ammonia Nitrogen	N	mg/L	**16**	0.08	-	-	-
Total Kjeldahl Nitrogen	N	mg/L		-	0.2	0.2	-
Total Phosphorus	P	mg/L		0.07	0.05	0.10	-
Cyanide (mg/L)							
Weak Acid Dissociable Cyanide (CN-)		mg/L		-	-	-	-
Total	CN	mg/L	**1.0**	-	<0.01	<0.01	-
Free	CN	mg/L		-	<0.1	<0.1	-

FD = Field Duplicate
- Not analyzed

Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

		Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcanic			Method Detection Limit
				Second Portage Arm (tailings disposal area)			
				MW03-04	MW06-07		
Laboratory sample number				9756-01	12568-01	12568-02	
Sampling date				18-Sep-03	30-Aug-06	30-Aug-06	27-Aug-10
QA/QC						FD	
FIELD-MEASURED PARAMETERS							
Temperature		°C		3.3	5	5	-
pH		s.u.	**6.0-9.0**	7.67	8.00	8.00	-
Conductivity		uS/cm		370 - 450	440	440	-
LABORATORY PARAMETERS							
Calculated TDS (mg/L)				154	172**	162**	-
pH		s.u.	**6.0-9.0**	-	7.54	7.57	-
Conductivity		uS/cm			281	285	0.001
Total Alkalinity	CaCO3	mg/L		-	89	89	1
Bicarbonate Alkalinity HCO3		mg/L		-	108	108	0.5
Carbonate Alkalinity CO3		mg/L		-	< 0.5	< 0.5	0.5
Hydroxide Alkalinity OH		mg/L		-	< 0.5	< 0.5	0.5
Dissolved Sulphate	SO4	mg/L		63.8	4	3.76	1
Hardness CaCO3*		mg/L		53	106	107	1
Hardness (Total)		mg/L		-	124	128	1
Total Suspended Solids	TSS	mg/L	**15**	-	11	11	1
Total Dissolved Solids	TDS	mg/L		-	-	-	10
Turbidity		NTU	**15**	-	-	-	0.1
Total Metals							
Aluminum[1]	Al	mg/L		-	1.08	1.06	0.03
Antimony	Sb	mg/L		-	< 0.001	< 0.001	0.001
Arsenic	As	mg/L	**0.5**	-	0.001	0.002	0.002
Barium	Ba	mg/L		-	0.11	0.11	0.03
Beryllium	Be	mg/L		-	< 0.001	< 0.001	0.001
Bismuth	Bi	mg/L		-	< 0.001	< 0.001	0.001
Boron	B	mg/L		-	< 0.05	< 0.05	0.05
Cadmium[3]	Cd	mg/L		-	< 0.0002	< 0.0002	0.001
Calcium	Ca	mg/L		-	34.9	36.4	0.1
Chromium[2]	Cr	mg/L		-	0.006	0.005	0.001
Cobalt	Co	mg/L		-	0.001	0.001	0.001
Copper[3]	Cu	mg/L	**0.3**	-	0.011	0.011	0.003
Iron	Fe	mg/L		-	1.5	1.58	0.1
Lead[3]	Pb	mg/L	**0.2**	-	0.001	0.001	0.001
Lithium	Li	mg/L		-	0.004	0.004	0.001
Magnesium	Mg	mg/L		-	8.81	9.04	0.1
Manganese	Mn	mg/L		-	0.073	0.074	0.003
Mercury	Hg	mg/L		-	< 0.00002	< 0.00002	0.0001
Molybdenum	Mo	mg/L		-	0.005	0.0048	0.0005
Nickel[3]	Ni	mg/L	**0.5**	-	0.005	0.005	0.001
Phosphorus	P	mg/L		-	0.4	0.4	0.01
Potassium	K	mg/L		-	2.7	2.8	0.1
Selenium	Se	mg/L		-	< 0.001	< 0.001	0.001
Silicon	SiO2	mg/L		-	5	5	0.05
Silver	Ag	mg/L		-	0.0009	0.0009	0.00010
Sodium	Na	mg/L		-	8.85	9.12	0.05
Strontium	Sr	mg/L		-	0.23	0.24	0.001
Tellurium	Te	mg/L		-	< 0.001	< 0.001	0.001
Thallium	Tl	mg/L		-	< 0.0001	< 0.0001	0.01
Thorium	Th	mg/L		-	< 0.0005	< 0.0005	0.0005
Tin	Sn	mg/L		-	< 0.001	< 0.001	0.001
Titanium	Ti	mg/L		-	0.032	0.031	0.001
Uranium	U	mg/L		-	0.0095	0.0097	0.0005
Vanadium	V	mg/L		-	0.002	0.002	0.001
Zinc	Zn	mg/L	**0.5**	-	0.006	0.006	0.005
Zirconium	Zr	mg/L		-	< 0.01	< 0.01	0.001

Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

		Units	Portage Attenuation Pond Effluent Limits Maximum Average Conc.	Intermediate Volcanic			Method Detection Limit
				Second Portage Arm (tailings disposal area)			
				MW03-04	MW06-07		
Laboratory sample number				9756-01	12568-01	12568-02	
Sampling date				18-Sep-03	30-Aug-06	30-Aug-06	27-Aug-10
QA/QC						FD	
Dissolved Metals							
Aluminum	Al	mg/L		0.72	0.04	0.042	0.03
Antimony	Sb	mg/L		0.001	< 0.001	< 0.001	0.001
Arsenic	As	mg/L	**0.3**	0.007	< 0.001	0.0010	0.0020
Barium	Ba	mg/L		0.03	0.086	0.086	0.03
Beryllium	Be	mg/L		<0.001	< 0.001	< 0.001	0.001
Bismuth	Bi	mg/L		<0.001	< 0.001	< 0.001	0.001
Boron	B	mg/L		<0.05	< 0.05	< 0.05	0.05
Cadmium	Cd	mg/L	**0.002**	<0.0002	< 0.0002	< 0.0002	0.0002
Calcium	Ca	mg/L		15	31	31.5	0.05
Chromium[2]	Cr	mg/L		<0.001	< 0.001	< 0.001	0.001
Cobalt	Co	mg/L		0.003	< 0.001	< 0.001	0.0010
Copper	Cu	mg/L	**0.1**	0.006	0.005	0.008	0.001
Iron	Fe	mg/L		0.55	< 0.05	0.05	0.1
Lead	Pb	mg/L	**0.1**	0.006	< 0.001	< 0.001	0.001
Lithium	Li	mg/L		0.015	0.002	0.002	0.001
Magnesium	Mg	mg/L		3.81	6.83	6.92	0.05
Manganese	Mn	mg/L		0.049	0.032	0.032	0.001
Mercury	Hg	mg/L		<0.00002	< 0.00002	< 0.00002	0.0001
Molybdenum	Mo	mg/L		0.024	0.004	0.0042	0.030
Nickel	Ni	mg/L	**0.2**	0.003	0.002	0.002	0.01
Phosphorus	P	mg/L		5.58	0.3	0.3	0.01
Potassium	K	mg/L		5.44	2.3	2.3	0.1
Selenium	Se	mg/L		<0.001	< 0.001	< 0.001	0.001
Silicon	SiO2	mg/L		10.2	2.70	2.70	0.05
Silver	Ag	mg/L		<0.0001	< 0.00025	< 0.00025	0.0003
Sodium	Na	mg/L		52.9	7.7	7.8	0.0
Strontium	Sr	mg/L		0.14	0.2	0.2	0.001
Tellurium	Te	mg/L		<0.001	< 0.001	< 0.001	0.001
Thallium	Tl	mg/L		<0.0001	< 0.0001	< 0.0001	0.01
Thorium	Th	mg/L		<0.0005	< 0.0005	< 0.0005	0.0005
Tin	Sn	mg/L		<0.001	< 0.001	< 0.001	0.001
Titanium	Ti	mg/L		0.003	< 0.001	< 0.001	0.001
Uranium	U	mg/L		0.013	0.008	0.008	0.0005
Vanadium	V	mg/L		<0.001	< 0.001	< 0.001	0.001
Zinc	Zn	mg/L	**0.4**	0.022	< 0.005	< 0.005	0.005
Zirconium	Zr	mg/L		<0.0010	< 0.01	< 0.01	0.001
Anions							
Fluoride	F	mg/L		0.34	0.2	0.11	0.1
Chloride	Cl	mg/L	**1000**	13.4	33.3	33.5	0.05
Nutrients							
Nitrate and Nitrite	NO3 + NO2	mg/L	**20***	< 0.05	-	-	0.02
Nitrate	NO3	mg/L		< 0.05	0.12	0.12	0.05
Nitrite	NO2	mg/L		0.004	0.003	0.003	0.002
Ammonia Nitrogen	N	mg/L	**16**	-	-	-	0.1
Total Kjeldahl Nitrogen	N	mg/L		-	-	-	0.2
Total Phosphorus	P	mg/L		-	-	-	0.02
Cyanide (mg/L)							
Weak Acid Dissociable Cyanide (CN-)		mg/L		-	-	-	-
Total	CN	mg/L	**1.0**	-	-	-	-
Free	CN	mg/L		-	-	-	-

FD = Field Duplicate
- Not analyzed

		Units	Portage Attenuation Pond Effluent Limits[1] Maximum Average Conc.	Intermediate Volcanic						
				Second Portage Lake						
				MW08-02						
Laboratory sample number				F59984	F59995	147144	147172	147172	L56096	L56473
Sampling date				8-Sep-08	8-Sep-08	29-Aug-09	29-Aug-09	29-Aug-09	1-Sep-10	1-Sep-10
QA/QC					**FD**		**FD**	**Lab Dup**		**FD**
FIELD-MEASURED PARAMETERS										
Temperature		°C		7.3	-	4.6	-	-	9.2	-
pH		s.u.	**6.0 - 9.0**	7.05	-	7.79	-	-	7.87	-
Conductivity		uS/cm		808	-	616	-	-	690	-
LABORATORY PARAMETERS										
pH		s.u.	**6.0 - 9.0**	8.00	8.10	7.95	7.96	-	7.74	7.75
Conductivity		uS/cm		-	-	-	710	-	-	-
Total Cyanide		mg/L								
Total Alkalinity	as $CaCO_3$	mg/L		76	76		76	-	80	80
Bicarbonate Alkalinity HCO3 (mg/L)		mg/L		76	76					
Carbonate Alkalinity CO3 (mg/L)		mg/L		<2	<2					
Dissolved Sulphate	SO_4	mg/L		2.5	2.0	3.0	2.9	3.0	-	-
Hardness (Total)	as $CaCO_3$	mg/L		240	230	240	850	-	220	220
Sulphate	SO4	mg SO4/L								
Total Suspended Solids	TSS	mg/L	**15**	-	-	-	-	-	-	-
Total Dissolved Solids	TDS	mg/L		500	520	530	510	-	450	490
Turbidity		NTU	**15**	2.4	2.4	2.2	2.2	-	4	3.9
Total Metals (mg/L)										
Aluminum	Al	mg/L	**1.5**	-	-	-	-	-	<0.03	<0.03
Antimony	Sb	mg/L		-	-	-	-	-	<0.006	<0.006
Arsenic	As	mg/L	**0.3**	-	-	-	-	-	0.003	0.003
Barium	Ba	mg/L		-	-	-	-	-	0.03	0.04
Cadmium	Cd	mg/L	**0.002**	-	-	-	-	-	<0.001	<0.001
Calcium	Ca	mg/L		-	-	-	-	-	45	45
Chromium	Cr	mg/L		-	-	-	-	-	0.03	<0.03
Cobalt	Co	mg/L		-	-	-	-	-	<0.03	<0.03
Copper	Cu	mg/L	**0.1**	-	-	-	-	-	<0.003	<0.003
Iron	Fe	mg/L		-	-	-	-	-	-	-
Lead	Pb	mg/L	**0.1**	-	-	-	-	-	<0.001	<0.001
Magnesium	Mg	mg/L		-	-	-	-	-	26	26
Manganese	Mn	mg/L		-	-	-	-	-	0.042	0.044
Mercury	Hg	mg/L	**0.0004**	-	-	-	-	-	<0.0001	<0.0001
Molybdenum	Mo	mg/L		-	-	-	-	-	0.05	0.05
Nickel	Ni	mg/L	**0.2**	-	-	-	-	-	0.01	<0.01
Potassium	K	mg/L		-	-	-	-	-	-	-
Selenium	Se	mg/L		-	-	-	-	-	<0.001	<0.001
Silver	Ag	mg/L		-	-	-	-	-	<0.0003	<0.0003
Sodium	Na	mg/L		-	-	-	-	-	32	32
Thallium	Tl	mg/L		-	-	-	-	-	-	-
Zinc	Zn	mg/L	**0.4**	-	-	-	-	-	0.01	0.01
Dissolved Metals (mg/L)										
Aluminum	Al	mg/L	**1.5**	0.0046	0.00487	<0.03	<0.03	-	-	-
Arsenic	As	mg/L	**0.3**	0.0035	0.0035	0.003	<0.002	-	-	-
Barium	Ba	mg/L		0.045	0.043	0.04	<0.03	-	-	-
Cadmium	Cd	mg/L	**0.002**	<0.0002	<0.0002	<0.001	<0.001	-	-	-
Calcium	Ca	mg/L		50	48	51	340	-	-	-
Copper	Cu	mg/L	**0.1**	0.00056	0.0011	<0.003	<0.003	-	-	-
Iron	Fe	mg/L		<0.03	<0.03	<0.1	<0.1	-	-	-
Lead	Pb	mg/L	**0.1**	<0.0001	0.00027	<0.001	<0.001	-	-	-
Magnesium	Mg	mg/L		27	27	27	<1	-	-	-
Manganese	Mn	mg/L		0.03	0.031	<0.003	<0.003	-	-	-
Mercury	Hg	mg/L	**0.0**	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Molybdenum	Mo	mg/L		0.026	0.025	0.07	0.04	-	-	-
Nickel	Ni	mg/L	**0.2**	0.019	0.019	<0.01	<0.01	-	-	-
Potassium	K	mg/L		1.8	1.5	2	1.3	-	-	-
Selenium	Se	mg/L		<0.001	<0.001	<0.001	<0.001	-	-	-
Silver	Ag	mg/L		<0.0001	<0.0001	<0.0003	<0.0003	-	-	-
Sodium	Na	mg/L		-	-	36	24	-	-	-
Thallium	Tl	mg/L		<0.002	<0.002	<0.01	<0.01	-	-	-
Zinc	Zn	mg/L	**0.4**	0.014	0.014	0.005	<0.003	-	-	-
Anions (mg/L)										
Fluoride	F	mg/L		0.2	0.2	0.3	0.3	-	0.3	0.3
Chloride	Cl	mg/L	**1000**	160	180	160	160	180	160	160
Nutrients (mg/L)										
Nitrate and Nitrite	NO3 + NO2	mg/L		<0.1	<0.1	<0.04	<0.04	<0.04	-	-
Nitrate	NO3	mg/L	**20**	-	-	<0.02	<0.02	<0.02	-	-
Nitrite	NO2	mg/L		<0.1	<0.1	<0.02	<0.02	<0.02	-	-
Ammonia	N	mg/L	**16**	<0.05	0.05	0.05	0.05	-	0.06	0.06

FD = Field duplicate
\- Not analyzed

Table 2
Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

Laboratory sample number / Sampling date / QA/QC		Units	Portage Attenuation Pond Effluent Limits[1] Maximum Average Conc.	Intermediate Volcanic – Second Portage Lake – MW08-02				Method Detection Limit
				15816	15817	20763	20764	25/26-Jul-12
				21-Sep-11	21-Sep-11	23-Jul-12	23-Jul-12	31-Jul-12
					FD		**FD**	1-Aug-12
FIELD-MEASURED PARAMETERS								
Temperature		°C		8.6	-	20.5	-	
pH		s.u.	**6.0 - 9.0**	8.05	-	7.94	-	
Conductivity		uS/cm		905	-	616	-	
LABORATORY PARAMETERS								
pH		s.u.	**6.0 - 9.0**	7.22	7.39	7.81	7.59	--
Conductivity		uS/cm		-	-	-	-	
Total Cynanide		mg/L				<0.005	<0.005	0.005
Total Alkalinity	as $CaCO_3$	mg/L		76	76	102	100	2
Bicarbonate Alkalinity HCO3 (mg/L)		mg/L						
Carbonate Alkalinity CO3 (mg/L)		mg/L						
Dissolved Sulphate	SO_4	mg/L						
Hardness (Total)	as $CaCO_3$	mg/L		317	305	170	178	1
Sulphate	SO4	mg SO4/L		4	8	5	3	1
Total Suspended Solids	TSS	mg/L	**15**			2	4	1
Total Dissolved Solids	TDS	mg/L						
Turbidity		NTU	**15**	3.2	2.3	8.4	7	0.02
Total Metals (mg/L)								
Aluminum	Al	mg/L	**1.5**	0.03	<0.006	0.006	<0.006	0.006
Antimony	Sb	mg/L		-	-	-	-	
Arsenic	As	mg/L	**0.3**	0.0023	0.0020	<0.0005	<0.0005	0.0005
Barium	Ba	mg/L		0.043	0.0370	0.0313	0.0311	0.0005
Cadmium	Cd	mg/L	**0.002**	<0.00002	<0.00002	<0.00002	<0.00002	0.00002
Calcium	Ca	mg/L		63.1	54.2	35.5	37.4	0.03
Chromium	Cr	mg/L		-	-	-	-	-
Cobalt	Co	mg/L		-	-	-	-	-
Copper	Cu	mg/L	**0.1**	0.0014	0.0008	<0.0005	<0.0005	0.0005
Iron	Fe	mg/L		1.4	1.4	1.2	1.1	0.01
Lead	Pb	mg/L	**0.1**	<0.0003	<0.0003	<0.0003	<0.0003	0.0003
Magnesium	Mg	mg/L		38.9	38.0	19.8	20.6	0.02
Manganese	Mn	mg/L		0.1338	0.1213	0.133	0.1362	0.0005
Mercury	Hg	mg/L	**0.0004**	0.00009	0.0001	0.00012	0.0002	0.00001
Molybdenum	Mo	mg/L		0.0016	<0.0005	0.0522	0.053	0.0005
Nickel	Ni	mg/L	**0.2**	0.0046	0.0037	0.0017	0.002	0.0005
Potassium	K	mg/L		2.1	2.0	2.5	2.6	0.05
Selenium	Se	mg/L		0.005	0.005	0.004	0.006	0.001
Silver	Ag	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	0.0002
Sodium	Na	mg/L		43.3	48.8	26.8	29	0.05
Thallium	Tl	mg/L		0.005	<0.005	<0.005	<0.005	0.005
Zinc	Zn	mg/L	**0.4**	0.01	0.375	0.005	0.004	0.001
Dissolved Metals (mg/L)								
Aluminum	Al	mg/L	**1.5**	<0.01	<0.01	<0.01	<0.01	0.01
Arsenic	As	mg/L	**0.3**	<0.005	<0.005	<0.005	<0.005	0.005
Barium	Ba	mg/L		0.041	0.0410	0.0250	0.0240	0.005
Cadmium	Cd	mg/L	**0.002**	<0.005	<0.005	<0.005	<0.005	0.005
Calcium	Ca	mg/L		59.9	61	39.1	36.9	0.05
Copper	Cu	mg/L	**0.1**	<0.005	<0.005	<0.005	<0.005	0.005
Iron	Fe	mg/L		<0.05	<0.05	<0.05	<0.05	0.05
Lead	Pb	mg/L	**0.1**	<0.005	<0.005	<0.005	<0.005	0.005
Magnesium	Mg	mg/L		35.6	35.5	21.6	20.2	0.05
Manganese	Mn	mg/L		0.107	0.110	0.134	0.128	0.005
Mercury	Hg	mg/L	**0.0**	<0.0005	<0.0005	<0.0005	<0.0005	0.0005
Molybdenum	Mo	mg/L		<0.005	<0.005	0.046	0.043	0.005
Nickel	Ni	mg/L	**0.2**	<0.005	<0.005	<0.005	<0.005	0.005
Potassium	K	mg/L		2.3	2.4	2.1	1.9	0.05
Selenium	Se	mg/L		0.005	0.005	<0.005	<0.005	0.005
Silver	Ag	mg/L		<0.005	<0.005	<0.005	<0.005	0.005
Sodium	Na	mg/L		44	44.2	25.0	23.3	0.05
Thallium	Tl	mg/L		<0.01	<0.01	<0.01	<0.01	0.01
Zinc	Zn	mg/L	**0.4**	<0.005	0.013	<0.005	<0.005	0.005
Anions (mg/L)								
Fluoride	F	mg/L		0.32	0.33	0.42	0.37	0.02
Chloride	Cl	mg/L	**1000**	169	165	111	109	0.5
Nutrients (mg/L)								
Nitrate and Nitrite	NO3 + NO2	mg/L		0.01	<0.01	-	-	
Nitrate	NO3	mg/L	**20**	0.01	<0.01	0.04	0.04	0.01
Nitrite	NO2	mg/L		<0.01	<0.01	<0.01	<0.01	0.01
Ammonia	N	mg/L	**16**	0.08	0.07	0.2	0.22	0.01

FD = Field duplicate
- Not analyzed

Table 2
Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

Laboratory sample number / Sampling date / QA/QC		Units	Portage Attenuation Pond Effluent Limits[1] Maximum Average Conc.	Intermediate Volcanic, Second Portage Lake, MW08-03		Method Detection Limit
Laboratory sample number				F66637	F68088	
Sampling date				14-Sep-08	14-Sep-08	1-Sep-10
QA/QC					**FD**	
FIELD-MEASURED PARAMETERS						
Temperature		^oC		5.0	-	
pH		s.u.	**6.0 - 9.0**	7.10	-	
Conductivity		uS/cm		366	-	
LABORATORY PARAMETERS						
pH		s.u.	**6.0 - 9.0**	8.10	8.20	-
Conductivity		uS/cm		490	480	0.001
Total Cynanide		mg/L				
Total Alkalinity	as $CaCO_3$	mg/L		60	59	2
Bicarbonate Alkalinity HCO3 (mg/L)		mg/L		-	-	
Carbonate Alkalinity CO3 (mg/L)		mg/L		-	-	
Dissolved Sulphate	SO_4	mg/L		56	51	0.2
Hardness (Total)	as $CaCO_3$	mg/L		180	180	1
Sulphate	SO4	mg SO4/L				
Total Suspended Solids	TSS	mg/L	**15**	56	54	2
Total Dissolved Solids	TDS	mg/L		-	-	10
Turbidity		NTU	**15**	70	69	0.1
Total Metals (mg/L)						
Aluminum	Al	mg/L	**1.5**	-	-	0.03
Antimony	Sb	mg/L		-	-	0.006
Arsenic	As	mg/L	**0.3**	-	-	0.002
Barium	Ba	mg/L		-	-	0.03
Cadmium	Cd	mg/L	**0.002**	-	-	0.001
Calcium	Ca	mg/L		-	-	1
Chromium	Cr	mg/L		-	-	0.03
Cobalt	Co	mg/L		-	-	0.03
Copper	Cu	mg/L	**0.1**	-	-	0.003
Iron	Fe	mg/L		-	-	
Lead	Pb	mg/L	**0.1**	-	-	0.001
Magnesium	Mg	mg/L		-	-	1
Manganese	Mn	mg/L		-	-	0.003
Mercury	Hg	mg/L	**0.0004**	-	-	0.001
Molybdenum	Mo	mg/L		-	-	0.03
Nickel	Ni	mg/L	**0.2**	-	-	0.01
Potassium	K	mg/L		-	-	
Selenium	Se	mg/L		-	-	0.001
Silver	Ag	mg/L		-	-	0.0003
Sodium	Na	mg/L		-	-	0.03
Thallium	Tl	mg/L		-	-	
Zinc	Zn	mg/L	**0.4**	-	-	0.005
Dissolved Metals (mg/L)						
Aluminum	Al	mg/L	**1.5**	0.0046	0.0041	0.03
Arsenic	As	mg/L	**0.3**	<0.001	<0.001	0.002/0.001
Barium	Ba	mg/L		0.033	0.034	0.030
Cadmium	Cd	mg/L	**0.002**	<0.0002	<0.0002	0.001/0.0002
Calcium	Ca	mg/L		46	46	1
Copper	Cu	mg/L	**0.1**	0.003	0.0039	0.003
Iron	Fe	mg/L		<0.03	<0.03	0.03
Lead	Pb	mg/L	**0.1**	0.00056	0.00027	0.0001/0.001
Magnesium	Mg	mg/L		17	16	1
Manganese	Mn	mg/L		0.32	0.32	0.003
Mercury	Hg	mg/L	**0.0**	<0.00001	<0.00001	0.00001/0.0001
Molybdenum	Mo	mg/L		0.14	0.14	0.0005/0.03
Nickel	Ni	mg/L	**0.2**	<0.001	0.0017	0.01/0.001
Potassium	K	mg/L		4.4	4.5	0.1
Selenium	Se	mg/L		<0.001	<0.001	0.001
Silver	Ag	mg/L		<0.0001	<0.0001	0.0001/0.0003
Sodium	Na	mg/L		-	-	0.03
Thallium	Tl	mg/L		<0.002	<0.002	0.002
Zinc	Zn	mg/L	**0.4**	0.004	0.0035	0.005
Anions (mg/L)						
Fluoride	F	mg/L		0.3	0.3	0.1
Chloride	Cl	mg/L	**1000**	3.3	3.6	0.05
Nutrients (mg/L)						
Nitrate and Nitrite	NO3 + NO2	mg/L		27	27	0.4
Nitrate	NO3	mg/L	**20**	26	26	0.4
Nitrite	NO2	mg/L		1.1	1.2	0.02
Ammonia	N	mg/L	**16**	2.0	2.0	0.02

FD = Field duplicate
- Not analyzed

			Portage Attenuation Pond Effluent Limits[1] Maximum Average Conc.	Intermediate Volcanic		Intermediate Volcanic		Method Detection Limit
				Goose Island		Second Portage Lake Arm		
				MW11-01		MW11-02		
Laboratory sample number		Units		15979	15980	15870	15871	
Sampling date				29-Sep-11	29-Sep-11	26-Sep-11	26-Sep-11	28-Sep-11
QA/QC					FD		FD	
FIELD-MEASURED PARAMETERS								
Temperature		°C		0.1		8.9	-	-
pH		s.u.	**6.0 - 9.0**	10.30		8.93	-	-
Conductivity		uS/cm		3999		445	-	-
LABORATORY PARAMETERS								
pH		s.u.	**6.0 - 9.0**	8.11	8.93	7.19	7.40	-
Conductivity		uS/cm		-	-	-	-	-
Total Alkalinity	as $CaCO_3$	mg/L		23	37	104	103	2
Hardness (Total)	as $CaCO_3$	mg/L		13264	14759	167	165	1
Sulphate	SO4	mg SO4/L		29	30	42	41	1
Total Suspended Solids	TSS	mg/L	15	-	-	-	-	
Total Dissolved Solids	TDS	mg/L		14840	14620	263	259	
Turbidity		NTU	**15**	18.1	25.7	55.8	69.3	
Total Metals (mg/L)								
Aluminum	Al	mg/L	**1.5**	0.248	0.256	1.81	1.23	0.002
Antimony	Sb	mg/L		-	-	-	-	
Arsenic	As	mg/L	**0.3**	0.128	0.142	<0.0005	<0.0005	0.0005
Barium	Ba	mg/L		0.1484	0.1991	0.2297	0.2097	0.0005
Cadmium	Cd	mg/L	**0.002**	<0.00002	0.00009	0.00004	<0.00002	0.00002
Calcium	Ca	mg/L		5263	5857	49.7	49.2	0.03
Chromium	Cr	mg/L		-	-	-	-	-
Cobalt	Co	mg/L		-	-	-	-	-
Copper	Cu	mg/L	**0.1**	0.0237	0.0357	0.032	0.0247	0.0005
Iron	Fe	mg/L		1.3	1.9	1.9	0.9	0.01
Lead	Pb	mg/L	**0.1**	<0.0003	0.0031	0.003	0.0039	0.0003
Magnesium	Mg	mg/L		29.9	32.6	10.6	10.4	0.02
Manganese	Mn	mg/L		0.0433	0.05	0.2274	0.1853	0.0005
Mercury	Hg	mg/L	**0.0004**	0.00073	0.00077	0.00058	0.00064	0.00001
Molybdenum	Mo	mg/L		<0.0005	<0.0005	<0.0005	<0.0005	0.0005
Nickel	Ni	mg/L	**0.2**	0.2109	0.2269	0.0087	0.0065	0.0005
Potassium	K	mg/L		201	225	1.9	2	0.05
Selenium	Se	mg/L		0.564	0.594	<0.001	<0.001	0.001
Silver	Ag	mg/L		0.0123	0.0146	0.0006	0.0002	0.0002
Sodium	Na	mg/L		344	550	10.5	10.3	0.05
Thallium	Tl	mg/L		<0.005	<0.005	<0.005	<0.005	0.005
Zinc	Zn	mg/L	**0.4**	0.038	0.091	0.024	0.019	0.001
Dissolved Metals (mg/L)								
Aluminum	Al	mg/L	**1.5**	0.15	0.01	<0.01	<0.01	0.01
Arsenic	As	mg/L	**0.3**	0.137	0.13	<0.005	<0.005	0.005
Barium	Ba	mg/L		0.13	0.136	0.16	0.167	0.005
Cadmium	Cd	mg/L	**0.002**	<0.005	<0.005	<0.005	<0.005	0.005
Calcium	Ca	mg/L		5136	5099	42.8	43.4	0.05
Copper	Cu	mg/L	**0.1**	0.021	0.015	0.008	0.01	0.005
Iron	Fe	mg/L		1.3	0.97	<0.05	<0.05	0.05
Lead	Pb	mg/L	**0.1**	<0.005	<0.005	<0.005	<0.005	0.005
Magnesium	Mg	mg/L		22.5	25.8	7.7	8	0.05
Manganese	Mn	mg/L		0.029	0.029	0.145	0.148	0.005
Mercury	Hg	mg/L	**0.0004**	0.0006	0.0006	0.0011	0.001	0.0005
Molybdenum	Mo	mg/L		<0.005	<0.005	<0.005	<0.005	0.005
Nickel	Ni	mg/L	0.200	0.179	0.171	<0.005	<0.005	0.005
Potassium	K	mg/L		183	192	1.3	1.4	0.05
Selenium	Se	mg/L		0.637	0.606	<0.005	<0.005	0.005
Silver	Ag	mg/L		<0.005	<0.005	<0.005	<0.005	0.005
Sodium	Na	mg/L		283	338	7.6	7.9	0.05
Thallium	Tl	mg/L		<0.01	<0.01	<0.01	<0.01	0.01
Zinc	Zn	mg/L	**0.4**	0.02	0.013	<0.005	0.013	0.005
Anions (mg/L)								
Fluoride	F	mg/L		0.55	0.62	0.13	0.18	0.02
Chloride	Cl	mg/L	**1000**	10271	9859	20.9	20.7	0.5
Nutrients (mg/L)								
Nitrate and Nitrite	NO3 + NO2	mg/L		-	-	-	-	-
Nitrate	NO3	mg/L	**20**	0.28	0.29	1.7	1.7	0.01
Nitrite	NO2	mg/L		<0.01	<0.01	0.02	0.03	0.010
Ammonia	N	mg/L	**16**	0.07	0.27	0.17	0.2	0.05

FD = Field duplicate
\- Not analyzed

QA/QC of Groundwater Quality Results
Agnico-Eagle Mines Ltd
Meadowbank Division

			Intermediate Volcanic			
			Second Portage Lake			
			MW08-02			
Laboratory sample number		Units	20763	20764	Method Dection Limit	RPD
Sampling date			23-Jul-12	23-Jul-12		
QA/QC				**FD**		
LABORATORY PARAMETERS						
pH		s.u.	7.81	7.59	--	3%
Total Cyanide (CN)		mg/L	<0.005	<0.005	0.005	--
Total Alkalinity	CaCO3	mg/L	102	100	2	+/- MDL
Sulphate	SO4	mg/L	2	4	1	+/- MDL
Total Suspended Solids	TSS	mg/L	5	3	1	+/- MDL
Hardness (Total)	as $CaCO_3$	mg/L	170	178	1	5%
Turbidity		NTU	8.4	7	0.02	18%
Total Metals						
Aluminum[1]	Al	mg/L	0.006	<0.006	0.006	--
Arsenic	As	mg/L	<0.0005	<0.0005	0.0005	--
Barium	Ba	mg/L	0.0313	0.0311	0.0005	+/- MDL
Cadmium[3]	Cd	mg/L	<0.00002	<0.00002	0.00002	--
Calcium	Ca	mg/L	35.5	37.4	0.03	5%
Copper[3]	Cu	mg/L	<0.0005	<0.0005	0.0005	--
Iron	Fe	mg/L	1.2	1.10	0.01	9%
Lead[3]	Pb	mg/L	<0.0003	<0.0003	0.0003	--
Magnesium	Mg	mg/L	19.8	20.6	0.02	4%
Manganese	Mn	mg/L	0.133	0.1362	0.0005	2%
Mercury	Hg	mg/L	0.00012	0.00016	0.00001	29%
Molybdenum	Mo	mg/L	0.0522	0.053	0.0005	2%
Nickel[3]	Ni	mg/L	0.0017	0.002	0.0005	+/- MDL
Potassium	K	mg/L	2.5	2.6	0.05	4%
Selenium	Se	mg/L	0.004	0.006	0.001	+/- MDL
Silver	Ag	mg/L	<0.0002	<0.0002	0.0002	--
Sodium	Na	mg/L	26.8	29	0.05	8%
Thallium	Tl	mg/L	<0.005	<0.005	0.005	--
Zinc	Zn	mg/L	0.005	0.004	0.001	+/- MDL
Dissolved Metals						
Aluminum	Al	mg/L	<0.01	<0.01	0.01	--
Arsenic	As	mg/L	<0.005	<0.005	0.005	--
Barium	Ba	mg/L	0.025	0.024	0.005	+/- MDL
Cadmium	Cd	mg/L	<0.005	<0.005	0.005	--
Calcium	Ca	mg/L	39.1	36.9	0.05	6%
Copper	Cu	mg/L	<0.005	<0.005	0.005	--
Iron	Fe	mg/L	<0.05	<0.05	0.05	--
Lead	Pb	mg/L	<0.005	<0.005	0.005	--
Magnesium	Mg	mg/L	21.6	20.2	0.05	7%
Manganese	Mn	mg/L	0.134	0.128	0.005	5%
Mercury	Hg	mg/L	<0.0005	<0.0005	0.0005	--
Molybdenum	Mo	mg/L	0.0460	0.043	0.005	+/- MDL
Nickel	Ni	mg/L	<0.005	<0.005	0.005	--
Potassium	K	mg/L	2.1	1.9	0.05	10%
Selenium	Se	mg/L	<0.005	<0.005	0.005	--
Silver	Ag	mg/L	<0.005	<0.005	0.005	--
Sodium	Na	mg/L	25	23.3	0.05	7%
Thallium	Tl	mg/L	<0.01	<0.01	0.01	--
Zinc	Zn	mg/L	<0.005	<0.005	0.005	--
Anions						
Fluoride	F	mg/L	0.42	0.37	0.02	13%
Chloride	Cl	mg/L	111	109	0.5	2%
Nutrients						
Nitrate	NO3	mg/L	0.04	0.04	0.01	+/- MDL
Nitrite	NO2	mg/L	<0.01	<0.01	0.01	--
Ammonium	N	mg N/L	0.2	0.22	0.01	2%

Notes:
Concentrations are mg/L unless otherwise noted.
[1] Part F item 2 of Meadowbank Water License. All regulated parameters for total concentration
RPD value exceeds 20%
FD = Field duplicate
RPD = relative percent difference
-- not calculated (one or both result below MDL)

APPENDIX A

Well Development Logs

MW08-02							
Date	Approximate Depth of Waterra (mbtoc)	Volume Purged (L)	Total Volume Purged (L)	pH	Temperature (C)	Conductivity (uS/cm)	Notes
12-Jul-12		-	-	-	-	-	well frozen at 18.8 mbtoc
15-Jul-12		-	-	-	-	-	water level 28.25 mbtoc, frozen at 151 mbtoc
16-Jul-12	-	20	20	6.28	14.1	240	water level 25.33 mbtoc pre-purge and 60.51 mbtoc post-purge
17-Jul-12	45	15	35	5.47	24.4	325	water level 22.33 mbtoc pre-purge
	65	15	50	5.75	16.6	337	
	85	20	70	5.87	17	337	
	100	20	90	5.95	20	312	
	110	10	100	6.14	16.3	378	
	110	5	105	6.28	18.2	381	
	110	10	115	6.38	16.9	374	
	110	8	123	6.43	17.1	385	
	110	8	131	6.45	16.3	386	
	110	5	136	6.51	15.6	398	
	110	15	151	6.80	25	285	pH meter check, measured 6.96 (pH 7 buffer)
	110	5	156	6.73	19.1	366	
	110	7	163	6.65	17.9	389	
	110	6	169	6.66	17.8	400	
	110	5	174	6.70	21	372	
	110	5	179	6.70	20.4	409	
	110	5	184	6.72	18.3	442	
	120	1	185	6.78	19.6	448	
	120	5	190	6.79	20.5	447	
	120	6	196	6.82	20.7	463	
	120	5	201	6.83	19.8	492	
	120	4	205	6.87	20.1	495	
	120	4	209	-	-	-	
	120	3	212	6.91	20.2	512	
	120	6	218	6.94	25.6	419	
	120	4	222	6.91	21.9	510	water level 66.91 mbtoc post-purge
18-Jul-12	60	30	252	7.76	17.7	536	water level 28.46 mbtoc pre-purge, water level tape advanced to 153 mbtoc
	60	4	256	6.97	16.6	586	
	60	20	276	6.22	19.9	494	
	100	35	311	6.54	10.3	769	
	100	6	317	6.60	12.1	835	
	100	6	323	6.44	17.6	660	
	100	20	343	6.43	21.2	613	
	100	5	348	6.47	20.7	676	
	100	5	353	6.58	21.6	633	
	100	5	358	6.61	20.8	603	
	100	5	363	6.65	23	620	
	100	4	367	6.73	23.1	641	
	100	20	387	6.62	21.5	646	water level 88.24 mbtoc post-purge
19-Jul-12	100	40	427	7.95	13.7	868	water level 36.58 mbtoc pre-purge
	100	15	442	7.11	22.8	740	
	100	10	452	7.29	24.3	702	
	100	5	457	7.21	22.9	736	
	100	15	472	7.13	24.8	675	
	130	30	502	7.48	15.9	778	
	130	12	514	7.22	19	799	
	130	8	522	7.27	22	722	
	130	5	527	7.30	22.2	771	
	130	5	532	7.38	23.7	725	
	130	4	536	7.38	23.8	756	
	130	10	546	7.33	24.6	677	
	130	5	551	7.41	23.4	713	water level 106 mbtoc post-purge
20-Jul-12	95	40	591	7.71	14.6	576	water level 38.38 mbtoc pre-purge
	95	15	606	7.23	22.9	601	
	130	25	631	7.37	16.4	625	
	130	20	651	7.47	21	640	
	130	18	669	7.27	21.5	674	
	130	8	677	7.43	20.5	665	
	130	6	683	7.45	20.3	657	
	130	7	690	7.59	22.3	610	
	150	15	705	7.70	18.4	680	
	150	10	715	7.80	19.3	651	
	150	8	723	7.67	18.9	652	
	150	4	727	7.67	19	632	water level 116.11 mbtoc post-purge
21-Jul-12	100	35	762	7.53	19	562	water level 48.89 mbtoc pre-purge
	100	25	787	7.25	17.6	608	
	95	25	812	6.97	20.3	591	
	95	5	817	7.15	19.5	605	
	120	15	832	7.39	16.3	613	
	120	18	850	7.35	15.5	622	
	150	10	860	7.51	12.7	627	
	150	8	868	7.31	20.8	598	
	150	8	876	7.26	22.2	580	water level 115 mbtoc post-purge
22-Jul-12	100	40	916	7.83	16.8	539	water level 43.26 mbtoc pre-purge
	130	20	936	7.81	12.1	574	
	150	15	951	7.94	12.4	557	
	150	12	963	7.63	19.8	562	

MW08-03							
Date	Approximate Depth of Waterra (mbtoc)	Volume Purged (L)	Total Volume Purged (L)	pH	Temperature (C)	Conductivity (uS/cm)	Notes
12-Jul-12		-	-	-	-	-	well frozen at 63.23 mbtoc
15-Jul-12		-	-	-	-	-	water level near 73 mbtoc, well frozen at 150.92 mbtoc
16-Jul-12		-	-	-	-	-	water level near 71 mbtoc, well frozen at 151.42 mbtoc
18-Jul-12	60	25	25	7.22	38	56	water level 29.81 mbtoc, water level tape advanced to 151.38 mbtoc
	60	10	35	6.5	38.7	35	
	60	3	38	6.56	39.7	31	
	60	1	39	6.74	30.2	32	
	100	20	59	6.5	30.4	31	
	100	10	69	6.53	28.4	28	
	100	12	81	7.19	30.8	26	
	100	6	87	7.43	29.4	35	
	100	10	97	7.12	36.4	38	
	100	5	102	7.33	33.4	38	
	100	5	107	7.45	33	39	
	100	4	111	7.55	30.8	41	
	100	5	116	7.51	34	44	
	100	5	121	7.61	33.6	50	
	120	15	136	7.56	37.9	53	
19-Jul-12	100	20	156	7.43	35.8	77	water level 61.87 mbtoc pre-purge
	100	30	186	7.85	29	71	
	100	24	210	7.98	25.3	63	
	100	30	240	7.55	31.2	70	
	100	15	255	8.11	26.5	60	
	120	20	275	7.87	22.7	52	
	120	15	290	8.1	24.3	64	
	120	15	305	7.97	28.7	65	
	120	12	317	8.11	27.4	65	
	120	15	332	8.01	29.8	71	
	120	10	342	8.09	29.1	69	
	120	15	357	7.8	30.9	65	
	120	10	367	8.1	30.2	72	
	120	10	377	8.15	30.6	70	water level 112.43 mbtoc post-purge
20-Jul-12	120	30	407	8.04	32.4	94	water level 88.30 mbtoc pre-purge
	120	20	427	7.75	29.7	96	
	120	15	442	7.53	27.4	111	
	120	6	448	7.67	25.9	110	
	120	10	458	7.76	32.8	112	
	120	12	470	7.55	31.9	113	
	120	5	475	7.77	29.8	111	
	120	5	480	7.83	29.7	111	
	120	10	490	8.05	32.7	107	
	120	5	495	8.08	30.5	104	
	120	5	500	8.09	29.5	102	water level 118.08 mbtoc post-purge
21-Jul-12	130	25	525	7.89	31.7	124	water level 89.59 mbtoc pre-purge
	130	15	540	7.27	30.1	106	
	130	5	545	7.35	29.4	105	
	130	2	547	7.38	27.1	102	
	130	15	562	6.99	32.3	104	
	130	8	570	7.28	32.8	101	
	130	2	572	7.63	29.4	103	
	130	2	574	7.64	29.5	100	
	130	3	577	7.55	32.5	101	
22-Jul-12	130	1	578	7.87	34	120	water level 105.80 mbtoc pre-purge
	130	10	588	7.72	36.2	114	water level 114.86 mbtoc post-purge
23-Jul-12	130	15	603	8.14	31.6	120	water level 107.06 mbtoc pre-purge
	130	10	613	7.72	32.3	116	
	130	4	617	7.72	29.8	111	
	130	2	619	7.73	25	115	
	130	2	621	7.85	25.3	110	water level 120.36 mbtoc post-purge
24-Jul-12	130	8	629	8.11	30.4	128	water level 109.94 mbtoc pre-purge
	130	8	637	7.69	33.2	111	
	130	5	642	7.35	35.1	114	water level 115.96 mbtoc post-purge
25-Jul-12	130	10	652	-	33.7	136	water level 111.54 mbtoc pre-purge
	130	5	657	-	37.2	110	

APPENDIX B

Laboratory Analytical Certificate

Multilab Val-d'Or

Analytical Report

Company: **Agnico Eagle Division Meadowbank**

Client: M. Stéphane Robert
Address: General Delivery
Baker Lake Nunavut X0C 0A0
Phone: (604) 677-0689 (--)
Fax: (604) 677-0687

Lab number: V-20763

Sampling location: MW-08-02A

Sampling date: July 23, 2012

Sample name: MW-08-02A

Sampling hour: 13:00

Sampled by: Dale Holtze/Real Cantin

Date received: July 25, 2012

Matrix: Water

Drinking water distribution:

Reported on: August 06, 2012

Unless otherwise stated, all samples were received in acceptable condition.

Results relate only to the sample tested.

All samples will be disposed of after 30 days following analysis.

Roger Turmel , Chimiste
J'approuve le certificat
2012.08.06 13:20:56 -04'00'

900, 5ième avenue
Val d'Or (Québec)
J9P 1B9
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Fax / Téléc: (819) 874-0360
E-mail: valdor@multilab-direct.com
Site web: www.multilab-direct.com

Multilab Val-d'Or

Analytical Report

Lab number: V-20763

Sample name: MW-08-02A — Sampling date: July 23, 2012

Sampling location: MW-08-02A — Sampling hour: 13:00

Parameter	Result		Method name	Analysis date
Alkalinity	102	mg CaCO3/L	M-ALCA-2.0	July 25, 2012
Aluminium (Al)	0.006	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Aluminium (Al)	<0.01	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Silver (Ag)	<0.0002	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Silver (Ag)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Arsenic (As)	<0.0005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Arsenic (As)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Ammonia nitrogen (NH3-NH4)	0.2	mg N/L	Sous-traitance\Multilab Direct	July 30, 2012
Barium (Ba)	0.0313	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Barium (Ba)	0.025	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Cadmium (Cd)	<0.00002	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Cadmium (Cd)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Calcium (Ca)	35.5	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Calcium (Ca)	39.1	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Chloride	111	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Copper (Cu)	<0.0005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Copper (Cu)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Total Cyanide (CNt)	<0.005	mg/L	M-CN-1.0	July 25, 2012
Hardness	170	mg CaCO3/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Hardness	186	mg CaCO3/L	Sous-traitance\Multilab Direct	August 01, 2012
Iron (Fe)	1.2	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Iron (Fe)	<0.05	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Fluoride (F)	0.42	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Total Suspended Solids	2	mg/L	M-SOLI-1.0	July 26, 2012
Magnesium (Mg)	19.8	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Magnesium (Mg)	21.6	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Manganese (Mn)	0.1330	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Manganese (Mn)	0.134	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Mercury (Hg)	0.00012	mg/L	Sous-traitance\Multilab Direct	August 03, 2012
Dissolved Mercury (Hg)	<0.0005	mg/L	Sous-traitance\Multilab Direct	July 31, 2012
Molybdenum (Mo)	0.0522	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Molybdenum (Mo)	0.046	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
NH4	0.20	mg N/L	Sous-traitance\Multilab Direct	July 30, 2012
Nickel (Ni)	0.0017	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Nickel (Ni)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Nitrate (NO3)	0.04	mg N/L	Sous-traitance\Multilab Direct	July 26, 2012
Nitrite (NO2)	<0.01	mg N/L	Sous-traitance\Multilab Direct	July 26, 2012
pH	7.81		M-PH-2.0	July 25, 2012
Lead (Pb)	<0.0003	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Lead (Pb)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012

Sauf indication contraire, tous les échantillons ont été reçus en bon état.

900, 5ième avenue
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Site web: www.multilab-direct.com

Multilab Val-d'Or

Analytical Report

Lab number: V-20763

Sample name: MW-08-02A — Sampling date: July 23, 2012
Sampling location: MW-08-02A — Sampling hour: 13:00

Parameter	Result		Method name	Analysis date
Potassium (K)	2.5	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Potassium (K)	2.1	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Selenium (Se)	0.004	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Selenium (Se)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Sodium (Na)	26.8	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Sodium (Na)	25	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Sulfate (SO4)	5	mg SO4/L	Sous-traitance\Multilab Direct	July 31, 2012
Thallium (Tl)	<0.005	mg/L	Sous-traitance\Multilab Direct	July 31, 2012
Dissolved thallium (Tl)	<0.01	mg/L	Sous-traitance\Multilab Direct	July 31, 2012
Turbidity	8.4	NTU	Sous-traitance\Multilab Direct	July 25, 2012
Zinc (Zn)	0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Zinc	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012

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F-02-06
Version 3ième: 26/10/2005

Detection limit

Lab number: V-20763

Sample name: MW-08-02A
Sampling location: MW-08-02A
Sampling date: July 23, 2012
Sampling hour: 13:00

Parameter	Value	Unit	Method	Accreditation
Alkalinity	2	mg CaCO3/L	M-ALCA-2.0	
Aluminium (Al)	0.006	mg/L	Sous-traitance	
Dissolved Aluminium (Al)	0.01	mg/L	Sous-traitance	
Silver (Ag)	0.0002	mg/L	Sous-traitance	Yes
Dissolved Silver (Ag)	0.005	mg/L	Sous-traitance	
Arsenic (As)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Arsenic (As)	0.005	mg/L	Sous-traitance	
Ammonia nitrogen (NH3-NH4)	0.01	mg N/L	Sous-traitance	Yes
Barium (Ba)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Barium (Ba)	0.005	mg/L	Sous-traitance	
Cadmium (Cd)	0.00002	mg/L	Sous-traitance	Yes
Dissolved Cadmium (Cd)	0.005	mg/L	Sous-traitance	
Calcium (Ca)	0.03	mg/L	Sous-traitance	Yes
Dissolved Calcium (Ca)	0.05	mg/L	Sous-traitance	
Chloride	0.5	mg/L	Sous-traitance	Yes
Copper (Cu)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Copper (Cu)	0.005	mg/L	Sous-traitance	
Total Cyanide (CNt)	0.005	mg/L	M-CN-1.0	Yes
Hardness	1	mg CaCO3/L	Sous-traitance	
Dissolved Hardness	1	mg CaCO3/L	Sous-traitance	
Iron (Fe)	0.01	mg/L	Sous-traitance	Yes
Dissolved Iron (Fe)	0.05	mg/L	Sous-traitance	
Fluoride (F)	0.02	mg/L	Sous-traitance	Yes
Total Suspended Solids	1	mg/L	M-SOLI-1.0	Yes
Magnesium (Mg)	0.02	mg/L	Sous-traitance	Yes
Dissolved Magnesium (Mg)	0.05	mg/L	Sous-traitance	
Manganese (Mn)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Manganese (Mn)	0.005	mg/L	Sous-traitance	
Mercury (Hg)	0.00001	mg/L	Sous-traitance	Yes
Dissolved Mercury (Hg)	0.0005	mg/L	Sous-traitance	
Molybdenum (Mo)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Molybdenum (Mo)	0.005	mg/L	Sous-traitance	
NH4	0.05	mg N/L	Sous-traitance	
Nickel (Ni)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Nickel (Ni)	0.005	mg/L	Sous-traitance	
Nitrate (NO3)	0.01	mg N/L	Sous-traitance	Yes
Nitrite (NO2)	0.01	mg N/L	Sous-traitance	Yes
Lead (Pb)	0.0003	mg/L	Sous-traitance	Yes
Dissolved Lead (Pb)	0.005	mg/L	Sous-traitance	
Potassium (K)	0.05	mg/L	Sous-traitance	

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Multilab Val-d'Or

Detection limit

Lab number: V-20763

Sample name: MW-08-02A | Sampling date: July 23, 2012

Sampling location: MW-08-02A | Sampling hour: 13:00

Parameter	Value	Unit	Method	Accreditation
Dissolved Potassium (K)	0.05	mg/L	Sous-traitance	
Selenium (Se)	0.001	mg/L	Sous-traitance	Yes
Dissolved Selenium (Se)	0.005	mg/L	Sous-traitance	
Sodium (Na)	0.05	mg/L	Sous-traitance	Yes
Dissolved Sodium (Na)	0.05	mg/L	Sous-traitance	
Sulfate (SO4)	1	mg SO4/L	Sous-traitance	Yes
Thallium (Tl)	0.005	mg/L	Sous-traitance	
Dissolved thallium (Tl)	0.01	mg/L	Sous-traitance	
Turbidity	0.02	UTN	Sous-traitance	Yes
Zinc (Zn)	0.001	mg/L	Sous-traitance	Yes
Dissolved Zinc	0.005	mg/L	Sous-traitance	

Sauf indication contraire, tous les échantillons ont été reçus en bon état.

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Multilab Val-d'Or

Quality control Report

Lab number: V-20763

Sample name:	MW-08-02A	Sampling date:	July 23, 2012
Sampling location:	MW-08-02A	Sampling hour:	13:00

Parameter		
Alkalinity mg CaCO3/L	Standard name	std Alk
	Result	144
	Accuracy	99.3%
	Limit	123 - 167
Aluminium (Al) mg/L	Blank	<0.006
	Standard name	DMR-0027-2012-18t
	Result	6.14
	Accuracy	99.2%
	Limit	5.26 - 7.12
Dissolved Aluminium (Al) mg/L	Blank	<0.01
	Standard name	DMR-0027-2012-18d
	Result	6.8
	Accuracy	90.1%
	Limit	5.26 - 7.12
Silver (Ag) mg/L	Blank	<0.0002
Dissolved Silver (Ag) mg/L	Blank	<0.005
Arsenic (As) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	0.3232
	Accuracy	85.8%
	Limit	0.198 - 0.368
Dissolved Arsenic (As) mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	0.321
	Accuracy	86.6%
	Limit	0.219 - 0.347
Ammonia nitrogen (NH3-NH4) m	Blank	<0.01
	Standard name	DMR-0507-2012-NH3
	Result	1.5
	Accuracy	90.9%
	Limit	1.40 - 1.90
Barium (Ba) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	2.106
	Accuracy	87.8%
	Limit	2.0 - 2.8
Dissolved Barium (Ba) mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	2.23
	Accuracy	92.9%

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F-02-06
Version 3ième: 26/10/2005

Quality control Report

Lab number: V-20763

Sample name:	MW-08-02A	Sampling date:	July 23, 2012
Sampling location:	MW-08-02A	Sampling hour:	13:00

Parameter		
	Limit	2.0 - 2.8
Cadmium (Cd) mg/L	Blank	<0.00002
	Standard name	DMR-0027-2012-18t
	Result	0.81050
	Accuracy	90.1%
	Limit	0.8 - 1.0
Dissolved Cadmium (Cd) mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	0.818
	Accuracy	90.9%
	Limit	0.8 - 1.0
Calcium (Ca) mg/L	Blank	<0.03
	Standard name	DMR-0027-2012-18t
	Result	11.7
	Accuracy	83%
	Limit	9 - 12
Dissolved Calcium (Ca) mg/L	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	11.3
	Accuracy	87%
	Limit	9 - 12
Chloride mg/L	Blank	<0.5
	Standard name	DMR-0507-2012-CL
	Result	53.0
	Accuracy	91.8%
	Limit	43.1 - 54.9
Copper (Cu) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	1.367
	Accuracy	89.8%
	Limit	1.05 - 1.43
Dissolved Copper (Cu) mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	1.41
	Accuracy	86.3%
	Limit	1.05 - 1.43
Total Cyanide (CNt) mg/L	Blank	<0.005
	Standard name	DMR-0409-2012-5
	Result	0.089
	Accuracy	90.8%

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Quality control Report

Lab number: V-20763

Sample name:	MW-08-02A	Sampling date:	July 23, 2012
Sampling location:	MW-08-02A	Sampling hour:	13:00

Parameter		
	Limit	0.083 - 0.113
Iron (Fe) mg/L	Blank	<0.01
	Standard name	DMR-0027-2012-18t
	Result	10.4
	Accuracy	99%
	Limit	8.9 - 12.1
Dissolved Iron (Fe) mg/L	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	10.4
	Accuracy	99%
	Limit	8.9 - 12.1
Fluoride (F) mg/L	Blank	<0.02
	Standard name	DMR-0507-2012-12F
	Result	1.5
	Accuracy	96.8%
	Limit	1.43 - 1.67
Total Suspended Solids mg/L	Blank	<1
	Standard name	STD-MES 25mg/L
	Result	27
	Accuracy	92%
	Limit	19 - 31
Magnesium (Mg) mg/L	Blank	<0.02
	Standard name	DMR-0027-2012-18t
	Result	5.6
	Accuracy	90.2%
	Limit	5.28 - 7.14
Dissolved Magnesium (Mg) mg/l	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	6.3
	Accuracy	98.6%
	Limit	5.28 - 7.14
Manganese (Mn) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	3.502
	Accuracy	90.7%
	Limit	3.28 - 4.44
Dissolved Manganese (Mn) mg/l	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	3.81
	Accuracy	98.7%

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Quality control Report

Lab number: V-20763

Sample name:	MW-08-02A	Sampling date:	July 23, 2012
Sampling location:	MW-08-02A	Sampling hour:	13:00

Parameter		
	Limit	3.28 - 4.44
Dissolved Mercury (Hg) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-13-Hg
	Result	0.0050
	Accuracy	81%
	Limit	0.0033 - 0.0051
Molybdenum (Mo) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	0.6044
	Accuracy	85.7%
	Limit	0.599 - 0.811
Dissolved Molybdenum (Mo) mg	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	0.632
	Accuracy	89.6%
	Limit	0.599 - 0.811
NH4 mg N/L	Blank	<0.05
Nickel (Ni) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	1.171
	Accuracy	96.4%
	Limit	0.96 - 1.30
Dissolved Nickel (Ni) mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	1.29
	Accuracy	85.8%
	Limit	0.96 - 1.30
Nitrate (NO3) mg N/L	Blank	<0.01
Nitrite (NO2) mg N/L	Blank	<0.01
	Standard name	DMR-0507-2012-NO2
	Result	3.3
	Accuracy	97.6%
	Limit	2.87 - 3.89
pH	Standard name	STD pH 7.00
	Result	7.02
	Accuracy	99.7%
	Limit	6.96 - 7.04
Lead (Pb) mg/L	Blank	<0.0003
	Standard name	DMR-0027-2012-18t
	Result	0.9300

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F-02-06
Version 3ième: 26/10/2005

Multilab Val-d'Or

Quality control Report

Lab number: V-20763

Sample name:	MW-08-02A	Sampling date:	July 23, 2012
Sampling location:	MW-08-02A	Sampling hour:	13:00

Parameter		
Dissolved Lead (Pb) mg/L	Accuracy	96.7%
	Limit	0.8 - 1.0
	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	0.930
Potassium (K) mg/L	Accuracy	96.7%
	Limit	0.8 - 1.0
	Blank	<0.05
	Standard name	DMR-0027-2012-18t
	Result	18.3
Dissolved Potassium (K) mg/L	Accuracy	97.2%
	Limit	15.1 - 20.5
	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	20.1
Selenium (Se) mg/L	Accuracy	87.1%
	Limit	15.1 - 20.5
	Blank	<0.001
	Standard name	DMR-0027-2012-18t
	Result	1.34
Dissolved Selenium (Se) mg/L	Accuracy	99.3%
	Limit	1.15 - 1.55
	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	1.44
Sodium (Na) mg/L	Accuracy	93.3%
	Limit	1.15 - 1.55
	Blank	<0.05
	Standard name	DMR-0027-2012-18t
	Result	14.7
Dissolved Sodium (Na) mg/L	Accuracy	94.2%
	Limit	11.8 - 16.0
	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	14.9
Sulfate (SO4) mg SO4/L	Accuracy	92.8%
	Limit	11.8 - 16.0
	Blank	<1
	Standard name	DMR-0507-2012-SO4
	Result	56

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Quality control Report

Lab number: V-20763

Sample name:	MW-08-02A	Sampling date:	July 23, 2012
Sampling location:	MW-08-02A	Sampling hour:	13:00

Parameter		
	Accuracy	92.3%
	Limit	47 - 57
Thallium (Tl) mg/L	Blank	<0.005
	Standard name	STD Tl SC0187114 1000ppm
	Result	976
	Accuracy	97.6%
	Limit	850 - 1150
Dissolved thallium (Tl) mg/L	Blank	<0.01
	Standard name	STD Tl SC0187114 1000ppm
	Result	960
	Accuracy	96%
	Limit	850 - 1150
Turbidity UTN	Standard name	DMR-0507-2012-Turbidité
	Result	12.1
	Accuracy	92.4%
	Limit	11.1 - 15.1
Zinc (Zn) mg/L	Blank	<0.001
	Standard name	DMR-0027-2012-18t
	Result	4.76
	Accuracy	94.5%
	Limit	3.83 - 5.19
Dissolved Zinc mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	4.99
	Accuracy	89.4%
	Limit	3.83 - 5.19

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F-02-06
Version 3ième: 26/10/2005

Multilab Val-d'Or

Additional information

Lab number: V-20763

Sample name: MW-08-02A | Sampling date: July 23, 2012

Sampling location: MW-08-02A | Sampling hour: 13:00

Lab method	Method reference
M-ALCA-2.0	MA.315-Alc-Aci 1.0
M-MET-3.0	MA.200-Mét. 1.2
M-NH3-2.0	MA.300-N 2.0
M-CL-2.0	MA.300-Ions 1.3
M-CN-1.0	MA.300-CN 1.2
M-CI-1.0	MA.300-Anions 1.0
M-SOLI-1.0	MA.104-S.S. 1.1
M-NITR-2.0	MA.300-NO3 2.0
M-PH-2.0	MA.303-Titr Auto 2.0
M-SULF-2.0	MA.300-Ions 1.3
M-TURB-1.0	MA.103-Tur. 1.0

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F-02-06
Version 3ième: 26/10/2005

Multilab Val-d'Or

Analytical Report

Company: **Agnico Eagle Division Meadowbank**

Client: M. Stéphane Robert
Address: General Delivery
Baker Lake Nunavut X0C 0A0
Phone: (604) 677-0689 (--)
Fax: (604) 677-0687

Lab number: V-20764

Sampling location: MW-08-02B
Sampling date: July 23, 2012

Sample name: MW-08-02B
Sampling hour: 13:00

Sampled by: Dale Holtze/Real Cantin
Date received: July 25, 2012

Matrix: Water

Drinking water distribution:

Reported on: August 06, 2012

Unless otherwise stated, all samples were received in acceptable condition.

Results relate only to the sample tested.

All samples will be disposed of after 30 days following analysis.

Roger Turmel , Chimiste
J'approuve le certificat
2012.08.06 13:21:16 -04'00'

Sauf indication contraire, tous les échantillons ont été reçus en bon état.

F-02-06
Version 3ième: 26/10/2005

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Multilab Val-d'Or

Analytical Report

Lab number: V-20764

Sample name: MW-08-02B — Sampling date: July 23, 2012

Sampling location: MW-08-02B — Sampling hour: 13:00

Parameter	Result		Method name	Analysis date
Alkalinity	100	mg CaCO3/L	M-ALCA-2.0	July 25, 2012
Aluminium (Al)	<0.006	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Aluminium (Al)	<0.01	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Silver (Ag)	<0.0002	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Silver (Ag)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Arsenic (As)	<0.0005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Arsenic (As)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Ammonia nitrogen (NH3-NH4)	0.22	mg N/L	Sous-traitance\Multilab Direct	July 30, 2012
Barium (Ba)	0.0311	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Barium (Ba)	0.024	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Cadmium (Cd)	<0.00002	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Cadmium (Cd)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Calcium (Ca)	37.4	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Calcium (Ca)	36.9	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Chloride	109	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Copper (Cu)	<0.0005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Copper (Cu)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Total Cyanide (CNt)	<0.005	mg/L	M-CN-1.0	July 25, 2012
Hardness	178	mg CaCO3/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Hardness	175	mg CaCO3/L	Sous-traitance\Multilab Direct	August 01, 2012
Iron (Fe)	1.1	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Iron (Fe)	<0.05	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Fluoride (F)	0.37	mg/L	Sous-traitance\Multilab Direct	August 02, 2012
Total Suspended Solids	4	mg/L	M-SOLI-1.0	July 26, 2012
Magnesium (Mg)	20.6	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Magnesium (Mg)	20.2	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Manganese (Mn)	0.1362	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Manganese (Mn)	0.128	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Mercury (Hg)	0.00016	mg/L	Sous-traitance\Multilab Direct	August 03, 2012
Dissolved Mercury (Hg)	<0.0005	mg/L	Sous-traitance\Multilab Direct	July 31, 2012
Molybdenum (Mo)	0.0530	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Molybdenum (Mo)	0.043	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
NH4	0.22	mg N/L	Sous-traitance\Multilab Direct	July 30, 2012
Nickel (Ni)	0.0020	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Nickel (Ni)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Nitrate (NO3)	0.04	mg N/L	Sous-traitance\Multilab Direct	July 26, 2012
Nitrite (NO2)	<0.01	mg N/L	Sous-traitance\Multilab Direct	July 26, 2012
pH	7.59		M-PH-2.0	July 25, 2012
Lead (Pb)	<0.0003	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Lead (Pb)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012

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Multilab Val-d'Or

Analytical Report

Lab number: V-20764

Sample name: MW-08-02B
Sampling location: MW-08-02B
Sampling date: July 23, 2012
Sampling hour: 13:00

Parameter	Result		Method name	Analysis date
Potassium (K)	2.6	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Potassium (K)	1.9	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Selenium (Se)	0.006	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Selenium (Se)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Sodium (Na)	29	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Sodium (Na)	23.3	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Sulfate (SO4)	3	mg SO4/L	Sous-traitance\Multilab Direct	July 31, 2012
Thallium (Tl)	<0.005	mg/L	Sous-traitance\Multilab Direct	July 31, 2012
Dissolved thallium (Tl)	<0.01	mg/L	Sous-traitance\Multilab Direct	July 31, 2012
Turbidity	7	NTU	Sous-traitance\Multilab Direct	July 25, 2012
Zinc (Zn)	0.004	mg/L	Sous-traitance\Multilab Direct	August 01, 2012
Dissolved Zinc	<0.005	mg/L	Sous-traitance\Multilab Direct	August 01, 2012

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F-02-06
Version 3ième: 26/10/2005

Multilab Val-d'Or

Detection limit

Lab number: V-20764

Sample name: MW-08-02B | Sampling date: July 23, 2012

Sampling location: MW-08-02B | Sampling hour: 13:00

Parameter	Value	Unit	Method	Accreditation
Alkalinity	2	mg CaCO3/L	M-ALCA-2.0	
Aluminium (Al)	0.006	mg/L	Sous-traitance	
Dissolved Aluminium (Al)	0.01	mg/L	Sous-traitance	
Silver (Ag)	0.0002	mg/L	Sous-traitance	Yes
Dissolved Silver (Ag)	0.005	mg/L	Sous-traitance	
Arsenic (As)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Arsenic (As)	0.005	mg/L	Sous-traitance	
Ammonia nitrogen (NH3-NH4)	0.01	mg N/L	Sous-traitance	Yes
Barium (Ba)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Barium (Ba)	0.005	mg/L	Sous-traitance	
Cadmium (Cd)	0.00002	mg/L	Sous-traitance	Yes
Dissolved Cadmium (Cd)	0.005	mg/L	Sous-traitance	
Calcium (Ca)	0.03	mg/L	Sous-traitance	Yes
Dissolved Calcium (Ca)	0.05	mg/L	Sous-traitance	
Chloride	0.5	mg/L	Sous-traitance	Yes
Copper (Cu)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Copper (Cu)	0.005	mg/L	Sous-traitance	
Total Cyanide (CNt)	0.005	mg/L	M-CN-1.0	Yes
Hardness	1	mg CaCO3/L	Sous-traitance	
Dissolved Hardness	1	mg CaCO3/L	Sous-traitance	
Iron (Fe)	0.01	mg/L	Sous-traitance	Yes
Dissolved Iron (Fe)	0.05	mg/L	Sous-traitance	
Fluoride (F)	0.02	mg/L	Sous-traitance	Yes
Total Suspended Solids	1	mg/L	M-SOLI-1.0	Yes
Magnesium (Mg)	0.02	mg/L	Sous-traitance	Yes
Dissolved Magnesium (Mg)	0.05	mg/L	Sous-traitance	
Manganese (Mn)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Manganese (Mn)	0.005	mg/L	Sous-traitance	
Mercury (Hg)	0.00001	mg/L	Sous-traitance	Yes
Dissolved Mercury (Hg)	0.0005	mg/L	Sous-traitance	
Molybdenum (Mo)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Molybdenum (Mo)	0.005	mg/L	Sous-traitance	
NH4	0.05	mg N/L	Sous-traitance	
Nickel (Ni)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Nickel (Ni)	0.005	mg/L	Sous-traitance	
Nitrate (NO3)	0.01	mg N/L	Sous-traitance	Yes
Nitrite (NO2)	0.01	mg N/L	Sous-traitance	Yes
Lead (Pb)	0.0003	mg/L	Sous-traitance	Yes
Dissolved Lead (Pb)	0.005	mg/L	Sous-traitance	
Potassium (K)	0.05	mg/L	Sous-traitance	

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Detection limit

Lab number: V-20764

Sample name:	MW-08-02B	Sampling date:	July 23, 2012
Sampling location:	MW-08-02B	Sampling hour:	13:00

Parameter	Value	Unit	Method	Accreditation
Dissolved Potassium (K)	0.05	mg/L	Sous-traitance	
Selenium (Se)	0.001	mg/L	Sous-traitance	Yes
Dissolved Selenium (Se)	0.005	mg/L	Sous-traitance	
Sodium (Na)	0.05	mg/L	Sous-traitance	Yes
Dissolved Sodium (Na)	0.05	mg/L	Sous-traitance	
Sulfate (SO4)	1	mg SO4/L	Sous-traitance	Yes
Thallium (Tl)	0.005	mg/L	Sous-traitance	
Dissolved thallium (Tl)	0.01	mg/L	Sous-traitance	
Turbidity	0.02	UTN	Sous-traitance	Yes
Zinc (Zn)	0.001	mg/L	Sous-traitance	Yes
Dissolved Zinc	0.005	mg/L	Sous-traitance	

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Multilab Val-d'Or

Quality control Report

Lab number: V-20764

Sample name:	MW-08-02B	Sampling date:	July 23, 2012
Sampling location:	MW-08-02B	Sampling hour:	13:00

Parameter		
Alkalinity mg CaCO3/L	Standard name	std Alk
	Result	144
	Accuracy	99.3%
	Limit	123 - 167
Aluminium (Al) mg/L	Blank	<0.006
	Standard name	DMR-0027-2012-18t
	Result	6.14
	Accuracy	99.2%
	Limit	5.26 - 7.12
Dissolved Aluminium (Al) mg/L	Blank	<0.01
	Standard name	DMR-0027-2012-18d
	Result	6.8
	Accuracy	90.1%
	Limit	5.26 - 7.12
Silver (Ag) mg/L	Blank	<0.0002
Dissolved Silver (Ag) mg/L	Blank	<0.005
Arsenic (As) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	0.3232
	Accuracy	85.8%
	Limit	0.198 - 0.368
Dissolved Arsenic (As) mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	0.321
	Accuracy	86.6%
	Limit	0.219 - 0.347
Ammonia nitrogen (NH3-NH4) m	Blank	<0.01
	Standard name	DMR-0507-2012-NH3
	Result	1.5
	Accuracy	90.9%
	Limit	1.40 - 1.90
Barium (Ba) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	2.106
	Accuracy	87.8%
	Limit	2.0 - 2.8
Dissolved Barium (Ba) mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	2.23
	Accuracy	92.9%

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F-02-06
Version 3ième: 26/10/2005

Quality control Report

Lab number: V-20764

Sample name:	MW-08-02B	Sampling date:	July 23, 2012
Sampling location:	MW-08-02B	Sampling hour:	13:00

Parameter		
Cadmium (Cd) mg/L	Limit	2.0 - 2.8
	Blank	<0.00002
	Standard name	DMR-0027-2012-18t
	Result	0.81050
	Accuracy	90.1%
Dissolved Cadmium (Cd) mg/L	Limit	0.8 - 1.0
	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	0.818
	Accuracy	90.9%
Calcium (Ca) mg/L	Limit	0.8 - 1.0
	Blank	<0.03
	Standard name	DMR-0027-2012-18t
	Result	11.7
	Accuracy	83%
Dissolved Calcium (Ca) mg/L	Limit	9 - 12
	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	11.3
	Accuracy	87%
Chloride mg/L	Limit	9 - 12
	Blank	<0.5
	Standard name	DMR-0507-2012-CL
	Result	53.0
	Accuracy	91.8%
Copper (Cu) mg/L	Limit	43.1 - 54.9
	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	1.367
	Accuracy	89.8%
Dissolved Copper (Cu) mg/L	Limit	1.05 - 1.43
	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	1.41
	Accuracy	86.3%
Total Cyanide (CNt) mg/L	Limit	1.05 - 1.43
	Blank	<0.005
	Standard name	DMR-0409-2012-5
	Result	0.089
	Accuracy	90.8%

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F-02-06
Version 3ième: 26/10/2005

Quality control Report

Lab number: V-20764

Sample name:	MW-08-02B	Sampling date:	July 23, 2012
Sampling location:	MW-08-02B	Sampling hour:	13:00

Parameter		
Iron (Fe) mg/L	Limit	0.083 - 0.113
	Blank	<0.01
	Standard name	DMR-0027-2012-18t
	Result	10.4
	Accuracy	99%
Dissolved Iron (Fe) mg/L	Limit	8.9 - 12.1
	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	10.4
	Accuracy	99%
Fluoride (F) mg/L	Limit	8.9 - 12.1
	Blank	<0.02
	Standard name	DMR-0507-2012-12F
	Result	1.5
	Accuracy	96.8%
Total Suspended Solids mg/L	Limit	1.43 - 1.67
	Blank	<1
	Standard name	STD-MES 25mg/L
	Result	27
	Accuracy	92%
Magnesium (Mg) mg/L	Limit	19 - 31
	Blank	<0.02
	Standard name	DMR-0027-2012-18t
	Result	5.6
	Accuracy	90.2%
Dissolved Magnesium (Mg) mg/l	Limit	5.28 - 7.14
	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	6.3
	Accuracy	98.6%
Manganese (Mn) mg/L	Limit	5.28 - 7.14
	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	3.502
	Accuracy	90.7%
Dissolved Manganese (Mn) mg/l	Limit	3.28 - 4.44
	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	3.81
	Accuracy	98.7%

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Multilab Val-d'Or

Quality control Report

Lab number: V-20764

Sample name:	MW-08-02B	Sampling date:	July 23, 2012
Sampling location:	MW-08-02B	Sampling hour:	13:00

Parameter		
	Limit	3.28 - 4.44
Dissolved Mercury (Hg) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-13-Hg
	Result	0.0050
	Accuracy	81%
	Limit	0.0033 - 0.0051
Molybdenum (Mo) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	0.6044
	Accuracy	85.7%
	Limit	0.599 - 0.811
Dissolved Molybdenum (Mo) mg	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	0.632
	Accuracy	89.6%
	Limit	0.599 - 0.811
NH4 mg N/L	Blank	<0.05
Nickel (Ni) mg/L	Blank	<0.0005
	Standard name	DMR-0027-2012-18t
	Result	1.171
	Accuracy	96.4%
	Limit	0.96 - 1.30
Dissolved Nickel (Ni) mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	1.29
	Accuracy	85.8%
	Limit	0.96 - 1.30
Nitrate (NO3) mg N/L	Blank	<0.01
Nitrite (NO2) mg N/L	Blank	<0.01
	Standard name	DMR-0507-2012-NO2
	Result	3.3
	Accuracy	97.6%
	Limit	2.87 - 3.89
pH	Standard name	STD pH 7.00
	Result	7.02
	Accuracy	99.7%
	Limit	6.96 - 7.04
Lead (Pb) mg/L	Blank	<0.0003
	Standard name	DMR-0027-2012-18t
	Result	0.9300

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Quality control Report

Lab number: V-20764

Sample name:	MW-08-02B	Sampling date:	July 23, 2012
Sampling location:	MW-08-02B	Sampling hour:	13:00

Parameter		
Dissolved Lead (Pb) mg/L	Accuracy	96.7%
	Limit	0.8 - 1.0
	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	0.930
Potassium (K) mg/L	Accuracy	96.7%
	Limit	0.8 - 1.0
	Blank	<0.05
	Standard name	DMR-0027-2012-18t
	Result	18.3
Dissolved Potassium (K) mg/L	Accuracy	97.2%
	Limit	15.1 - 20.5
	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	20.1
Selenium (Se) mg/L	Accuracy	87.1%
	Limit	15.1 - 20.5
	Blank	<0.001
	Standard name	DMR-0027-2012-18t
	Result	1.34
Dissolved Selenium (Se) mg/L	Accuracy	99.3%
	Limit	1.15 - 1.55
	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	1.44
Sodium (Na) mg/L	Accuracy	93.3%
	Limit	1.15 - 1.55
	Blank	<0.05
	Standard name	DMR-0027-2012-18t
	Result	14.7
Dissolved Sodium (Na) mg/L	Accuracy	94.2%
	Limit	11.8 - 16.0
	Blank	<0.05
	Standard name	DMR-0027-2012-18d
	Result	14.9
Sulfate (SO4) mg SO4/L	Accuracy	92.8%
	Limit	11.8 - 16.0
	Blank	<1
	Standard name	DMR-0507-2012-SO4
	Result	56

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Quality control Report

Lab number: V-20764

Sample name: MW-08-02B | Sampling date: July 23, 2012

Sampling location: MW-08-02B | Sampling hour: 13:00

Parameter		
	Accuracy	92.3%
	Limit	47 - 57
Thallium (Tl) mg/L	Blank	<0.005
	Standard name	STD Tl SC0187114 1000ppm
	Result	976
	Accuracy	97.6%
	Limit	850 - 1150
Dissolved thallium (Tl) mg/L	Blank	<0.01
	Standard name	STD Tl SC0187114 1000ppm
	Result	960
	Accuracy	96%
	Limit	850 - 1150
Turbidity UTN	Standard name	DMR-0507-2012-Turbidité
	Result	12.1
	Accuracy	92.4%
	Limit	11.1 - 15.1
Zinc (Zn) mg/L	Blank	<0.001
	Standard name	DMR-0027-2012-18t
	Result	4.76
	Accuracy	94.5%
	Limit	3.83 - 5.19
Dissolved Zinc mg/L	Blank	<0.005
	Standard name	DMR-0027-2012-18d
	Result	4.99
	Accuracy	89.4%
	Limit	3.83 - 5.19

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F-02-06
Version 3ième: 26/10/2005

Additional information

Lab number: V-20764

Sample name: MW-08-02B — Sampling date: July 23, 2012

Sampling location: MW-08-02B — Sampling hour: 13:00

Lab method	Method reference
M-ALCA-2.0	MA.315-Alc-Aci 1.0
M-MET-3.0	MA.200-Mét. 1.2
M-NH3-2.0	MA.300-N 2.0
M-CL-2.0	MA.300-Ions 1.3
M-CN-1.0	MA.300-CN 1.2
M-CI-1.0	MA.300-Anions 1.0
M-SOLI-1.0	MA.104-S.S. 1.1
M-NITR-2.0	MA.300-NO3 2.0
M-PH-2.0	MA.303-Titr Auto 2.0
M-SULF-2.0	MA.300-Ions 1.3
M-TURB-1.0	MA.103-Tur. 1.0

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AGNICO-EAGLE
MEADOWBANK DIVISION

January 9, 2013

Via email

Ms. Sophia Granchinho
Monitoring Officer
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, Nunavut X0B 0C0
(867) 983-4615

Dear Ms. Granchinho,

Re: File 03MN107 - AEM Response to The Nunavut Impact Review Board's 2011 – 2012 Annual Monitoring Report for the Meadowbank Gold Project and Board Recommendations

The following information and comments are provided to address the directives outlined in the NIRB report dated December 7, 2012, entitled *'The Nunavut Impact Review Board's 2011 – 2012 Annual Monitoring Report for the Meadowbank Gold Project and Board Recommendations'* made in accordance with the conditions of Project Certificate No.004.

Recommendation #1
The Board requires AEM to provide a full discussion and summary on the PEAMP for the Project in accordance with commitments made within the FEIS, during the Final Hearing, and as required throughout the Project Certificate (including Appendix D).

AEM has provided an annual report to the NIRB which has met the conditions of the project certificate since the project began construction in 2008. Within the annual report submission, detailed monitoring reports are submitted that are specifically designed to evaluate the impacts of mine related activities and were originally developed during the NIRB project screening and meet the conditions of the NIRB Project Certificate. AEM believes that the detailed monitoring studies/reports, which are dictated by the management plans submitted during the screening, are routinely conducted and are annually reported by third party consultants or qualified environmental practitioners. Extensive discussions are provided in accordance with commitments listed in the FEIS and the Project Certificate. As per Appendix D of the NIRB Project Certificate, the objectives of these studies as reported in the annual report, submitted on an annual basis, include:

a) Measure the relevant effects of the project on the ecosystemic and socioeconomic environment(s). These effects may be measured through biophysical and socioeconomic monitoring programs undertaken by the Proponent or by other means as described in the Project Certificate;

b) Assess the accuracy of the predictions made within the FEIS;

c) Evaluate the effectiveness of project monitoring procedures and plans;

d) Identify impacts requiring additional mitigation or adaptive management; and

e) Provide relevant data and information to support regional monitoring initiatives where feasible.

AEM firmly believes that the annual report meets these objectives, however acknowledges the need for further clarification from the NIRB on how best to present the data and summarizes the results. AEM has worked closely with regulatory agencies and continually refines and updates monitoring programs to reflect changes to the mine site and to ensure the effectiveness of the monitoring studies to evaluate and predict mine related impacts. These studies are routinely used to implement mitigation or adaptive management (an example of this is dike construction monitoring and targeted effects assessment studies in 2008 and 2010). In consultation with stakeholders and enforcement agencies (i.e. NWB, EC, DOE, DFO and HTO), AEM has improved monitoring plans and studies to increase their ability to detect mine-related impacts. An example of this (and in fulfillment of the Type A Water License 2AM-MEA0815 Part I Section 1 requirements) AEM has recently submitted a revised and updated Aquatic Effects Monitoring Program (AEMP) Meadowbank Mine and Core Receiving Environmental Monitoring Program (CREMP): Design Document 2012. In consultation with the Nunavut Water Board and NIRB, in 2013, AEM will submit a 2012 AEMP annual report which will provide a complete summary of the related aquatic monitoring programs. All results will be integrated and AEM will propose a structure of reporting that summarizes the data in a means that meets the expectations of the NIRB.

Recommendation #2
The Board requests that AEM provide a full analysis of thresholds against the actual results of surveys conducted in 2011, specifically pertaining to raptor nest surveys, mine site ground surveys, hunter harvest surveys, and the caribou radio-collaring program.*

AEM has completed a comparison of the wildlife survey results and this was submitted to the NIRB in the Meadowbank Mine 2011 Wildlife Monitoring Summary Report by Nunavut Environmental (2012). In this report a full comparison to FEIS thresholds were made according to the Terrestrial Ecosystem Management Plan (Cumberland 2005).

For raptors (refer to section 6.7 of the Meadowbank Mine 2011 Wildlife Monitoring Summary Report),

A summary of the impact predictions identified in the TEMP (Cumberland 2006) is provided in Table 6.3. The 2011 raptor monitoring data were compared to the impact prediction thresholds to evaluate adherence to the impact predictions and the provision of adaptive management, as either a necessary or proactive measure.

Table 6.3: Accuracy of Impact Predictions – Healthy Prey Populations (for Raptors) and Disturbance to Nesting Raptors along the AWPAR

Measurable Parameter	Threshold	Threshold Exceeded	Adaptive Management Implemented	Status	TEMP Ref.
Healthy Prey Populations	Healthy raptor prey populations (small mammals and breeding birds) will be maintained at the Meadowbank site by ensuring that the integrity and health of habitats are maintained.	NO	NO	Annual PRISM Plot surveys ELC Habitat Classification	4.7.2.1
Disturbance to Nesting Raptors	Raptor nest failures will not be caused by mine-related activities. Threshold is one nest failure per year.	NOT ANTICIPATED (No nests present prior to quarry development)	YES recommendations made to road and quarry activities to accommodate nesting raptors (refer to Section 6.7 for details). Development of appropriate management plan(s).	AWPAR Surveys Waterbird Nesting Surveys Dedicated Raptor Nest Surveys Daily / Weekly Systematic Mine Site Ground Surveys	4.7.2.2

For hunter harvest surveys (see section 10.6 of the Meadowbank Mine 2011 Wildlife Monitoring Summary Report),

Table 10.3 provides a summary of the impact predictions identified in the TEMP (Agnico-Eagle, 2006). The 2011 HHS data were compared to the impact prediction thresholds to evaluate adherence to the impact predictions and the provision of adaptive management, as either a necessary or proactive measure.

Table 10.3: Accuracy of Impact Predictions – Baker Lake Hunter Harvest Study

Measurable Parameter	Threshold	Threshold Exceeded	Adaptive Management Implemented	Status	TEMP Ref.
Hunting by Baker Lake Residents	The AWPAR will not result in significant changes in the spatial distribution, seasonal pattern, or harvest levels of caribou kills by Baker Lake hunters. Changes will not exceed 20% of current harvest activities correlated to use by the road.	NO	Road access regulated, safety measures enforced and training required. No shooting zone instated around the AWPAR.	Hunter Harvest Study	4.4.2.3
Hunting by Baker Lake Residents	Caribou herds will not be significantly affected by year-round access to the RSA.	NO	YES; AWPAR Access Protocols	Satellite-collaring data Hunter Harvest Study	

For caribou monitoring (see section 11.8 of the Meadowbank Mine 2011 Wildlife Monitoring Summary Report),

A summary of the impact predictions identified in the TEMP is provided in Table 11.2. The 2011 satellite-collaring data were compared to the impact prediction thresholds to evaluate adherence to the impact predictions and the provision of adaptive management, as either a necessary or proactive measure.

Table 11.2: Accuracy of Impact Predictions – Radio collaring Data

Measurable Parameter	Threshold	Threshold Exceeded	Adaptive Management Implemented	Status	TEMP Ref.
Sensory Disturbance	Mine related construction and operations activities will not preclude Caribou and Muskoxen from using suitable habitats beyond 500 m of mine buildings, facilities and roads. Threshold is unnatural caribou use patterns beyond 1,000 m.	NO	YES	Satellite-collaring data Daily and weekly mine-site ground surveys AWPAR Road Surveys	4.4.2.2
Hunting by Baker Lake Residents	Caribou herds will not be significantly affected by year-round access to the RSA.	NO	YES; AWPAR Access Protocols	Satellite-collaring data Hunter Harvest Study	

For breeding birds (see section 4.7 of the Meadowbank Mine 2011 Wildlife Monitoring Summary Report),

The breeding bird plot monitoring program is an instrumental component in accurately evaluating the wildlife abundance, richness and diversity impact predictions identified in the TEMP (Cumberland 2006) and reproduced in Table 4.4. The cumulative PRISM plot data set was compared to the impact prediction thresholds to evaluate adherence to the impact predictions and the provision of adaptive management, as either a necessary or proactive measure. To date, no thresholds of bird abundance, richness and diversity have been exceeded, suggesting that significant project-related effects are not occurring.

Table 4.4: Accuracy of Impact Predictions (Based on PRISM Plot Analysis) – Local Breeding Bird Abundance and Diversity

Measurable Parameter	Threshold	Threshold Exceeded	Adaptive Management Implemented	Status	TEMP Ref.
Changes in Breeding Bird Composition	Mine-related reduction in local breeding bird abundance and diversity will not occur. Threshold of >20% function between mine and reference plots.	NO	NO	Annual PRISM Plot surveys	4.3.2.3
Healthy Prey Populations	Maintenance of healthy prey populations (breeding birds and small mammals) to ensure integrity and health of raptor habitats. Thresholds are qualitative, and can be achieved through management and maintenance of vegetation and healthy prey communities.	NO	NO	Annual PRISM Plot surveys ELC Habitat Mapping	4.7.2.1

and waterbirds (see section 7.7 of the Meadowbank Mine 2011 Wildlife Monitoring Summary Report)

A summary of the impact predictions identified in the TEMP (Cumberland 2006) is provided in Table 7.6. The 2011 and cumulative waterbird nest dataset was compared to the impact prediction thresholds to evaluate adherence to the impact predictions and the provision of adaptive management, as either a necessary or proactive measure. No threshold levels were exceeded in 2011.

Table 7.6: Accuracy of Impact Predictions – Disturbance of Nesting, Roosting or Moulting Waterfowl along the AWPAR and for the Mine Site LSA

Measurable Parameter	Threshold	Threshold Exceeded	Adaptive Management Implemented	Status	TEMP Ref.
Disturbance of Nesting, Roosting or Moulting Waterfowl	Mine facilities and activities will not impact the breeding success of waterfowl occurring in the area or disturb large concentrations of roosting or moulting waterbirds. Threshold level is one nest failure per year.	NO	NO	Waterbird Nest Surveys Daily / Weekly Systematic Mine Site Ground Surveys	4.8.2.2

Mine site ground surveys are conducted as a general surveillance of the mine site to ensure activities are not causing any unpredicted harm to wildlife, to evaluate waste management procedures and evaluate spills. As a result, there are no specific thresholds to be compared to, as this survey is for operational due diligence and not specified in the original TEMP.

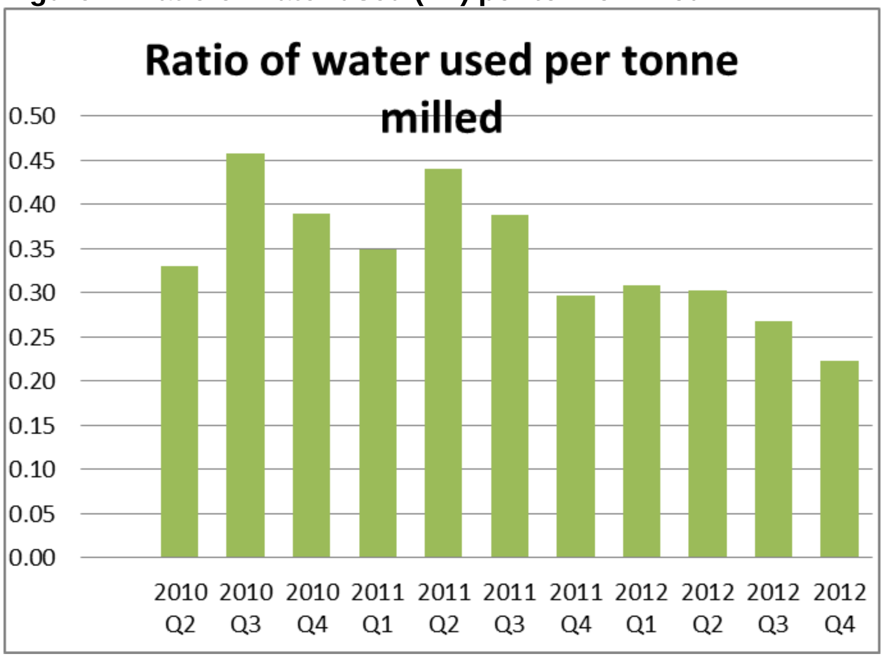
Recommendation #3

It is requested that AEM indicate what next steps it would pursue in regards to its on-site water management practices, once the results of its investigations are available.

It is the intent of AEM to minimize freshwater use at the Meadowbank site. For the previous 6 months Process Plant personnel have been investigating and designing methods to reduce freshwater usage. The Process Plant uses app 90% of the freshwater pumped by Meadowbank. We finalized the implementation of our action plan in mid-December 2012. This included a new cooling system, installed and put into operation, using reclaim water for the SAG mill. Since the summer, 2012, we have increased our recirculation of reclaim water to 80% (72% in the second quarter of 2012) which has reduced our fresh water consumption by almost 40 m^3/hr (which represents a reduction of 350,000 m^3 per year). Figure 1 indicates that the ratio of water used (m^3) per tonne milled decreased significantly, by 24 m^3/tonne (46 m^3/tonne, Q3 2010, to 22 m^3/tonne in Q4 2012). This information was submitted to the Nunavut Water Board on Jan 4, 2013.

With the completion of this action plan, AEM should be able to achieve our current limit of 700,000 m3 /year in 2013 and no amendment for the increase of the fresh water use should be needed. We will continue, during the year, to investigate other measures to reduce our water consumption of fresh water.

Figure 1: Ratio of water used (m^3) per tonne milled



Recommendation #4

The Board requests that AEM provide a plan of action to ensure future contamination of sampling bottles does not occur. This could include updating site procedures to require the replacement of sampling bottles more frequently in order to avoid CN contamination, and working with the laboratory contracted to determine the source of CN at the mine site.

AEM has updated procedures and replaces sample bottles on a monthly basis to ensure that shelf life at the site is minimal. We have had no additional instances of increased levels of Cyanide in our effluent to Third Portage Lake during 2012.

Recommendation #5

The Board requests that AEM keep the NIRB informed on the development of the contaminated soil storage/pilot remediation site and that copie of the revised landfarm management plan or any other related plans be provided to the NIRB.

A revised Landfarm Design and Management Plan with the final drawing was submitted to the NWB on October 22, 2012 (Appendix A). The contaminated soils located in Quarry 5 have been removed and were placed at our Landfarm. We have started the sorting process in Q22 but due to freezing temperatures recently and equipment availability we have to wait until next summer to complete the clean-up of this site.

Recommendation #6

The Board requests that AEM provide a plan including an estimated date by which the defective wells are expected to be replaced or re-established in order to collect the robust groundwater quality data intended by, and required for the comprehensive monitoring program which resulted from the environmental assessment and subsequent licensing stages of the Project. In addition, the Board requests that AEM provide the NIRB with a summary of the number of wells to be installed, and an updated map showing where the wells would be installed in relation to other project components and in proximity to water bodies.*

For recommendation #'s 6 to 9 refer to Appendix B.

Condition # 8 of the NIRB project certificate requires the mine operator to resample the wells to verify the data obtained over two seasons of sampling (2003 and 2004) of the existing operable wells. Recalling the NIRB technical hearings, from which intervener comments were issued and were developed into the conditions of the NIRB certificate, the concerns on groundwater quality regarded 2 distinct issues:

- Monitoring of the natural salinity of talik groundwater seeping into the Portage and Goose open pits in order to validate the ability of the proposed water management and treatment plans to attenuate salinity in the effluent prior to release to receiving waters; and
- Monitoring of groundwater in the vicinity of the tailings storage facility (TSF) located in Second Portage Arm in order to detect potential seepage of tailing process water through fractures in the bedrock below the TSF to the Portage open pit.

Effect of Groundwater Seepage Quality on Water Management and Treatment Plans

Sampling of groundwater in the talik at Portage and Goose open pits since 2003 (figure 1) and open pit sump water quality monitoring has provided extensive information on the quality and salinity of groundwater below the base of the open pits; water that is predicted to seep into the open pits as mining advances. Historical groundwater quality trends for salinity parameters (chloride, TDS and calcium) are provided in Figures 2A, 2B and 2C (attached). These figures show that groundwater at the monitoring wells has consistently had a low salinity and low trace metal concentrations. Salinity, represented by total dissolved solids (TDS), has been less than 1900 mg/L, generally around 500 to 800 mg/L TDS. The salinity of groundwater at well MW11-01 is addressed in the response to recommendation 8. These values (NW11-01) are lower than the salinity of pit sump waters collected from the Goose Pit to date (between 86 mg/L and 432 mg/L total dissolved solids or TDS). Furthermore, the chemistry of open pit sumps monitored to date is less saline than the predicted groundwater salinity seeping into the open pits (groundwater salinity predicted to be between 460 and 850 mg/L TDS; Golder, 2004). Consequently neither mine water management nor water treatment plans are or would be affected by the small volume of low salinity seepage observed to date.

Although not all wells continue to be functional and some wells that are blocked have not yet been repaired, the monitoring conducted to date achieves the purpose of the first part of the NIRB certificate condition number 8, which is to evaluate the consequence of pit water quality on the effectiveness of water management and treatment plans. Monitoring of the sump water quality in Goose and Portage open pits also achieves this purpose.

Monitoring of Groundwater Quality at the TSF

The use of the groundwater well at Second Portage Arm (MW11-02) will continue in order to monitor for the presence of mine process water in groundwater. Actions will be taken in 2013 to remove the blockage in this well caused by the WaTerra® tubing and the fitting located at 28 metres in MW11-02 to allow sampling of this well. A recommended approach to remove the blockage in MW11-02 could include (but may not be limited to) advancing a minimum 30 metre length of RW drill rod (27.8 mm outer diameter) equipped with a fitting containing an external thread into the 40.4 mm inner diameter well casing using a drill rig operated by Orbit Garant Drilling. The action of successfully advancing the drill rods into and/or beyond the blockage may enable the WaTerra® tubing to become dislodged and recovered during the removal of the drill rods. The monitoring of this well achieves the purpose of the second part of the NIRB certificate condition number 8, which is to evaluate the potential seepage of tailing process water through fractures in the bedrock below the TSF to the Portage open pit. If the blockage cannot be removed, the well will be replaced.

Recommendation #7

It is recommended that AEM keep the NIRB informed of the status of the re-evaluation of the groundwater well monitoring program in order to monitor ongoing compliance to the requirements of Condition 8.

For recommendation #'s 6 to 9 refer to Appendix B.

The groundwater monitoring program was conducted in July 2012. Monitoring well MW08-02 was successfully sampled in triplicate. Monitoring well MW08-03 could not be sampled because of an ice bridge inside the well pipe that could not be removed. This prevented formation groundwater from entering the well. Monitoring well MW11-01 was damaged in spring 2012 and was deemed inoperable, therefore no groundwater samples were collected and the well was subsequently decommissioned in July 2012. Monitoring well MW11-02 located east of the tailings storage facility could not be sampled due to a blockage comprised of well development tubing which prevented access to the formation groundwater.

Collecting groundwater samples from monitoring wells only partially achieves the purpose of monitoring of salinity and quality of open pit seepage. Monitoring wells provide groundwater information at one specific location that represents one or a small set of more less impermeable fractures in rock at a distance from where seepage will daylight in the Goose or Portage open pits. Given the very low hydraulic conductivity of the bedrock at 150 meters (2 x 10^{-8} m/s in the bedrock mass, and up to 10^{-6} m/s in the

Second Portage Fault; Golder, 2004), the groundwater sampled in the wells is far in distance and time from reaching the open pit.

The advantage of the well, being the ability to repeatedly sample a same location, is undermined by its fragility in an arctic environment where frost action can damage even robust wells. At Meadowbank, monitoring of talik water means the well collars must be positioned close to the open pit crest to reach the talik. Vehicular traffic and blasting pose both a constant threat to equipment (like well MW11-01 damaged in 2011) and to the safety of personnel carrying out the monitoring program.

AEM is committed to recovering operable wells that are blocked (monitoring wells MW11-02 and MW08-03) in 2013. However, instead of replacing the wells that have been destroyed, AEM is considering using alternate methods to more effectively achieve the purpose of condition 8 of the NIRB certificate for salinity of water reporting to the open pit. Methods currently being considered include, but may not be limited to, the following:

- Collecting samples from the groundwater that infiltrated into production holes at the base of open pits (Goose, North Portage, Third Portage);
- Collecting samples of groundwater from horizontal borehole that could be drilled at the base of open pit walls where seeps are observed, and/or from groundwater seeps into open pits;
- Measuring conductivity of groundwater in-situ (without sampling groundwater) through the installation of conductivity probes in boreholes drilled to the talik. These probes measure water conductivity (and therefore salinity) in real time.

Production holes are used for blasting and drilled to approximately 8.5 metres depth with a 0.17 metre diameter bore. A groundwater sample could be collected from a production hole that contains water prior to the addition of explosives in the hole. Instrumenting a horizontal borehole with a piezometer could also facilitate monitoring of inflow to the open pit, although this may not be needed if groundwater is flowing in the horizontal borehole. If water is flowing into a horizontal borehole, a sample would be collected after an adequate volume of water has been flushed out of the borehole. The location of horizontal boreholes would need to be designed to target locations and geological features that augment the likelihood of encountering water. For both production holes and horizontal boreholes, new holes would be drilled as the pit expands.

The installation of conductivity probes can be an effective method of monitoring the in-situ groundwater salinity in real time in arctic environments (Martin *et al*., 2013).

The target dates for the Groundwater Plan will be August/September, 2013. Results of sample analysis will be compared to historical values.

Recommendation #8

It is recommended that AEM conduct further studies to accurately determine the source of the contamination in the well MW11-01, especially with a focus as to

determining whether the increased values are be related to the movement of groundwater through the formation within the Goose Island Pit.

For recommendation #'s 6 to 9 refer to Appendix B.

The source of the apparent contamination at monitoring well MW11-01 in 2011 will not be further investigated. The contamination at this well have occurred during well installation partly from the well grout (causing the elevated pH) and by brine addition during drilling (causing the high salinity). The monitoring well was installed in a borehole drilled with heated lake water as drilling fluid between September 12 and 17, 2011, however brine (calcium chloride base) was added to the borehole on September 16 to prevent freezing as no night shift was available. Actions were taken to flush the brine out of the borehole on September 17 prior to the installation of the monitoring well which was completed on September 18. Energized heat trace cables and the injection and re-circulation of heated lake water into the well were also required as ice had formed in the well following the installation. Monitoring well MW11-01 was developed for four days, where approximately 214 Litres (2.6 well volumes) of water were removed in addition to the water introduced during thawing prior to being sampled.

Conductivity measurements collected throughout the development of well MW11-01 (Table 1) indicated that the brine solution was not completely removed at the time of sampling, also shown as the elevated concentrations of dissolved chloride, TDS and calcium (Figures 2A, 2B and 2C). The water sampled at MW11-01 in 2011 represents formation water with some portion of calcium chloride brine remaining in the pocket of formation water sampled.

The elevated pH noted during development (up to pH of 12, see Table 1) is characteristic of grout which has transferred to the development water during installation. The pH did re-establish itself to a circum-neutral value once the grout set at the end of the development carried out in 2011.

Dewatering of the Bay Goose impoundment area occurred between July 25 and November 14, 2011 and resumed in spring of 2012 immediately following the freshet. The Goose pit was not yet in operation during the groundwater monitoring program completed in September 2011. Therefore, the observed contamination of groundwater at MW11-01 in 2011 is unlikely related to the activities of the mine or groundwater flow from the TSF. Furthermore, groundwater quality impacts in the vicinity of the Goose pit as a result of the TSF are not anticipated given the hydraulic gradient and distance the TSF is situated from the Goose pit.

This well was to be further developed in 2012 however this could not be carried out because the well was damaged during 2012 site operations and subsequently decommissioned by Golder to seal it properly. Follow up monitoring to complete development and obtain a verification sample at this location are no longer possible (see alternates methods in Recommendation #9 for future groundwater evaluation in the Goose Pit.

Recommendation #9

It is recommended that AEM provide the Board with a more detailed discussion regarding the mitigation measures to be put into place in order to address the observed higher values recorded at well MW11-01.*

For recommendation #'s 6 to 9 refer to Appendix B.

The Goose pit began operation in April 2012. Monthly monitoring of sump water quality at Goose pit was initiated in June 2012. The water accumulating in the open pit includes water from the Goose pit and trace seepage from the Bay Goose dike. This water is subsequently pumped to the Attenuation Pond. The locations of the sumps are not permanent and depend on operations and mine planning. The available water quality data for Goose pit and dike seeps provides evidence that concentrations of TDS and chloride (samples were not analyzed for calcium) are low and representative of a mixture of formation water and lake water and not highly saline as compared to water quality observed at MW11-01 (as shown in Figures 2A and 2B). No mitigation measures will be put in place to address the elevated calcium chloride pocket at well MW11-01 since this is not anticipated to cause a noticeable increase in salinity concentrations of pit sump waters. Monitoring of sump water quality at Goose pit will continue in order to replace damaged monitoring well MW11-01.

Recommendation #10

The Board requests that AEM provide a discussion of the exceedances observed for the duplicate samples, as well as an indication as to whether further studies are planned in order to address the results observed for the QAQC monitoring.

In accordance with the Type A License, the Meadowbank mine developed a Quality Assurance / Quality Control (QA/QC) Plan submitted on January 2009 (AEM, 2009) which requires that samples are collected by qualified technicians and field duplicates are submitted to ensure QA/ QC is adequate. Results of the laboratory and field duplicates are assessed annually by measuring the relative percent difference (RPD) between original and duplicate measurements. A field duplicate sample is an independent collection of water samples at the same time and location as the original, as a measure of consistency in sampling methodology and heterogeneity of chemical parameters at discrete locations. According to the AEM (2009) QA/QC sampling protocol, the number of field duplicates taken is approximately 10% of original samples. RPD values may be either positive or negative, and ideally should provide a mix of the two, clustered around zero. Consistently positive or negative values may indicate a bias. Large variations in RPD values are often observed between duplicate samples when the concentrations of analytes are very low and approaching the detection limit.

Although the QA/QC plan was followed and samples were collected by qualified technicians or biologists, few field duplicate samples exceeded the RPD threshold. Given the high number of samples collected in 2011, it is common to have few RPD exceedances as result of the discrete differences in the original and field duplicate. Given the variability of these exceedances (occurring with different parameters, on different dates for different sampling programs; i.e. for samples taken from the STP-April 4 and SW-RSF -August 1) and the high number of successful samples, it is evident that field QA/QC standards during water sampling were maintained during sampling in 2011. In the future, AEM technicians will continue to follow standard QA/QC procedures (AEM, 2009) for surface water sampling that requires the use of sample bottles that are provided by an accredited laboratory, proper handling and storage of bottles to prevent cross-contamination between areas and if appropriate thoroughly rinsing the sample containers with site water prior to sample collection. AEM will also review and update the QA/QC plan in consideration of the NIRBs recommendations.

Recommendation #11
The Board requests that AEM provide information on the type of deterrents it plans to use in the future to deter falcons and ravens at the Meadowbank site and at the Baker Lake bulk fuel storage facility, and to provide discussion as to the effectiveness of such deterrents at these sites and any alternatives that may be considered.

Peregrine falcon activity and nesting has increased along the AWAR as compared to baseline since 2008 due to the construction of ideal perch and protected nesting sites in the region. No deterrent methods will be used at quarries not in operation.

In 2012, for the first time, peregrine falcons were observed nesting near mine operations. As a result, AEM consulted Nunavut Environmental for advice and developed a Peregrine Falcon Management and Protection Plan (see appendix C).

AEM recently involved Dr. Alastair Franke from the University of Alberta. Dr. Alastair Franke has been conducting research on raptors in Nunavut since 2003. He has extensive knowledge of falcon behavior and is recognized by the Government of Nunavut, Department of Environment (DOE) as a raptor expert for the territory. If falcon activity is observed near mine operations, AEM will immediately consult with Alastair and he will provide site specific protective measures and if needed deterrence recommendations to ensure falcon protection.

AEM has installed owl decoys at the Baker Lake Fuel farm to deter ravens from continuing to nest and will be sure to continue to monitor these potential nest sites during routine fuel inventory monitoring and Baker Lake site inspections. AEM personnel will continue to discourage nesting at the fuel storage area by walking up the stairs and prior to establishing a nest. If a nest is observed, AEM will immediately contact the DOE.

Recommendation #12
The Board requires AEM to provide a monitoring plan for the spill at kilometre 22, requesting specifically, that AEM provide information on what conditions must be met to discontinue monitoring of this area in 2 years.

With respect to a plan of action and adaptive management, AEM has prepared and implemented a comprehensive spill prevention strategy for vehicles travelling along the AWPR. Our main focus is controlling the speed of all vehicles to prevent rollovers and/or accidents. The speed limit along the AWPR has been reposted, all vehicular traffic is timed for travel between gatehouses and our security team patrols the road regularly (including using radar). The second focus is increased road maintenance and safety procedures which ensure that surfaces remain flat to prevent "washboard" conditions and that the road is closed during inclement weather conditions. In addition to this TDGA training has been received by our fuel contractors, Arctic Fuels, onsite training on AWPR use is given to all AEM employees and contractors and sea-cans containing spill clean-up equipment have been placed at all water crossings along the AWPR. Of note – there were no spills along the AWPR during 2012.

The clean-up of spill residues at Km 23 on the AWPR was completed in the fall 2012. Approximately 550,000 liters of water was treated at the site in 2012. The water met our Water License criteria (no detect for parameters of concern) and the excavated areas used to capture the residual contamination were refilled and contoured back to the original state. Previously, in 2011, app 1500 m3 of soil was excavated from this area (stored at Quarry 5 and since removed to Meadowbank Landfarm also in 2012). Maritime barriers will remain in the watercourse through the 2013 freshet as a precaution and sample monitoring will be conducted in the spring and fall of 2013. It should be noted that results of monitoring in the watercourse in 2012 revealed no detection for any hydrocarbon material. It is also our intent to continue monitoring the watercourse in 2014. If levels of hydrocarbons are detected then remedial measures will be undertaken – cut off trenches, further source investigation, water treatment, etc.

All information regarding the clean-up and remediation has been reported to the AANDC Water Inspector as required (see appendix D).

Recommendation #13

The Board requests that AEM develop and put into place an action plan designed to prevent wind-blown debris from the waste piles and/or to establish additional on-site waste management practices.* The Board also requires AEM to report on the effectiveness of this waste management action plan in its annual reporting to the NIRB.

AEM staff use their best efforts to prevent windblown debris by ensuring that any bulk waste not going to the incinerator is bagged. All organic (food) waste is stored in close top bins to eliminate being blown around.

After freshet in the spring a site cleanup is preformed every year to collect any accidental wind-blown debris from winter storms and strong winds. It is also regular practice for field crews to pick up wind-blown materials when they are seen. The Meadowbank site has improved its waste handling immensely as noted by regulators who frequent the site.

Recommendation #14

The Board reminds AEM that its future annual reports are expected to speak to the amended Condition 32. Further, the Board requires that AEM provide information on the compliance status to Condition 32(e) and 32(f) for the 2011 year and provides record of consultation with the community of Baker Lake in 2011 as to the private nature of the access road and the non-mine access that is allowed for traditional Inuit activities.*

Annually, AEM holds a meeting in the Hamlet of Baker Lake to explain to the community the Policies and Procedures of the All Weather Private Road from Baker Lake to the Meadowbank Mine site. In 2011, the meeting was held on October 3 and the minutes of the meeting are available in the 2011 NIRB annual report. A copy of the minutes of the meeting is located in Appendix E. AEM also conducts quarterly meetings with the Bake Lake Community Liaison Committee and issues related to the use of the AWPR are discussed regularly.

Also, during the caribou migration (September-October), we place notices on the local radio station (see example in Appendix F).

Recommendation #15

It is also recommended that AEM provide information on the authorized non-mine use of the road as required under Condition 32(g). The Board request that AEM provide an assessment of the environmental and socio-economic impacts of the access road as spoken to in Condition 33 […2. to facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required,...]. The assessment should include a discussion on whether or not road usage had increased since the development of the access road, whether an increase in harvesting has been observed and whether that may be attributed in whole or in part to the use of the road, whether the development of the access road has had an impact on traditional activities in the area, and the potential socio-economic impacts of the public use of the access road.

AEM procedures for non-mine uses of the road requires that any local users report to the Baker Lake Gatehouse and sign a form that describes the safety protocol while on the road. The road is used by local hunters using ATV's. Daily records are kept. Unfortunately all records for the first quarter of 2011 were lost due to the fire at Meadowbank in March, 2011. After that our focus was to rebuild the kitchen while continuing mine operations. As a result there are limited records for 2011, however, as an example I am providing a summary of the non-mine authorized road use for Sept/Oct, 2011 (see Table below). In 2012 we have implemented the use of electronic records to prevent any future loss of hardcopy records. AEM is confident that our current procedures and protocols provide for the safety of the local public while using the road either for hunting access or for general recreational opportunities. There have been no accidents to date involving mine related truck traffic and locals using ATV's.

2011 AWPAR ATV USAGE RECORDS

Date	# of ATV's	Date	# of ATV's
4-Sep-11	2	1-Oct-11	32
5-Sep-11	29	2-Oct-11	30
6-Sep-11	15	3-Oct-11	24
7-Sep-11	12	4-Oct-11	25
8-Sep-11	6	6-Oct-11	20
9-Sep-11	8	7-Oct-11	29
11-Sep-11	20	8-Oct-11	34
12-Sep-11	5	9-Oct-11	23
13-Sep-11	19	10-Oct-11	46
14-Sep-11	14	11-Oct-11	2
15-Sep-11	9	12-Oct-11	14
16-Sep-11	10	13-Oct-11	27
17-Sep-11	34	14-Oct-11	24
18-Sep-11	4	15-Oct-11	11
19-Sep-11	19	16-Oct-11	7
20-Sep-11	15	17-Oct-11	6
21-Sep-11	15	18-Oct-11	16
22-Sep-11	16	19-Oct-11	4
23-Sep-11	14	20-Oct-11	3
24-Sep-11	59	22-Oct-11	5
25-Sep-11	16	23-Oct-11	5
26-Sep-11	5	24-Oct-11	3
27-Sep-11	23	25-Oct-11	10
28-Sep-11	12	27-Oct-11	6
29-Sep-11	12	29-Oct-11	2
30-Sep-11	18	1-Nov-11	1

As reported in the NIRB annual report (see Appendix H section 10.4 of the NIRB annual report), at the end of 2011, hunting data had been collected via the Hunter Harvest Study (HHS) from 46 participants (an increase from 2010 when 39 calendars were returned). The estimated 10% of Baker Lake hunters participating in the HHS continues to be used as the estimate of overall participation based on the 2008 HTO member list and an assumption that there is an increase in overall number of hunters in the community.

The hunters participating in the HHS appear to be representative of the hunting population in Baker Lake, consisting of male, female, casual, regular and intensive hunters. Estimates from HHS data to- date suggest that the 10% of hunters participating in the HHS account for 10-15% of total Caribou harvests in the Hamlet of Baker Lake, assuming that the participating hunters are likely those that are more actively involved in hunting.

In most years, within 5 km of the AWPAR, a higher proportion of Caribou (i.e., 55% across all years) are taken during the growing season than in the winter season. Given the improved hunting access along and adjacent to the road during the snow free period, this higher proportion was not unexpected and has not increased since 2009. Interestingly, the road also appeared to be important to hunters in the winter season, despite relatively unrestricted access to unroaded areas in the Baker Lake area. Factors such as ease of access and security may be factors in a hunter's decision to hunt in an area.

In 2011, 283 Caribou (42% of total) were harvested within 5 km of the AWPAR, the highest count to date; however, although increases have been seen each consecutive year since AWPAR construction, the total harvests per participant within 5 km of the AWPAR has increased only marginally (Figure 10.8), from 6.9 Caribou per participant in 2008 to 7.1 Caribou per participant in 2011. When comparing Caribou harvests within 5 km of the road from the HHS to historical NWMB data, there does appear to be an increased harvest along the AWPAR (Table 10.2).

Counts remained low for Muskox and Wolverine, precluding any interpretation of potential mine- related effects. Low densities of Muskox and Wolverine and general aversion to human activities require hunters to explore areas well outside areas occupied by the AWPAR; therefore, the AWPAR is anticipated to have little effect on Muskox and Wolverine hunting patterns.

Figure 10.8: Caribou Harvests (Total Harvest and Average by Participant) Along the AWPAR (2007
to 2011).

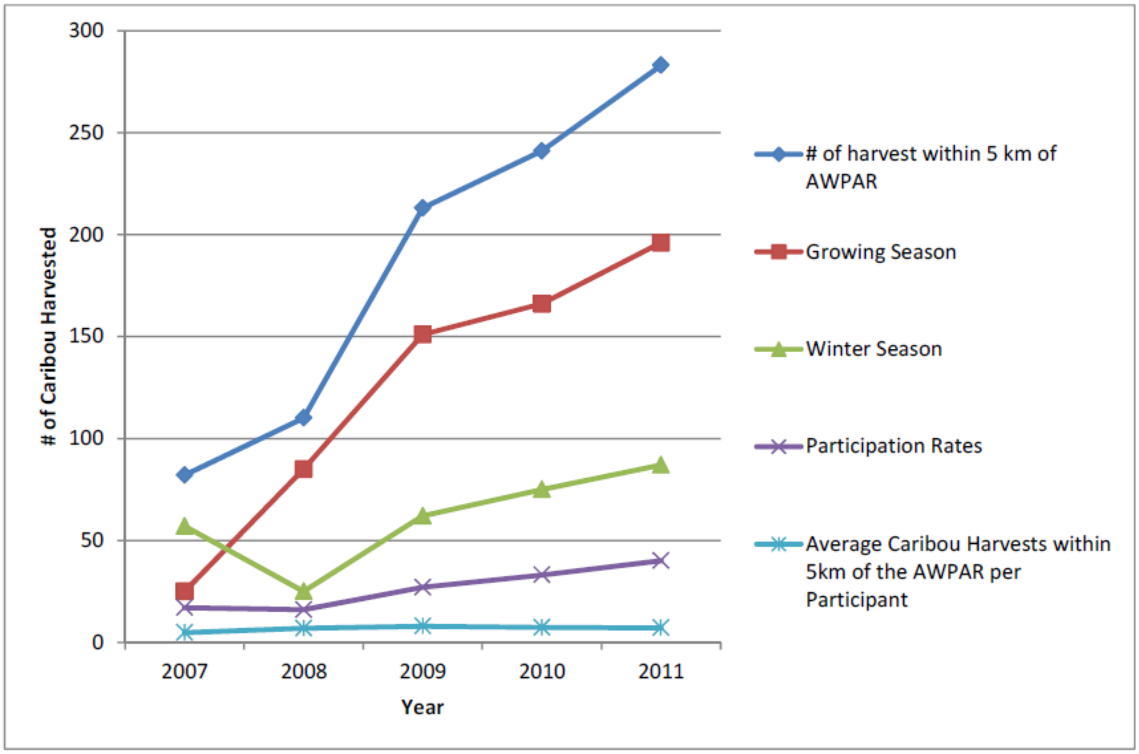


Table 10.2: Caribou Harvest Distribution along the AWPAR and within the Meadowbank LSA and RSA (1996/2001, and 2007 to 2011)

Study	% of harvest within 5 km of Meadowbank Road	% of harvest within Meadowbank LSA	% of harvest within Meadowbank RSA
NWMB 1996 - 2001	18%	7%	67%
Baker Lake HHS 2007-2010	38%	22%	75%
Baker Lake HHS 2007	34%	12%	79%
Baker Lake HHS 2008	37%	28%	73%
Baker Lake HHS 2009	36%	20%	78%
Baker Lake HHS 2010	38%	22%	73%
Baker Lake HHS 2011	42%	25%	74%

Recommendation #16

The Board invites Health Canada1 to provide comments on the results of both the WSLRA and PQRA reports as provided by AEM, and to indicate whether or not further information may be required with respect to the monitoring program as outlined in Condition 67.

As per Condition 67, AEM agrees with the NIRB recommendations and will consult with NIRB and Health Canada for the monitoring of contaminants in country foods.

Recommendation #17

It is recommended that AEM notify the NIRB of any plans for follow-up studies that may be conducted as a result of the PQRA report recommendations.

This is dependent on consultation with Health Canada's and their response to the PQRA. As per the TEMP, AEM will complete another SLRA in 2014 (i.e. every 3 years). During this re-evaluation and analysis, the chromium levels at reference and mine-site stations will be re-assessed and if necessary, additional samples may be collected (to evaluate chromium speciation).

Recommendation #18

Based on the information and results provided from the 2011 dust monitoring program and given the limited amount of data collected, it is recommended that the monitoring stations be kept in place until more data is collected, and prior to new locations being selected by AEM. If AEM, in consultation with EC, determines that a more suitable location for dust monitoring have been located, the Board requires that the Proponent provide a description of the new location for the atmospheric monitoring station, including an updated map showing where the station would be installed in relation to other project components (including roads) and in proximity to water bodies.

The location of the station was determined in consultation with EC in July 2011. Station #4 was installed before the beginning of the construction of the Vault road. During the construction, the realignment of the Vault road placed the station within 10 feet of the road. Therefore, AEM re-positioned Station #4 100 m east of the road to be indicative of the original intended location (approximately 100 meters from the road). The other stations were not changed from the initial location agreed upon with EC.

Recommendation #19

The Board requests that AEM provide a discussion and rationale as to why the two out of the four stations monitored exceeded the maximum allowable concentrations of total fixed dust fall during the months of November/December.*

During November and December, the Vault road construction was ongoing and these stations were affected. This was considered as a onetime incident for the construction period only.

Recommendation #20

The Board requests that AEM provide the information as requested by EC.*

AEM, in response to EC's request to provide information regarding the incinerator not achieving sufficient temperatures in the secondary chamber on a "few occasions " to ensure "complete combustion…", has determined that there were some initial operational problems during the use of the incinerator. During the first 1.5 years of incinerator operation (June, 2009 – through 2010), staff turnover and proper training on the correct waste mix and correct charging procedure of the incinerator taking longer than anticipated were the likely causes of the insufficient temperature being reached on the few occasions referenced by EC. Since that time AEM committed to proper training and operation of the unit. Stack testing results from 2012 sampling indicated emissions were below EC's criteria for Dioxins, Furans and Mercury. These results illustrate that the unit temperatures are maintained to ensure complete combustion of wastes. It is important to note also that the waste stream being incinerated has not changed since the incinerator was put into use.

Recommendation #21
The Board requires that AEM address the dust control issue for the access road.*

As part of the Meadowbank air quality impact assessment (Cumberland, 2005), a detailed modeling of a 7.5 km long road between Vault mine and the processing plant was conducted as this roadway will be the most frequently used road. The model showed that the worst case level of air pollution (mainly fugitive dust) will be in the range of, or less than, the air quality objectives. Evaluation and monitoring of fugitive dust along the AWAR was not required, because much lower traffic volumes were predicted for this route.

At Meadowbank, AEM has implemented a road dust control program that is focused as follows:

1. Ensure road safety by controlling dust to ensure safe visibility during mine operations – this involves controlling dust whenever road safety or worker safety is threatened by dust emissions from road traffic; and

2. Protect the environment and public health – this involves controlling dust whenever there is a potential for harm from road dust to human health or to the receiving environment.

Under Item 1 above, the highest traffic volume is on the mine site (caused by the heavy mining haul trucks and the higher volume of traffic) and therefore the highest safety priority is on the mine site itself. The section of the road between the Meadowbank mine and the exploration camp also has the highest volume of road traffic and therefor has been the focus of dust control. To address these areas of greatest risk at the mine site we have two water trucks operating throughout the day controlling dust emissions.

Under item 2, air quality monitoring, and ecological effects monitoring results as part of Condition 67 and bird surveys around the mine site have not demonstrated any significant changes due to mine related road dust emissions. As reported in the annual report, no significant harm to the environment, either to vegetation, to wildlife or to the aquatic environment has been reported.

The GN Guidance ton dust suppression states that he only acceptable chemical dust suppressants are calcium chloride and bituminous oil (heavy oil like bunker C). At Meadowbank we have used calcium chloride but find that it only has a short term benefit on dust suppression which is quickly lost through the heavy truck traffic. Therefore effective management of dust would require very large volumes of calcium chloride which in our opinion will cause other adverse environmental effects via run off during freshet and rain events.

Last year we did receive complaints of dust emissions from the Hamlet of Baker Lake. These emissions were associated with the increase in road traffic from the AEM Baker Lake port site to the Baker Lake Gatehouse that occurred during the summer sealift period. In response we provided the Hamlet with Calcium Chloride that they applied to the section of road between the AEM port and the Gatehouse.

To treat the full length of the Meadowbank AWAR with calcium chloride (110 km with two applications per year) we estimate that it would require 2.8 million litres of 29.6% liquid calcium chloride. This is a very large volume of material that could cause adverse environmental impacts and it is not guaranteed that two applications would be sufficient nor make a difference based on the modeling presented in the EIS. The AWPR needs to be graded regularly to ensure that haulage of materials like fuel and oils can be done safely. Purchase and shipping cost alone for this amount of suppressant would be very costly (order of several millions per year) and we are not sure that two applications per year would be adequate. AEM is not willing to this spread or introduce this amount of calcium chloride into the local receiving environment on an annual basis until we know what the potential environmental effects of this CaCl are and until we know that the dust currently generated along the AWAR is actually causing harm. As previously stated, our monitoring studies have not identified dust deposition as a potential concern to the terrestrial or aquatic environment.

Another method of suppression being evaluated is the slowing of traffic, during barge season, to minimize dust generation.

Recommendation #22

It is recommended that AEM to provide a plan which details the future dust monitoring studies that would be conducted along the access road including a discussion of potential adaptive management strategies that may result from these studies.*

In 2013, AEM will continue to monitor air quality around the mine site and additionally, is proposing to conduct a study to evaluate dustfall at selected locations along Vault Pit Road, along the AWAR between the exploration camp and the mine site, and along 3 additional sections of the AWAR. Dust deposition will be evaluated over one or two months (July-August and August- September 2013) when the highest levels of dust generation is expected (due to limited precipitation and no snow cover). The objectives of the proposed study will be to evaluate dustfall adjacent to the AWAR and mine site roads at locations where dust suppression activities are underway and frequency of traffic is comparatively high or moderate. The dustfall study will address NIRB recommendations (letter dated December 7, 2012), assist in evaluating and comparing the air quality impact assessment (Cumberland, 2005) and be used to develop future mitigative and management actions. Details of this study design are presented in the attached memo Appendix G.

Should you have any questions, please contact me via email at
stephane.robert@agnico-eagle.com

Regards,
Agnico-Eagle Mines Limited – Meadowbank Division

Stéphane Robert
Manager Regulatory Affairs Nunavut

AGNICO-EAGLE

MEMORANDUM

Feeding Wildlife

All,

It has been brought to the attention of the Environment Department and Senior Management that individuals have been feeding wildlife on the Meadowbank site. Feeding wildlife attracts them to the site and therefore increases the chances of human wildlife interactions.

Feeding wildlife can result in severe consequences. Animals that are regularly fed become fearless of humans. This results in animals getting closer to humans expecting to be fed. When these wild animals are not fed they can in turn bite a human. Animals will have to be put down if they threaten or hurt staff. It does not matter in what area the feeding takes place, it is against policy and contradicts our license.

Chunks of meat on the ground

<u>IMPORTANT</u>: Any person caught *feeding animals* or disposing of food related waste (wrappers and coffee) in an improper manner, including not disposing of food waste in the proper containers or at the landfill, will be met with disciplinary measures.

Chewed Garbage

Food waste at Landfill

Regional Office:
93, Rue Arseneault
Bureau 202
Val d'Or, Quebec J9P 0E9
Tel: 819-825-3744

Baker Lake Office:
P.O. Box 540
Baker Lake, Nunavut X0C 0A0
Tel: 867-793-4610 Fax: 867-793-4611

MEMORANDUM

Animals are wild and must remain so, **a fed animal is a dead animal**, as once it becomes use to eating food it does not have the will or ambition to hunt. If this animal has young, the young will also learn to live off the unnatural food. Once the unnatural food source stops, these animals will die.

Furthermore, wildlife reports are causing increased responses from environmental staff due to a problem caused by other AEM staff. This results in increased costs to Meadowbank which are preventable.

Please be mindful not to disrupt the wildlife that is located in the vicinity of our work area. With your cooperation we will be able to complete our project without negative human/wildlife interactions.

Thank you,

Kevin Buck
Environmental Superintendent

Jeffrey Pratt
Environmental Coordinator

No Garbage Bags in Red Bins

Regional Office:
93, Rue Arseneault
Bureau 202
Val d'Or, Quebec J9P 0E9
Tel: 819-825-3744

Baker Lake Office:
P.O. Box 540
Baker Lake, Nunavut X0C 0A0
Tel: 867-793-4610 Fax: 867-793-4611

Appendix B

Filling trucks or tankers at the Tank Farm, Baker Lake

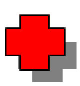
		PROCEDURE NUMBER:	**MBK-SIT-0074**
People concerned	**Arctic Fuel, Tanker Drivers**	**Prepared by**	Site Services
		Authorized by	Éric Trudel, Site Services Superintendant
Effective :	2011-11-14	***"Safety First, Safety Last … Safety Always!"*** ***"No Repeats" – Our Stepping Stone to ZERO HARM***	

This procedure corresponds to the required minimum standard. Each and every one also has to comply with the rules and regulations of the Nunavut Government in terms of health and safety at work.

Objective: to provide a safe and effective procedure for filling a tanker or trucks at the Tank Farm, at Baker Lake.

Concerned departments:	**Required equipment**
 Site services	

Risks /Impacts legend



Health & Safety

Process/Quality

Costs

Environment

Procedure	***Risks/ Impacts***
1. Install the wheel chocks every time you go out of the tanker before filling the vehicle and keep it until it's done.	Prevent incident and /or accident
2. Get out of the vehicle while you are filling the tanker.	
3. Complete the form ''Fuel and Freight Haulage'', the mechanical verification section.	
4. Check the maximum capacity for the tanker which is used. Fill the tanker at 90% of the capacity to have a safety space for the Haulage.	
5. Climb by the ladder on the tank and check by the lid if the tank is empty. To start the filling, make sure you have an empty tank. If the tank is not empty, stop immediately this procedure and call your supervisor.	
6. Connect the hose and open the valves.	
7. If the tanker has more than one compartment, try to operate the inlet fuel valves of each compartment. It's important because, if one compartment is isolated, the capacity of the tank is reduced and this situation will cause a spill on the ground.	
8. Complete the form ''Fuel and Freight Haulage'' the Fuel Haulage section.	
9. Start the Fuel pump and check to find a leak on the valves, the hose and the tank.	
10. At 90% of the tanker capacity, stop the pump, close the valve and disconnect the hose. Place the fill hose and the valve in the heater box.	

11. Complete the form ''Fuel and Freight Haulage'' the Freight Haulage section.	
12. Complete the form ''Baker Lake, Tank Farm, Fuel filling for tanker'' inside the shed of the fuel station.	
13. Before you leave, lock the door at the Fuel Station.	
14. Remove the wheels chocks and bring the fuel at Meadowbank.	
15. If you have an emergency or a spill on the ground, call your supervisor immediately and the supervisor of Agnico Eagle Mine. a. Chanel : # 16 , RD Baker Lake b. Phone : 793-1303	
16. Drive carefully.	

JET-A BARREL PUMPING

		PROCEDURE NUMBER:	**MBK-SIT-0073**
People concerned	• **Field services**	**Prepared by**	Site Services
		Approved by	Eric Trudel Site Services Superintendent
Effective :	2013-09-19	***"Safety First, Safety Last … Safety Always!"*** ***"No Repeats" – Our Stepping Stone to ZERO HARM***	

This procedure corresponds to the required minimum standard. Each and every one also has to comply with the rules and regulations of the Nunavut Government in terms of health and safety at work.

Objective: To prevent spill or any other damage

Concerned department:	**Required equipment**
Site services	• Regular PPE • Electric pump • Contentment back • Open top barrel opener

Impacts			
Health & Safety	Process/Quality	Costs	Environment

JET-A BARREL PUMPING

Procedure	Risks/ Impacts
1- Put the barrel of jet-a on the contentment rack	Prevent incident and /or accident
2- Bring an empty open top barrel and put this one also on the contentment rack	
3- Open the two caps on the top of the barrel(small and big)	
4- Put the ground between pump and barrel	
5- Take the pump and put the pipe in the big hole on the top of the barrel	
6- Plug in the pump (make sure the on/off switch it's off)	
7- Put the other end of the pump (hose) where you want to dump	
8- Start the pump (be careful of the spill) if you need to be two persons call for help	
9- When finished, turn off the switch	

10- Remove the pump from the barrel and put the pump in the empty open top barrel to prevent any spill	
11- Remove the ground from the empty barrel	
12- If you have to pump another barrel, restart at the point 3	
13- No smoking permitted around working area	

BAKER LAKE JET-A FUEL FILLING

		PROCEDURE NUMBER:	**MBK-SIT-0028**
People concerned	• **Three (3) employees from site services or Artic Fuel Service to complete this procedure**	**Prepared by**	Site Services
		Authorized by	Éric Trudel Site Services Superintendent
Effective :	2012-11-19	***"Safety First, Safety Last … Safety Always!"*** ***"No Repeats" – Our Stepping Stone to ZERO HARM***	
This procedure corresponds to the required minimum standard. Each and every one also has to comply with the rules and regulations of the Nunavut Government in terms of health and safety at work.			

Objective:

To fuel a load of Jet-A in Baker Lake in delivery tanker. Three (3) people from site services or Artic Fuel Service should complete this procedure for it to be safe.

Concerned departments:	Required equipment
Site services	

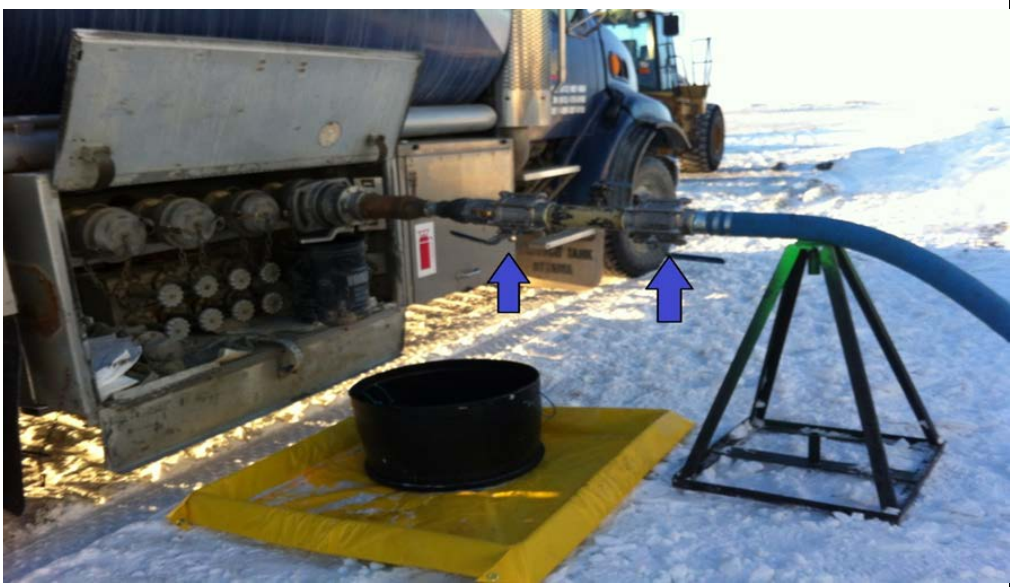
Risks/ Impacts Legend			
Health & Safety	Process/Quality	Costs	Environment

Procedure	*Risks/ Impacts*
1- Make sure the loading area is clear of snow and easy to access with the fuel truck. Park the Fuel truck in the loading area and put the wheel shock under the wheel.	Prevent incident and /or accident
2- The road supervisor or Arctic Fuel Services supervisor, level 2 needs to unlock the valve at the tank with the identified key located in the key storage in the Baker Lake office.	
3- Both ends need to be prepared with environmental container (black container and yellow bottom container) as seen on the picture on top. Make sure to use the Ground from the truck and connect it to the tank in use. 	
4- The road supervisor or Arctic Fuel Services supervisor, level 2 needs to get the part that is to be connected to the truck. You can get that part in the fuel farm in a warm area. As shown with the red arrow.	

5- When all the containment is in place, connect the hose to the adaptor already connected to the truck, as shown on the picture below with the yellow arrow.

6- Make sure to install the hose on the tri-pod when everything is assembled to support the weight.

7- When all of this has been done, you can now unlock the 2 locks located on the main valve. As seen on the picture below with the blue arrow. 	
8- Make sure you have 1 person on top of the truck, 1 person at the main valve connected to the truck and the road supervisor or Arctic Fuel Services supervisor, level 2 at the main valve of the jet-a tank.	
9- Open the Jet-A tank main valve all the way as shown on the picture below with the red arrow and then open the other valve as indicated by the yellow arrow in the exact position shown in the picture. 	

10- After, the person standing by the 2 main valves at the truck (as shown on the picture below) can open both valves to start loading the truck (gravity feed only). 	
11- When all of those operations have been completed, the 3rd person on top of the tanker monitors the level to prevent overflow.	
12- When the truck is full, just close the 2 main valves as shown on the picture on top and use the drain closer to the truck to drain the line between the truck and the main valve. It should give you about half a 5 gallons pail. (This configuration is double block and bleed).	
13- Take that 5 gallons pail and with the use of a funnel, transfer it in the red container located right beside the loading area.	

14- Take the truck adaptor and bring it back in a warm area at the fuel farm.	
15- Take the hose and bring it back toward tank #7 and attach it on the stairs with the rope witch is made for that purpose.	
16- Re-lock the 3 valves on both ends and store the containment. 	

Notes: - There will remain around 20,000 liters in each tank of the discharge by gravity. -Each tank is identified from 1 to 8 at Baker and 9 is at Meadowbank. -Field supervisor in Meadowbank needs to fill the info in public / global inventory/Meadowbank fuel inventory/JET-A-inventory -Only the field service Supervisor is in charge of ordering the Jet-A.	

AGNICO-EAGLE

MEADOWBANK GOLD PROJECT

Landfarm Design and Management Plan

In Accordance with Water License 2AM-MEA0815

Prepared by:
Agnico-Eagle Mines Limited – Meadowbank Division

Version 3
February 2013

EXECUTIVE SUMMARY

General Information

The Landfarm Design and Management Plan (LDMP) describes the design features and operational procedures for the landfarm constructed at the Meadowbank Gold Project site for the storage and treatment of petroleum hydrocarbon contaminated soil.

Annual Review

The LDMP will be reviewed and updated at least annually if necessary. Completion of the annual review of the LDMP will be documented through signatures of the personnel responsible for reviewing, updating and approving the LDMP.

Record of Changes

A record will document all significant changes that have been incorporated in the LDMP subsequent to the latest annual review. The record will include the names of the persons who made and approved the change, as well as the date of the approval.

Distribution List

Agnico-Eagle Mines Limited (AEM) will maintain a distribution list for the LDMP providing information about all parties that receive the plan including mine personnel, departments, and outside agencies.

IMPLEMENTATION SCHEDULE

As required by Water License 2AM-MEA0815, Part B, Item 16, the proposed implementation schedule for this Plan is effective immediately (February 2013) subject to any modifications proposed by the NWB as a result of the review and approval process.

DISTRIBUTION LIST

AEM - Environmental Superintendent

AEM – Environmental Coordinator

AEM – General Mine Manager

AEM – Site Services Superintendent

AEM – Field Services Supervisor

AEM – Engineering Superintendent

DOCUMENT CONTROL

Table 1 – Document Control

Version	Date (YMD)	Section	Page	Revision
1	08/10/08	2		Remediation guidelines used and the parameters measured
		7		Details on storage and treatment options for metals, solvents, glycol and heavy oils; Measures to prevent damage to the liner during mechanical operation
		4		Contingency plans for exceedances in the amounts of contaminated soil and/or snow/ice
		5		Details describing the design components/specifications of the spillway
		8		Contingency planning and monitoring of sump volumes during the snowmelt period
2	12/10/22	All	All	Comprehensive revision to original plan
3	13/02/28	All	All	Further detail and rationale provided

Version 3

Prepared By: Meadowbank Environment Department

Approved By: ____________________________

Kevin Buck

Environmental Superintendent

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1 INTRODUCTION

1.1 PROJECT HISTORY

Agnico-Eagle Mines Limited (AEM) Meadowbank Division (Project) currently operates an open pit gold mine located on Inuit-owned land in the Kivalliq Region of Nunavut, approximately 70 km north of the hamlet of Baker Lake. In 2008 the Landfarm Design and Management Plan was developed by AEM in accordance with Water License 2AM-MEA0815 to describe the handling and remediation of petroleum hydrocarbon (PHC) contaminated soil at the Meadowbank site. During construction and initial operations (2008-2011, prior to construction of the landfarm facility), soil potentially contaminated with PHCs, as a result of spills, was deposited in two quarries (Q5 and Q22) along the All Weather Access Road (AWAR). The majority of this soil was from a transport tanker spill in 2010 and from the contractor camp used for roadway construction in 2007 and 2008. In 2012 the transport of this soil back to the minesite for treatment/storage began. Landfarm design and management plan modifications (Version 2) were submitted by AEM to the Nunavut Water Board on October 22, 2012. This new plan focuses on minimizing the waste footprint onsite, and maximizing remediation potential through implementation of a pilot bioremediation project. The revisions in this document (Version 3) provide further rationale for the designs presented in Version 2, as well as additional details on the management of contaminated soils onsite. This includes spill prevention and contingency planning.

1.2 OBJECTIVES

Onsite storage and remediation has been established as the preferred method for treatment of petroleum hydrocarbon-contaminated soil that may be generated on the Meadowbank site and Exploration Camp. Specifically, remediation through landfarming has been identified as the primary treatment option and, as such, is the focus of this contaminated soil management plan. A pilot project to enhance rates of bioremediation through addition of a nutrient source is also described. Alternate contingency options in the event that landfarming is not successful or as efficient as planned are also discussed.

This plan is a component of the Meadowbank Environmental Management System. The objectives of this plan are:

1. To provide an overview of contaminated soil management at Meadowbank
2. To describe the physical setting, location and design criteria of the landfarm
3. To define acceptable types of contaminated soils to be placed in the landfarm and conditions for removal of treated soil

4. To define operating procedures and monitoring requirements for the landfarm, including the pilot bioremediation project
5. To describe contingency options for alternate treatment/storage of PHC contaminated soil

2 SPILL PREVENTION

2.1 SPILL MANAGEMENT DOCUMENTATION

Spill prevention is the first stage in contaminated soil management at the Meadowbank site. Three documents describe spill prevention, management and response at this facility: the Spill Contingency Plan, the Emergency Response Plan, and the Oil Pollution Emergency Plan. Specifically, Section 2.1 of the Spill Contingency Plan describes spill prevention measures and can be referred to for further detail. All were updated in July or August of 2012, and spill prevention programming was reviewed.

General spill prevention methods include:

- Daily inspections of fuel/chemical storage areas for leaks
- Training in safe handling procedures
- Keep containers sealed
- Use methods of secondary containment
- Keep overpack drums nearby to contain leaking drums
- Keep storage area secure from unauthorized access, and protected from weathering and damage
- Segregate incompatible materials
- Regular meetings with site departments

2.2 DECREASING SPILL SEVERITY

In 2011, spills of landfarmable materials (fuel and hydraulic oil) at Meadowbank totaled 5338 liters. In 2012, Meadowbank Division Environment Department increased delivery of spill prevention programing. This included more departmental information sessions to maintain awareness about spill prevention methods and reporting procedures. In 2012, spills of fuel and hydraulic oil have been reduced to 3012 liters. In 2013, the Environment Department will be incorporating a site wide training session for every employee on site. In addition, the Emergency Response Team as well as Environment and Road Maintenance staff will have extensive training in spill response by a consultant specializing in spill training (January, 2013). Training will pertain to spill response on the tundra as well as surface water. In addition, AEM will begin use of a new hydraulic fluid (Hydrex™ Extreme; Petro-Canada) that contains no heavy metals and is 40% biodegradable in 28 days. It is therefore estimated that any soil contaminated with the new fluid will be more rapidly remediated in the landfarm than soil contaminated with the previously used fluid.

3 LANDFARM DESIGN

3.1 BACKGROUND

When spills do occur, onsite storage and remediation is the most practical and efficient method of handling contaminated soil, particularly in an isolated location like Meadowbank. For PHC contamination, bioremediation through landfarming has been identified as a viable remedial technique. This method involves spreading, mechanical mixing, and placing the contaminated soil in windrows within a containment area and promoting conditions favourable for the volatilization and aerobic microbial degradation of hydrocarbons. A number of environmental factors and physical properties of the soil affect microbial growth and rates of biodegradation, including temperature, soil moisture, nutrient content, salinity and soil particle size.

Previously, a landfarm options analysis prepared for AEM by Golder (2007a) identified some of these factors, and presented the following information from the literature on landfarming in the north. Although rates of biodegradation decline with temperature, landfarming is still a feasible technique in arctic climates (Reimer et al. 2005). Microbial activity stops between 0 – -5°C (although volatilization continues at this temperature), so degradation in the north is typically restricted to the months of June – September. Nevertheless, degradation was reported at 70% after one year in a study in Alert, NU (Greer et al. 2007), and 90% over two summers on Resolution Island (Paudyn et al. 2005).

3.2 LOCATION

The overall site plan for the Meadowbank Gold Project and the location of the landfarm facility are shown in Figure 3-1. This central location was chosen to minimize the waste footprint on site and the transport distance of contaminated material from spill locations. All of the waste generated at Meadowbank in the form of tailings, wasterock and the site landfill is in close proximity. The location of the new facility is directly north of the future South Cell Tailings Facility (2015). This location will facilitate closure and possible contingency plans (Section 5), because all waste will be located in the same area, and not spread out around the mine site.

3.2.1 Proximity of Surface Water

The facility is located 300 m from the nearest water body, Third Portage Lake (TPL) and immediately adjacent to the current North Cell Tailings Storage Facility (TSF). Surface drainage in this area is easterly, towards the TSF and away from TPL.

3.2.2 Proximity of Groundwater

In the Meadowbank area, the shallow groundwater is estimated to be 1.5 m below surface (active layer July – October), at the average depth of thaw. In order to prevent movement of contaminants from the landfarm facility into groundwater and the surrounding environment, Environment Canada (SAIC, 2006) recommends implementation of a barrier with 10^{-7} cm/s hydraulic conductivity at a thickness of 0.6 m. The Meadowbank facility pad is constructed of 2.7 m of compacted till with a hydraulic conductivity of 10^{-7} m/s. Therefore, no impacts to groundwater are anticipated.

3.3 DESIGN

The landfarm facility is designed with one soil remediation/storage cell. The design volume of the cell is based on allowances for the materials to be treated. This calculation is described in the following section.

3.3.1 Soil Volume Requirements

Between 2008 and 2010, the Meadowbank Gold Mine stored 5,320 m^3 of soil potentially contaminated with hydrocarbons in two quarries along the AWAR (Q5 and Q22), as a contaminated soil storage facility had not yet been built onsite. As discussed above, the majority of this contamination was the result of an overturned tanker in 2010, and spills during the construction and initial operations. A delineation of contamination in the quarries (Qikiqtaaluk Environmental, 2010) indicated approximately 1,000 m^3 of contaminated soil above Government of Nunavut (GN) guidelines in Q22, and 250 m^3 in Q5. In 2011, an additional 250 m^3 of PHC contaminated soil was generated onsite, and placed in Q22. Actual hydrocarbon contaminated soil from January - October 2012 was 400 m^3, and the projected total for 2012 at that time was 480 m^3. The total volume of contaminated soil generated at Meadowbank to date is therefore approximately 1730 m^3, for an annual average of 346 m^3. Currently production will continue through 2017 for an expected additional required landfarm capacity of 1,725 m^3 (5 years x 346 m^3/year). With an additional 20% for contingency, and conservatively assuming that no soil will be remediated and removed before closure, the total capacity of the landfarm should therefore be a minimum of 4,146 m^3.

3.3.2 Design Specifications

Specifications of the landfarm design are shown in Figure 3-2. As built, the landfarm area is constructed with a 1.5 m high berm and a 2.7 m deep compacted till base with hydraulic conductivity of $1x10^{-7}$ m/s. The slope of the base is 1.5%.

The useful landfarm area is 3,712 m^2. Based on landfarm specifications of other northern mines (Ekati Diamond Mine – in Golder, 2007a), contaminated material can be stockpiled up to 4 m high. Accounting for a 25% loss of area due to sloping at that windrow height, the landfarm area will allow for the storage of a maximum of 11,136m^3. This will readily accommodate the estimated total of 4,146 m^3 of contaminated soil, should all of it need to be stored until closure. In addition, ample room will be available to accommodate a designated area for spreading of contaminated coarse-grained material that cannot be bioremediated (see Section 4.2.2).

Based on the available area, maximum windrow size will be 15 m wide at base x 4 m high x 50 m long, but smaller piles will be used as space allows tomaximize rates of biodegradation and volatilization.

4 LANDFARM OPERATION AND MANAGEMENT

The following presents the operational procedures for the landfarm facility.

4.1 MANAGEMENT RESPONSIBILITY

AEM will be responsible for managing and implementing the operation plan. Operation and monitoring of the facility will come under the responsibility of the Environment Superintendent. Designation of training requirements is the responsibility of Meadowbank Environment Department.

4.2 ACCEPTABLE MATERIAL

4.2.1 Contaminants

The landfarm facility will only treat and/or store petroleum hydrocarbon contaminated soils that have been generated through mine-related activities at the Meadowbank Gold Project and the Meadowbank exploration camp. Material from other sites will not be accepted without approval from the Nunavut Water Board, AANDC Water Resources Officers and the Kivalliq Inuit Association.

The following products may be treated in the landfarm if used onsite and spilled on soil:

- Diesel fuel
- Gasoline
- Aviation fuel (Jet A)
- Hydraulic oil
- Other light oil e.g. engine oil, lubricating oil

In the event that the contaminant source is unknown, soil samples will be analyzed for petroleum hydrocarbons and possibly additional contaminants prior to placement in the landfarm. These additional parameters could include total metals, oil and grease, and volatile organic compounds. Analysis for additional compounds will be determined by the Environment Department on a case-by-case basis. Concentrations of contaminants will be compared to the site background values (for metals) and/or criteria in the GN Guidelines for Contaminated Site Remediation (March, 2009). If this analysis indicates soil contamination above background or GN guidelines with any substances not described in Section 4.2.1 (i.e. non-PHC contaminants), it will not be placed in the landfarm facility. This is to ensure PHC contaminated soil is not contaminated with other products.

Spills of > 100 L of non-PHC material (e.g. solvents, glycol) will be placed in drums and stored in the site Hazmat area for shipment south to approved facilities during barge season. Spills of non-PHC material < 100 L will be placed in the TSF.

4.2.2 Grain Size

While very coarse-grained larger soil material does not readily retain moisture and nutrients, inhibiting bioremediation, volatilization will occur more rapidly (SAIC, 2006). It has been noted that this material likely contains lower concentrations of contaminants due to a lower volume:surface area ratio, and can typically be screened out prior to landfarming (SAIC, 2006). A 2010 study at Meadowbank (Qikiqtaaluk Environmental, 2010) indicated increasing concentrations of PHC with decreasing grain size in one group of samples with soil fractions of 0.5, 0.5-1 and >1" (two other groups sampled were below detection at all grain sizes). Soils and rock material with grain size <1" will be separated from larger-grained material as best as possible. This will occur at the spill location or in the landfarm. If necessary, a screen sieve will be used. The two soil fractions will be treated separately in the landfarm (see Section 4.3.1).

4.3 CONTAMINATED SOIL ADDITIONS

4.3.1 Spill Excavation

Soil contaminated with the above-described petroleum hydrocarbon materials will be excavated from the source and transported to the landfarm facility in dump trucks or by roll-off containers. Care will be exercised to ensure that the entire spill is excavated (verified by olfactory and visual assessment or sampling if necessary) and that none of the contaminated material is lost during transport.

4.3.2 Placement in the Landfarm

As above, larger coarse material (> 1") will be separated from the finer material in the landfarm and assessed visually for PHC staining and product. If the material is saturated it will be spread out for volatilization in the designated area of the landfarm.

Fine-grained materials identified as acceptable in the landfarm should be placed in windrows with dimensions ~15 m wide at base x 2.5 m high x 50 m long. Windrows may be piled higher as space permits. A record will be kept by the on-site Environmental Coordinator of the amount of contaminated soil placed in the landfarm and the location of each load within the facility.

Although Qikiqtaaluk Environmental (2010) indicated 250 m^3 of contaminated soil in Quarry 5, all soil previously deposited in there (1200 m^3) has been removed to the landfarm facility and placed in two windrows (see Photo 1, Appendix B). Including contaminated soil produced onsite in 2012, the landfarm currently contains approximately 1680 m^3 of contaminated soil. Contaminated soil historically deposited in Quarry 22 (up to a maximum of 1,000 m^3, as delineated in Qikiqtaaluk Environmental, 2010) will be moved to the landfarm in 2013. Coarse, uncontaminated material will be left in Q22 for rehabilitation purposes.

4.4 CONTAMINATED SNOW

For spills < 100 L, PHC-contaminated snow will be placed in a designated area of the landfarm and treated as contact water after snowmelt.

For spills > 100 L, PHC-contaminated snow will be excavated and stored in labeled drums. After snow melt, the contaminated water will be pumped through the site's oil-water separator (carbon filter) to remove PHC residue. The treated water will be sampled per Part F, Item 6 of the Water License, and discharged to the Stormwater Management Pond if criteria are met. If criteria not met, water will be treated as hazardous material and shipped south. Also, after snowmelt, visible product will be cleaned up with absorbent pads or booms.

4.5 REMEDIATION

Remediation of fine-grained PHC-contaminated soil in landfarms occurs naturally through volatilization and aerobic microbial degradation. Soil aeration and nutrient amendment are recognized as methods of improving rates of remediation. To this end, remedial operations at the Meadowbank site include soil mixing (aeration) and a pilot project utilizing onsite nutrient additions. While it is recognized that pH, salinity, moisture content and microbial population density also contribute to rates of degradation, these factors will not be explicitly investigated or managed unless remediation rates are too slow to meet the site closure time period (see Section 5.2).

4.5.1 Absorbent Materials

Coarse-grained soils are not readily bio-remediated, but concentrations of PHC contaminants may still be reduced through volatilization. Oil absorbent pads will be used to help remove visible product from coarse-grained material. Used absorbent materials will be incinerated.

4.5.2 Aeration

In order to promote aerobic conditions throughout the windrows, soil will be mixed mechanically with earth-moving equipment. This turnover of soil piles will occur two to four times per year, during the summer months.

4.5.3 Soil Moisture

Prior to turning, site personnel will ensure that soil is not so dry as to generate significant dust, nor overly saturated. If soil is dry, water from within the landfarm containment area will be used as a moisture source and sprayed on the piles. If no accumulated water is available, a freshwater supply will be used. If the windrows are saturated, aeration will be conducted at a later date.

4.5.4 Nutrient Amendment – Pilot Project

A number of studies have indicated that amendment with nutrients may increase rates of biodegradation in PHC contaminated soils, but the effectiveness of this practice is not well defined in northern climates. For example, in a Resolution Island study by Paudyn et al. (2008), aeration alone reduced concentrations of diesel fuel by 80% over three summers, almost entirely due to volatilization (not biodegradation). One-time amendment with nutrients (C:N:P of 100:7.5:0.5) in combination with aeration resulted in 90% reduction of TPH concentrations over this time, with significant (but undefined) contributions from microbial degradation.

In order to determine effectiveness of nutrient additions, a pilot project has been undertaken at Meadowbank to examine rates of biodegradation with and without nutrient amendment. Two pilot piles in the landfarm facility were treated in 2012 with 400 gallons of sewage sludge as a nutrient source. Sewage sludge was mixed into the pilot piles on October 8th 2012. Each pile consisted of approximately 140 m^3 of soil. Representative composite samples of the non-treated piles were taken in November 2012 (surface and 1 m depth – see Photo 2; Appendix B), and further samples will be taken in spring 2013 of the treated and non-treated piles to determine if this method of nutrient amendment significantly affects rates of PHC degradation. If degradation occurs more rapidly with additions of sewage sludge and it is estimated that sufficient degradation will be achieved through this method before mine closure, the pilot project will be extended to include all soil placed in the facility.

The use of sewage sludge as a nutrient amendment has precedent in the north. This method has been used at Diavik Diamond Mine, as reported in the BSc thesis of Brenda Lee Bailey, Carleton University (in Golder, 2007). It was found in this study that with sewage sludge amendment (12.6 gallons on a 6 m^3 soil pile), aeration by perforated pipe and clear polyethylene covers to retain heat and moisture, TPH concentrations declined from 15,000 mg/kg to less than 2,000 mg/kg in 88 days. Sewage sludge as a nutrient source has also been proposed for the Milne Inlet Mary River Project (EBA, 2010). This material not only provides the benefit of nutrients, but adds organic matter to help retain moisture, and is a source of microorganisms. Furthermore, the re-use of this material produced onsite helps to reduce the waste footprint of the mine by re-directing this material from disposal facilities and avoiding the import of chemical fertilizer.

4.6 REMOVAL OF SOIL FROM THE LANDFARM

When PHC odours are no longer detected, coarse-grained material will be removed to the site waste rock disposal area and disposed of as potentially acid generating (PAG) material. PAG will be covered with a minimum of 2 m of non-potentially acid generating (NPAG) material at closure, such that freeze-back occurs and any potentially remaining contaminants are not mobile in the environment.

Prior to removal of the finer grained soil from the landfarm, soil samples will be analyzed to ensure they meet Government of Nunavut guidelines, as described below.

4.6.1 Remediation Guidelines

In assessing the remediation success of PHC contaminated soils being treated in the landfarm facility, AEM will use the Government of Nunavut (GN) Department of Environment, Environmental Guidelines for Site Remediation (March, 2009) to determine if the soil has been suitably treated. A copy of the guideline document has been included as Appendix A.

The following parameters will be measured and compared with the GN industrial remediation criteria in order to determine whether PHC contaminated soil has been adequately remediated:

- Benzene, toluene, ethylbenzene and xylene (BTEX)
- Petroleum hydrocarbon fractions 1 - 4

GN remediation criteria are characterized for agricultural/wildland, residential/parkland, commercial and industrial land uses. At the Meadowbank site, remediation to agricultural/wildland criteria is targeted. However, if these criteria cannot be met efficiently, industrial criteria will be followed and soil disposed of accordingly (see Section 4.6.3). Remediation criteria for coarse-grained (>75 um) soils will be applied. Table 2 presents the applicable Tier 1 criteria for coarse-grained soil, assuming agricultural/wildland or industrial land uses. For contaminated sites, a Tier 1 analysis involves the most conservative criteria, and may be applied when the proponent does not wish to establish site-specific criteria.

Table 2 - Summary of relevant Government of Nunavut Tier 1 soil remediation criteria for surface soil for industrial land uses.

Parameter	Criteria (mg/kg)	
	Agricultural/ Wildland	*Industrial*
Benzene	0.03	0.03
Toluene	0.37	0.37
Ethylbenzene	0.082	0.082
Xylene	11	11
PHC Fraction 1	30	320
PHC Fraction 2	150	260
PHC Fraction 3	300	1700
PHC Fraction 4	2800	3300

4.6.2 Sampling and Analysis

Landfarm windrows will be sampled annually at the end of the summer season to determine if remediation objectives have been met. Representative composite samples will be taken of each windrow to estimate remaining PHC concentrations. For each 10 m of windrow length, one composite sample will be collected, each consisting of three surface sub-samples and three sub-samples at 1 m depth. Sub-samples will be taken approximately 3.3 m apart, and will be taken from both sides of the windrow.

After two seasons of treatment in the landfarm (Fall 2013), degradation rates will be assessed to estimate the total remediation time required for PHC-contaminated soil under these conditions. If remediation to GN guidelines is feasible within the life-of-mine timeframe, landfarm operations will continue, with aeration and possible nutrient amendments as described above. If rates of TPH degradation are not sufficient through this method, alternate options will be further investigated (see Section 5).

4.6.3 Soil Removal

Coarse-grained material will be assessed near the end of the summer season by Environment Department technicians for PHC product and odour. A PID monitor may be employed to assist in petroleum-based vapour detection . When PHC odours are no longer detected, this material will be removed to the PRSF and disposed of as PAG material.

When sample analysis of fine-grained material at the end of a season indicates that concentrations of contaminants are below Government of Nunavut guidelines, a soil pile or the appropriate section of a pile will be deemed acceptable for removal from the facility. Interim monitoring may be conducted through measurements of head-space with a portable instrument (e.g. flame ionization detector), but samples will be confirmed by an accredited laboratory prior to soil removal.

Soil remediated to agricultural/wildland criteria will be appropriately delineated by Environment Department staff, and stockpiled outside the landfarm for use in site works or reclamation activities.

Soil remediated to industrial-use criteria will be removed from the landfarm and placed in the Portage Rock Storage Facility (PRSF) as PAG material. This material will be capped with a minimum of 2 m of NPAG at closure, allowing freeze-back and permanent encapsulation to occur.

4.7 WATER MANAGEMENT

Since the landfarm facility is uncovered to facilitate natural weathering, water accumulating inside the bermed area may come into contact with contaminated material. The management plan for handling this potentially contaminated water is described below.

4.7.1 Snow Management

Snow will be removed as much as possible during winter to minimize the quantity of spring melt water inside the berm. Care will be taken to ensure contaminated snow/soil is not disturbed by leaving a base layer of snow (no less than 10 cm) in place. After snowmelt any contaminated product left from winter spill clean-up operations will be padded up. The base soil in these areas will be excavated and added to existing remediation windrows as soon as possible after snow melt to minimize migration into the facility substrate.

4.7.2 Water Management

Monitoring will be conducted for seepage of contact water through the perimeter berm, or accumulation of water within the containment berm through visual inspection by the Environment Department. This will be conducted on a weekly basis, after freshet, from July through October when water is likely to be present. In the event of water accumulation or seepage, the ponded water will be analyzed for BTEX, lead, oil and grease, as described in Part F, Item 6 of the Water License prior to discharge to the adjacent Tailings Storage Facility. Alternatively, ponded water will be sprayed on the windrows to increase moisture content, as required. Water accumulating in the landfarm will not be discharged to the environment.

4.8 LANDFARM ABANDONMENT

After removal of all remediated soil and prior to abandonment/closure of the landfarm, the berm and base will be sampled on a 10 m grid, including at a depth of 1 m in representative locations, to determine if these soils are free from PHC contamination. Results of this analysis will be compared to GN criteria. Since this area will form part of the TSF at closure, no excavation is necessary if industrial criteria are not met. AEM's Closure Plan notes that the tailings facilities will be capped with at least 2 m of NPAG to ensure freeze-back encapsulation. Monitoring of tailings freeze-back is ongoing at the site, and to date the results indicate that tailings are already freezing as planned.

4.9 SUMMARY OF ACTIVITIES

A summary of landfarm activities including monitoring of the physical condition and potential environmental impacts of the landfarm facility is provided in Table 3. A report will be prepared annually, indicating the volume of material added to the facility, amount of material removed and disposal or reuse location, all analysis results, volume and type of nutrient addition, visual inspection results and volume of contact water pumped. This information will be appended to AEM's NWB Annual Report.

Table 3 - Summary of landfarm activities, analyses and records to be kept.

Activity	Analysis	Frequency of Analysis	Record
Excavation of spill and transport of contaminated material	If unsure of full excavation - F1-F4, BTEX	As needed	Date and time of excavation; estimated quantity of excavated soil; storage/disposal location of excavated soil, if applicable; any evidence of remaining product
Contaminated soil additions to landfarm	If contaminant source unknown, F1-F4, BTEX, metals, oil and grease, VOCs (at discretion of Environment Department)	Prior to soil addition at facility	Date and time; quantity of soil; original location; landfarm location; spill/excavation record # or storage container label
Soil aeration	N/A	Two to four times during summer	Date and time; location; soil condition (moisture, odour, etc.)
Soil treatment with sewage sludge as nutrient supplement	Visual inspection to ensure proper incorporation	At least once during summer on selected windrows	Date and time; type of treatment (aeration or nutrient amendment); location in landfarm; any odour noticed during aeration
Sampling for progress of remediation	Hydrocarbon vapour in headspace (by PID); F1-F4, BTEX (laboratory)	Vapour – as needed; Laboratory - annually	Date and time; location; odour; laboratory report;
Soil removal from landfarm	Removal subject to meeting GN criteria	N/A	Date and time; location; quantity of soil removed; final location
Ponded contact water	BTEX, oil and grease, lead – as per Part F, Item 6 of Water License	Prior to any dewatering; if re-used in landfarm, no sampling necessary	Date and time, location, laboratory report, Annual Report
Seepage	Visual inspection; BTEX, oil and grease, lead – as per Part F, Item 6 of Water License	Weekly during summer	Location, extent, approximate depth, evidence of sheen
Identification of maintenance requirements	Visual inspection of facility	Twice annually during summer	Inspected areas; condition of berm and base; previously unidentified safety concerns

5 CONTINGENCY OPTIONS

The following sections describe the contaminated soil management plan, should a large spill event occur, and if landfarm treatment is not successful.

5.1 LARGE SPILL EVENT

Considering that the landfarm is built to hold nearly 3x as much contaminated soil as is expected to be produced, a large spill event producing a quantity of soil that cannot be contained in the landfarm is unlikely. Nevertheless, in this event, soils will be placed in a temporary storage area. A temporary stockpile area would be set up in the PRSF or at another location as approved by the NWB and AANDC. The soil would then be placed in the landfarm as soon as practical. Through extensive spill prevention measures discussed earlier in this Plan AEM is minimizing the probability of this scenario occurring.

5.2 ALTERNATE TREATMENT OPTIONS

Should landfarm treatment not perform as anticipated and it is evident that rates of degradation are not sufficient to meet GN Tier 1 criteria within the life-of-mine and the anticipated closure period (to 2025) the following alternative treatment options will be considered. Implementation will be after development of a more detailed protocol and approval of a revised plan by the NWB.

5.2.1 Soil Amendment

Since pH, salinity, moisture content and microbial population density all affect rates of biodegradation by microbes, these factors may be monitored and adjusted through soil amendments if they are not found to be optimal (see SAIC, 2006). In addition, the height of soil windrows could be reduced to maximize air exposure if space in the facility allows.

5.2.2 Tier 2 – Modified-Criteria Approach

According to the Government of Nunavut Environmental Guideline for Contaminated Site Remediation (Appendix A), in cases where site conditions, land uses, receptors or exposure pathways are different from those assumed in the development of the Tier 1 criteria, modified criteria may be permitted. This process requires the collection of site-specific information on exposure and risk estimates, and is subject to GN approval. In the case of the Meadowbank site, landfarmed soils are to be encapsulated in the PRSF rather than used in surface applications, as assumed in Tier 1, reducing the likelihood of exposure to any remaining contamination. Therefore, the Tier 2 approach could be warranted if Tier 1 criteria cannot be met. Any consideration for this approach would be based on soil sampling results and science based information.

5.2.3 Thermal Desorption

In the thermal desorption process, excavated soils are heated in a chamber to rapidly volatilize PHCs. Gases produced are consumed in an oxidation unit, and particulate matter removed (baghouse). Soil, free of any contamination, can then be replaced, or used in site reclamation or construction processes. The other advantage of this approach is that this equipment is mobile and could be brought to any spill site for remediation activities (e.g. spills along the AWAR). This method is described by Environment Canada (2002). The purchase or rental of a portable thermal desorber unit is under consideration by AEM as a contingency option.

5.2.4 Direct Placement in TSF or PRSF

Another option for management of contaminated soil would be the direct placement of this material in the Tailings Storage Facility or Waste Rock Storage Facility, if bioremediation is not effective. Although the consumption of space in these storage areas is not optimal, the quantity of PHC-contaminated soil created onsite is small in comparison to the quantity of tailings or waste rock. While this method would not result in the treatment of soil, it is a viable contingency option because it would allow for the safe disposal of the contaminated material. The final cover with NPAG will be a minimum of 2 m deep (current closure plan is 4 m of NPAG cover). Total encapsulation and freeze-back would occur, eliminating any movement of contaminants. Over time, this material would undergo natural degradation. Consideration of this option would also include a suitable monitoring program for PHCs, which would be incorporated into the Meadowbank Closure Plan.

6 PLAN REVIEW AND CONTINUAL IMPROVEMENT

The Landfarm Design and Management Plan will be reviewed annually by the Meadowbank Environmental Superintendent in consultation with the Mine General Manager, and updated, if necessary, at least every two years of operation.

A final proposal will be submitted in regards to the feasibility of the pilot project within the next four years. Before submitting the final proposal, time is needed to estimate rates of remediation, and analyze the effectiveness of treatment with and without sewage sludge amendments.

REFERENCES

EBA. 2010. Hydrocarbon Impacted Soils Storage and Landfarm Facility Operations, Maintenance and Monitoring Plan, Milne Inlet, Mary River Project, Nunavut. Prepared for: Baffinland Iron Mines Corporation. Issued for Review. December 2010.

Environment Canada. 2002. Technical Assistance Bulletin 13: Soil Remediation: Low Temperature Thermal Desorption Available at: http://www.on.ec.gc.ca/pollution/ecnpd/tabs/tab13-e.html

Environment Canada. 2007. Part 4 screening for Land Farm, Hamlet of Pond Inlet – NIRB 07UN061. Technical advice. Available at: http://ftp.nirb.ca/01-SCREENINGS/COMPLETED%20SCREENINGS/2007/07UN061-GN-CGS%20-%20Pond%20Inlet%20Quarry/02-DISTRIBUTION/COMMENTS/070829-07UN061-EC%20Comment-IEAE.pdf

Golder (Golder Associates Ltd). 2007a. Technical Memorandum: Landfarm Option Analysis, Meadowbank Gold Project, Nunavut. Prepared for: Agnico-Eagle Mines Ltd. August 23, 2007.

Golder (Golder Associates Ltd.), 2007b. Final Report on Pit Slope Design Criteria for Portage and Goose Island Deposits, Meadowbank Gold Project Nunavut, Project 06-1413-089/5000, Doc. No. 449, Revision 0, submitted to Meadowbank Mining Corporation, dated April 5, 2007.

MMC (Meadowbank Mining Corporation), 2007. Meadowbank Gold Project Mine Waste and Water Management. August 2007.

SAIC (Science Applications International Corporation), 2006. Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils. Final report presented to: Contaminated Sites Division and Emergencies Engineering Technologies Office (EETO), Environmental Technology Centre, Environment Canada. SAIC Canada Project #: 11953.B.S08. CM #: 001659. March 31, 2006.

LIST OF ACRONYMS

AEM Agnico-Eagle Mines Ltd.

CCME Canadian Council of Ministers of the Environment

GN Government of Nunavut

NPAG Non-potentially Acid Generating

PAG Potentially Acid Generating

PPE Personal Protective Equipment

PRSF Portage Rock Storage Facility

SPL Second Portage Lake

TPL Third Portage Lake

TSF Tailings Storage Facility

FIGURES

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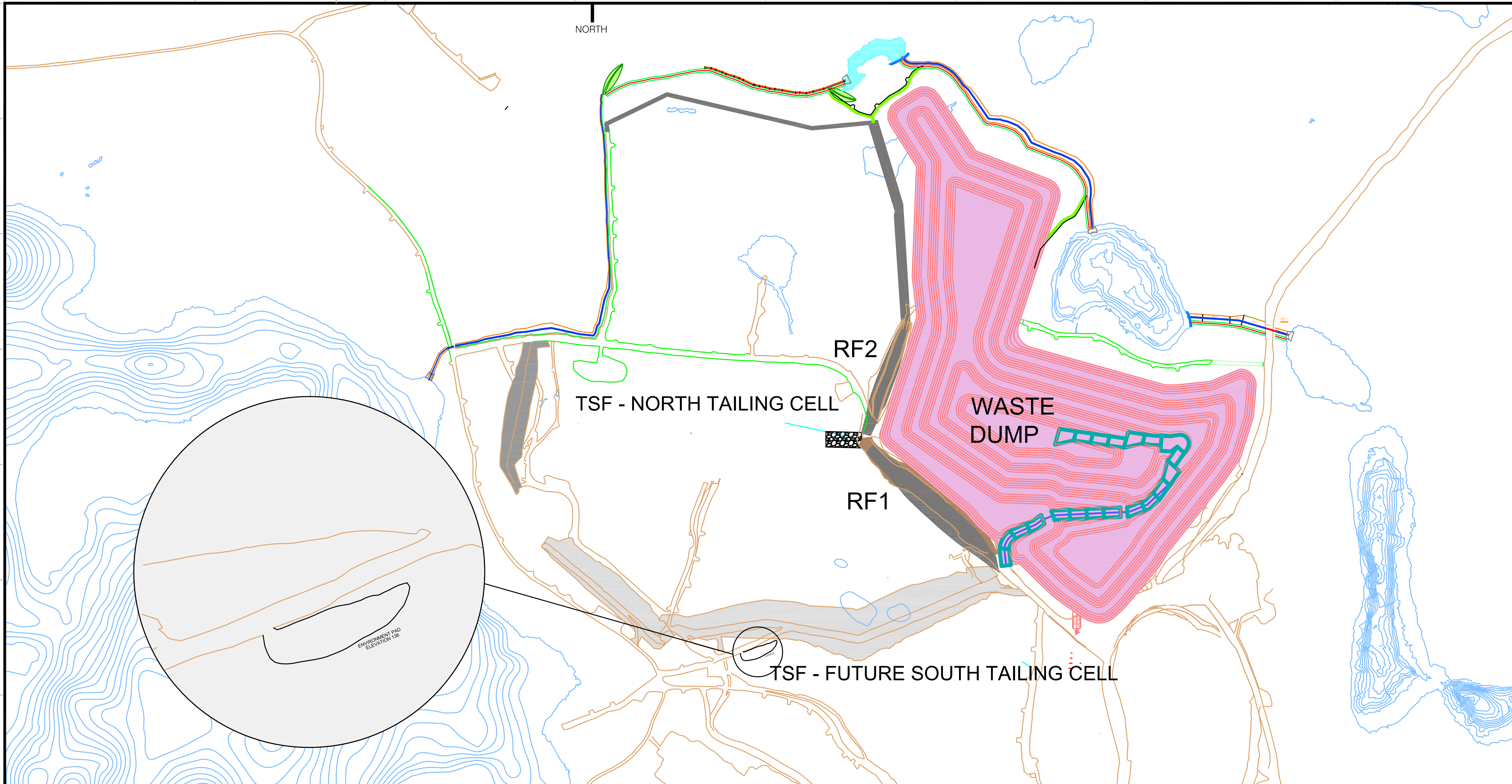

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REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	BY

REVISIONS

AGNICO-EAGLE

DRAWN BY	Y.SIMARD	DATE	2012–12–09
CHECKED BY	E.VOYER		
APPROVED BY	K.BUCK		
PROJECT NO.			
DATE			

TITLE
AGNICO–EAGLE – MEADOWBANK DIVISION
ENVIRONMENT PAD
AREA VIEW

SCALE	FILE
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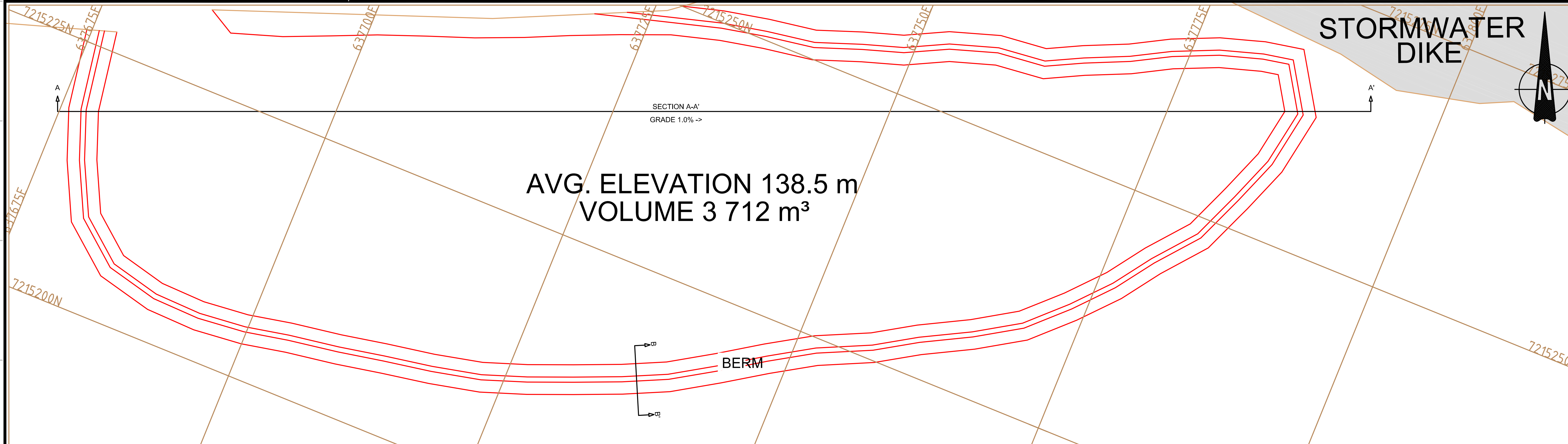

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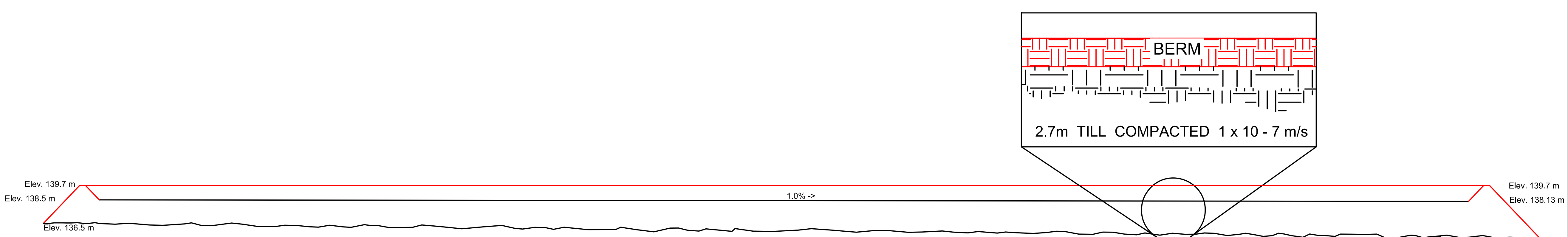

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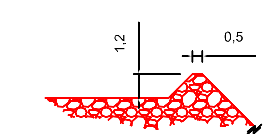

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DRAWN BY	P. DAUDELIN	DATE	20/10/2012
CHECKED BY	T.Lépine		20/10/2012
APPROVED BY	J.Bélanger		20/10/2012
PROJECT NO.			
DATE			

TITLE
AGNICO–EAGLE – MEADOWBANK DIVISION
ENVIRONMENT
LANDFARM

SCALE	FILE		
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Appendix A

Environmental Guideline for Contaminated Site Remediation
Government of Nunavut
March, 2009

Environmental Guideline for

Contaminated Site Remediation

Nunavut
Department of Environment
Government of Nunavut

GUIDELINE: CONTAMINATED SITE REMEDIATION

Originally Approved on	April 1999
Revised	January 2002
	March 2009

This Guideline has been prepared by the Department of Environment's Environmental Protection Division and approved by the Minister of Environment under authority of Section 2.2 of the *Environmental Protection Act.*

This Guideline is not an official statement of the law and is provided for guidance only. Its intent is to increase the awareness and understanding of the risks and hazards associated with contaminated sites and to assist in the management and remediation of these sites. This Guideline does not replace the need for the owner or person in charge, management or control of the contaminated site to comply with all applicable legislation and to consult with Nunavut's Department of Environment, other regulatory authorities and qualified persons with expertise in the management of contaminated sites.

Copies of this Guideline are available upon request from:

Department of Environment
Government of Nunavut
P.O. Box 1000, Station 1360, Iqaluit, NU, X0A 0H0
Electronic version of this Guideline is available at http://www.gov.nu.ca/env/environment

Cover Photos: GNU Department of Environment

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Appendices

Introduction

In Nunavut and across Canada, contaminated sites can pose a threat to human health, safety and the environment. Petroleum hydrocarbon contamination in soil is a concern for several reasons. To differing degrees, petroleum hydrocarbons are toxic to plants and animals, and are mobile and persistent in the environment. Petroleum hydrocarbons can also pose a fire or explosion hazard and can create aesthetic problems such as offensive odours and tastes. In some cases the concern may also be financial, because of the loss of property value and the cost of remediating the property.

The intent of this Guideline is to help effectively manage contaminated sites. It helps to provide a consistent approach by describing the process used to manage (e.g. identify, assess, plan and remediate) contaminated or potentially contaminated sites on Commissioner's Land, including private land within municipalities, and by providing soil remediation criteria for petroleum hydrocarbons and other contaminants.

The *Environmental Protection Act (EPA)* gives the Government of Nunavut authority to take measures to ensure the preservation, protection and enhancement of the environment, with the goal of long-term sustainability and stewardship. Section 2.2 of the *EPA* provides the Minister of Environment with authority to develop, coordinate, and administer this Guideline (see Appendix 1).

The Department of Environment is the key territorial agency concerning the management of contaminated sites on Commissioner's Land. In Nunavut however, Indian and Northern Affairs Canada (INAC) retains responsibility for the management of inland waters, including surface water and groundwater. If contaminated water is encountered, INAC should immediately be consulted.

1.1 Definitions

CCME — The Canadian Council of Ministers of the Environment (CCME) is the major intergovernmental forum in Canada for discussion and joint action on environmental issues of national, international and global concern. The 14 member governments work as partners in developing nationally consistent environmental standards and practices (see Appendix 8).

Closure Report — The final report prepared by a qualified person and provided to the Environment Department following successful implementation of the Remedial Action Plan. The report generally includes a description of all site activities conducted, quantity of contaminated material treated or removed, treatment and disposal methods used, and analytical data generated.

Commissioner's Land — Lands that have been transferred by Order-in-Council to the Government of Nunavut. This includes roadways and land subject to block land transfers. Most Commissioner's Land is located within municipalities.

Contaminant	Any noise, heat, vibration or substance and includes such other substance as the Minister may prescribe that, where discharged into the environment, (a) endangers the health, safety or welfare of persons, (b) interferes or is likely to interfere with normal enjoyment of life or property, (c) endangers the health of animal life, or (d) causes or is likely to cause damage to plant life or to property.
Contaminated Site	Areas of land, surface water, groundwater, or sediments that have levels of contaminants exceeding the remediation criteria. Contaminant sources can include on-site burial of wastes, small or frequent drips and spills, stockpiling and storage of materials, major spills, and releases during fires. Contamination may also be caused by illegal dumping of contaminated soil. Contaminated sites may have short or long term consequences to the health and safety of people and the quality of the environment.
Discharge	Includes any pumping, pouring, throwing, dumping, emitting, burning, spraying, spreading, leaking, spilling, or escaping.
Environment	Means the components of the Earth and includes (a) air, land and water, (b) all layers of the atmosphere, (c) all organic and inorganic matter and living organisms, and (d) the interacting natural systems that include components referred to in paragraphs (a) to (c) above.
Inspector	Means a person appointed under subsection 3(2) of the *EPA* and includes the Chief Environmental Protection Officer.
Phase I Environmental Site Assessment	The process, as outlined in the Canadian Standards Association's (CSA) Standard Z768, by which a qualified person determines whether a property is, or may be, contaminated.
Phase II Environmental Site Assessment	The process, as outlined in the CSA Standard Z769, by which a qualified person characterizes and delineates concentrations and quantities of contaminants on a site and compares those levels to acceptable remediation criteria.
Qualified Person	A person who has an appropriate level of knowledge and experience in all aspects of contaminated site investigation, remediation and management.
Remedial Action Plan	A plan that identifies Site-Specific Remedial Objectives for a site, identifies remedial options and outlines their feasibility, and describes a preferred conceptual remediation plan, a performance monitoring plan, and, if appropriate, requirements for ongoing site management.

Remediation	The process to restore a site's environmental condition and reduce any existing hazards to human health and safety to an acceptable level. Remediation involves the development and application of a planned approach that removes, destroys, contains or otherwise reduces the availability of contaminants to people and the environment.
Remediation Criteria	The numerical limits or narrative statements pertaining to individual substances or chemicals in soil, water or sediment which are recommended to protect and maintain the specified uses of the site. When measurements taken at a contaminated site indicate that the remediation criteria are being exceeded, the need for management and remediation is indicated.
Responsible Party	The owner or person in charge, management or control of the contaminant before it is discharged or owner of the contaminated site.

Additional definitions can be found in Appendix 2.

1.2 Roles and Responsibilities

1.2.1 Environment Protection Division, Department of Environment

The Environmental Protection Division of the Department of Environment is the key environmental agency responsible for ensuring the proper management of contaminated sites on Commissioner's Land. Responsibilities include confirming the required level of remediation using the remediation criteria cited in this document, reviewing the submitted Remedial Action Plan, monitoring the progress of the project and issuing a letter of confirmation when no further remedial action is required.

Authority is derived from the *Environmental Protection Act*, which prohibits the discharge of contaminants to the environment and enables the Minister to undertake actions to ensure appropriate management measures are in place. Although programs and services are applied primarily to activities taking place on Commissioner's and municipal lands and to Government of Nunavut undertakings, the *Environmental Protection Act* may be applied to the whole of the territory where other controlling legislation, standards and guidelines do not exist. A complete listing of relevant legislation and guidelines can be obtained by contacting the Environmental Protection Division or visit the web site at http://www.gov.nu.ca/env/environment.

The Environmental Protection Division will provide advice and guidance on remediation measures. However, it remains the sole responsibility of the polluter, facility operator and landowner to provide adequate site management and remediation and to ensure all applicable statutes, regulations, standards and guidelines are fully complied with.

1.2.2 Responsible Party

If the polluter, facility operator or landowner is notified or otherwise has reason to believe that a site is contaminated, or is potentially contaminated, that person must immediately report the incident and ensure an appropriate evaluation of the potential environmental effects and risks is completed to determine what action, if any, is required under the *EPA* and this Guideline. Exercising timeliness in all matters related to the contaminated site is critical.

The responsibilities of a Responsible Party include the following:

- Reporting the incident to the NWT/Nunavut 24-Hour Spill Report Line (867-920-8130);
- Contacting EPD and other relevant regulatory agencies including the Regional Environmental Health Officer, Office of the Fire Marshal, local fire department, local government, landowner, affected adjacent landowners, 'Designated Inuit Organization', or other parties regarding health and safety concerns;
- Notifying members of the public who may be adversely affected by the contamination;
- Retaining a qualified person (see Section 1.1) to assess the site to determine the presence and extent of contamination; and
- Developing and implementing a Remedial Action Plan.

1.2.3 Other Regulatory Agencies

As there may be other environmental or public and worker health and safety issues to consider, other regulatory agencies may have to be contacted regarding the management of a contaminated site. Some of the other agencies include:

Department of Community and Government Services

The Department of Community and Government Services is responsible under the *Commissioners' Lands Act* for the issuance of land leases, reserves, licenses and permits on Commissioner's Lands. The Department is also responsible for, in cooperation with communities, the planning, funding, operation and maintenance of municipal solid waste and sewage disposal facilities in most Nunavut communities. Emergency planning responsibilities under the *Emergency Measures Act* include developing territorial emergency response plans, coordinating emergency operations at the territorial and regional levels and supporting community emergency response operations.

The Office of the Fire Marshal is responsible for ensuring the safe storage, handling and use of flammable and combustible liquids and the withdrawal of fuel storage tanks from service. The Office of the Fire Marshal derives its authority from the *Fire Prevention Act*, National Fire Code and National Building Code.

Department of Health and Social Services

Contaminated sites may impact adjacent properties, residences or other buildings thereby potentially affecting the health and safety of the public. The Office of the Chief Medical Officer of Health and Regional Environmental Health Officers should be consulted regarding legislated requirements under the *Public Health Act.*

Department of Economic Development and Transportation

The Motor Vehicles Division is responsible for ensuring the safe transport of contaminated soil and other hazardous waste through administration of the *Transportation of Dangerous Goods Act*. The Department is also responsible under the *Motor Vehicles Act* for driver licensing and various other vehicle and load safety matters.

Workers' Safety and Compensation Commission

The Workers' Safety and Compensation Commission is responsible for promoting and regulating worker and work place health and safety in Nunavut. The Commission derives its authority from the *Workers' Compensation Act* and *Safety Act*, which require an employer to maintain a safe work place and ensure the safety and well being of workers. The Work Site Hazardous Materials Information System, or WHMIS, requires information be provided to workers on the safe use of any hazardous materials used in the work place. All responsible parties should consult the Prevention Services Division for further information and guidance.

Local Municipal Governments

The role of local municipal governments is important in the management and safety of contaminated sites. Remediation standards are determined, in part, by how the property is used and how the property may be designated under local government development plans (e.g. land use zoning). Contaminated soil may be deposited for treatment and disposal at municipal landfill sites only with the consent of the local government. The local fire department may also be called upon if a fire or other public safety issue is identified.

Indian and Northern Affairs Canada

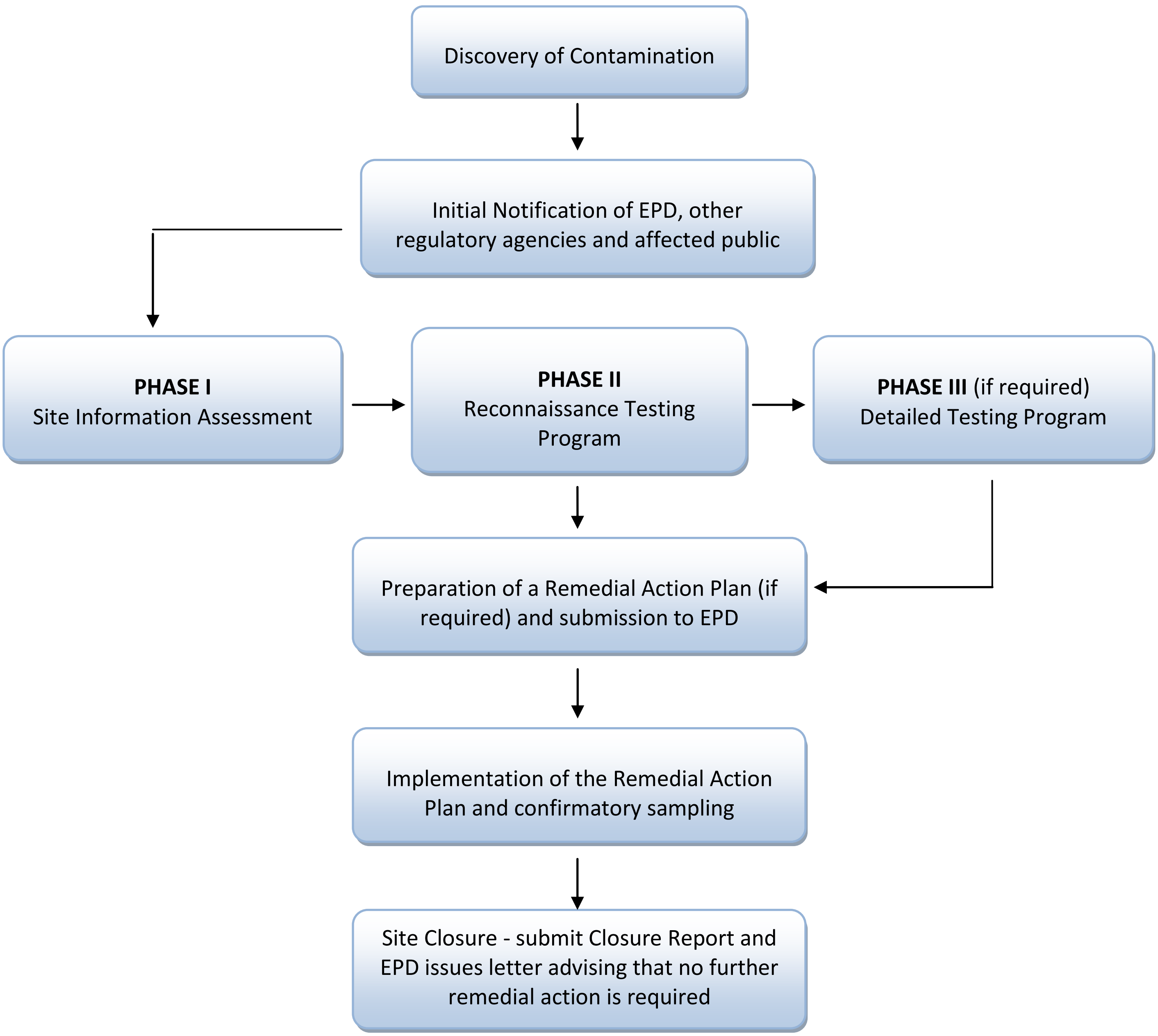
Indian and Northern Affairs Canada is responsible under the *Territorial Lands Act* and *Nunavut Waters and Nunavut Surface Rights Tribunal Act* for the management of federal lands and inland waters. Indian and Northern Affairs should be consulted if contaminated surface water or groundwater is encountered.

Co-management Boards and Agencies

Co-management boards and agencies established under the Nunavut Land Claim Agreement have broad authority for land use planning, impact assessment and the administration of land and water in settlement areas located outside of municipalities. The remediation of contaminated sites may be controlled through the setting of terms and conditions in plans, licenses and permits issued by these boards and agencies.

Contaminated Site Management Process

The management and remediation of a contaminated site consists of a phased approach starting with discovery of the contamination. A well-considered and comprehensive work plan will enable the Responsible Party to make informed decisions, which will result in the safe, effective and cost-efficient remediation of the site. The following flow chart describes the general steps in the overall management process.



2.1 Initial Notification

When a person discovers the presence of contamination, or has reason of believe a site is contaminated, they should immediately notify the Department of Environment and the owner of the facility or property. This discovery may occur as a result of a spill or other accident, an investigation completed for the sale or refinancing of a property, or other actions that identify contamination impacts to the environment.

Section 5.1 of the *EPA* states that where a discharge of a contaminant occurs, or is likely to occur, the owner or person in charge, management or control of the contaminant must immediately:

- report the discharge to the NWT/Nunavut 24-Hour Spill Report Line at (867) 920-8130;
- take all reasonable measures to safely stop the discharge and repair damages; and
- make reasonable efforts to notify any affected public.

Once this notification has occurred, EPD will assess the significance of the reported contamination by having an Inspector conduct a site visit or by reviewing other relevant information (e.g. site assessment report). If it is determined that contamination is present, or may be in the future, and that it poses a risk to human health, safety or the environment, the responsible party must undertake actions to repair the damages in a timely manner. These actions may include identifying the nature and extent of contamination, preparing a Remedial Action Plan and implementing the plan.

If it is determined that the problem cannot be resolved with limited remedial action, the responsible party may be instructed to obtain the services of a qualified person (e.g. environmental engineer or consultant). Obtaining the services of a qualified person is mandatory if there is evidence of groundwater contamination, if explosive vapours are present, or if a neighbouring property is affected. In all cases, the responsible party or its representative must consult the appropriate regulatory agencies (see section 1.2) and notify any affected members of the public. EPD may require the responsible party to provide proof of such consultation and notification.

Issues not related to public health, safety or the environment that arise between the responsible party and affected parties are civil matters, which are to be settled by the parties outside of this management process.

2.2 Site Assessment

Assessing, or characterizing, a contaminated site is a critical phase in the site management process. A well-planned and comprehensive assessment will enable the responsible party to make informed decisions about potential remediation actions.

There are normally up to three phases to an Environmental Site Assessment (ESA). These phases depend on the size and complexity of the contaminated site, and range from the general to the specific. While there are advantages with a phased approach, there may also be economies realized by combining information gathering and testing into a single investigation, particularly at remote locations where mobilization costs are significant.

2.2.1 Phase I: Site Information Assessment

The overall objective of the Phase I ESA is to identify whether actual or potential contamination exists at a site. At a minimum, the Phase I ESA must meet or exceed the Canadian Standards Association (CSA) Standard Z768-01, *Phase I Environmental Site Assessment*.

All available and relevant current and historical information pertaining to the site should be assembled when completing a Phase I ESA. This information will be used to estimate the likelihood, types and locations of contamination that may be present and help to develop a field-testing program, should one be required. Reports and information prepared for legal, transactional or environmental reasons (e.g. spill reporting, ESAs if already conducted) should be reviewed. Phase I ESAs do not involve the carrying out of a sampling plan.

The review frequently includes three broad aspects:

Facility Characteristics - A current and historical description of the site and its facilities is developed, particularly as it relates to the areas of concern (e.g. contaminant sources and potential discharge points). Reviewing facility records and discussions with past and present employees should also be used to gather relevant information. Additional information can be obtained by reviewing above and below ground structures (using blueprints, if available) as possible sources of contamination, as well as considering prior site and surrounding land uses.

Phase 1 - The initial actions undertaken to determine whether a property is, or is not, contaminated. A Phase I site information assessment involves reviewing all available reports, studies and other relevant documents on a site, but does not involve sampling, analysis and measurement of soil and water.

Phase II - Builds upon results of the Phase 1 assessment by sampling soil and water, and sometimes air, on a site to characterize and delineate the concentration of contaminants, and compare those levels to approved remediation criteria. A Remedial Action Plan may be developed following the Phase II reconnaissance testing program if all necessary information about the site has been obtained.

Phase III - The most detailed level of assessment that is intended to address any outstanding issues and information gaps following a Phase II assessment.

Contaminant Characteristics - Hydrocarbons, chemicals and other contaminants that may be stored at the site are identified. Their quantities and concentrations are estimated by visual inspections, reviewing documentation and interviewing past and present employees.

Physical Site Characteristics - The geology, hydrology and hydrogeology of the site and surrounding area are examined using available data. The objective is to develop a comprehensive understanding of local site characteristics and a current and historical description of the area.

Other sources of information can include aerial photographs, geology and groundwater reports; topographical, geological and other maps; the Government of the Northwest Territories' Hazardous Materials Spill Database (this database includes spills that have occurred in Nunavut) and previous site assessment reports.

The review should include a visual inspection of the site and discussions with local residents who may have knowledge of the site and its history. The site inspection will identify signs of contaminant discharge (e.g. leaks and drips, discoloured soil or discoloured building foundation walls), vegetation stress and examine local sensitive habitats (e.g. beaches, ponds, streams) for the presence of hydrocarbons. The proximity of the site to surrounding buildings, surface water bodies and sensitive habitats (e.g. wetlands) should also be identified.

2.2.2 Phase II: Reconnaissance Testing Program

The overall objective of the Phase II ESA is to confirm the presence and characterize the contaminants of concern at the site. At a minimum, the Phase II ESA must meet or exceed the CSA Standard Z769-00, *Phase II Environmental Site Assessment*.

Characterization of the contamination and site conditions require the carrying out of a sampling plan. The plan usually involves one or more field screening methods to identify suitable locations for more intrusive sampling and analysis. Overall, the sampling plan should enable the qualified person to confirm the presence of any contamination, provide an understanding of the nature of the contamination (e.g. location, quantity and direction of movement) and provide an understanding of the relevant site conditions (e.g. soil type, groundwater flow, exposure pathways). This information is necessary in order to develop a Remedial Action Plan or to identify the need for a more specific Phase III assessment, including human health and ecological risk assessments. It may also enable the qualified person to determine that no further action is required.

The Phase II testing program should include the adoption of recognized sampling procedures, quality assurance/quality control procedures and laboratory analytical protocols (see Appendices 5 and 6).

Environmental quality remediation criteria will need to be selected in consultation with EPD during the Phase II ESA. The data collected during the testing program will be compared to the applicable criteria to determine if, and where, exceedances exist on the property. See the CCME *Guidance Document on the Management of Contaminated Sites in Canada, April 1997* for further information.

2.2.3 Phase III: Detailed Testing Program

The results of the Phase II ESA will determine whether a Phase III ESA is required. If sufficient data has been obtained at Phase II to characterize the site and any potential risk to human health, safety and the environment, then the process may move directly to developing a Remedial Action Plan (if it is required).

Alternatively, a detailed Phase III ESA may be necessary if Phase II testing indicates that significant and wide-spread contamination exists. A Phase III ESA will address outstanding issues and information gaps with a view to obtaining enough information to enable development of a Remedial Action Plan. Specifically, the Phase III ESA will:

- target and delineate the boundaries of identified contamination;
- define site conditions and possible contaminant pathways in greater detail, particularly with respect to possible risk assessment;

- provide contaminant and other information necessary to finalize environmental quality remediation criteria or risk assessment; and
- provide all other information that is required in order to develop a Remedial Action Plan and enable contract specifications and tender documents to be prepared.

The Phase III detailed testing program will focus on areas identified in the Phase II program and involves a similar systematic process of sampling, analysis and evaluation. However, a greater number of samples are usually collected and a smaller suite of chemical substances may be analyzed as the program converges on the outstanding environmental issues. Field screening techniques are not usually employed in this testing.

Once the environmental condition of the site has been thoroughly assessed, the qualified person will be able to develop a site-specific Remedial Action Plan.

2.3 Land Use

Remediation criteria (see section 2.4) are presented in the context of four types of land use: agricultural/wildland, residential/parkland, commercial and industrial. The criteria are considered generally protective of human and environmental health for the 'normal' activities associated with each land use. It is important to note that it is the *current and intended future* land use that governs the decision on the level of remediation to be performed at a site. Identifying the appropriate land use will help to assess the extent of human and ecological exposure to contaminants in the soil, and is essential for preparing a Remedial Action Plan. The type of land use found adjacent to the contaminated site may also affect the remediation criteria to be achieved.

Agricultural/Wildland — Land on which the primary activity is related to the productive capability of the land. This includes lands that provides habitat for transitory wildlife and birds as well as greenhouses.

Residential/Parkland — Land on which dwelling, on a permanent, temporary or seasonal basis, is the primary activity. Institutions (e.g. hospitals, schools, daycares) and playgrounds are included under this land use. This land use also includes activity that is recreational in nature and that requires the natural or human designed capability of the land to sustain that activity. Residential/Parkland lands are normally readily accessible to the public.

Commercial — Land on which the primary activity is the commercial buying, selling, or trading of goods or services. Members of the public, including children, normally have free access to these lands.

Industrial — 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.

2.4 Application of Remediation Criteria at Contaminated Sites

There are three basic approaches that may be utilized for the development of site-specific remediation criteria and objectives:

Tier 1 Direct adoption of remediation criteria (Criteria-Based Approach).

Tier 2 Adoption of remediation criteria with modifications based on site-specific information (Modified-Criteria Approach).

Tier 3 Use of site-specific risk assessment (Risk-Based Approach).

The criteria-based approach (Tier 1) is designed to require fewer resources while providing a scientifically defensible basis for protection that is sufficiently flexible to account for certain site-specific factors. In most cases this approach provides an effective alternative to the modified-criteria (Tier 2) or detailed risk-based (Tier 3) approaches. The Tier 2 and Tier 3 approaches can be more complex and costly, and are utilized when the criteria-based approach is not suitable for a site (e.g. large, complex or remote industrial sites).

Regardless of the approach that is ultimately chosen, the level of human health, safety and environmental protection provided by each approach does not change, only the manner in which the level of protection is achieved.

The responsible party should consult with EPD before deciding which approach to take.

Tier 1 - Criteria-Based Approach

Under this approach, the remediation criteria selected for a site are adopted as the remediation objectives. In most cases this approach would involve either the reduction of petroleum hydrocarbon (PHC) concentrations in soil to achieve Tier 1 criteria or the removal and replacement of soil containing PHC concentrations in excess of the criteria. Factors that may bear weight on the decision of whether or not to directly adopt Tier 1 criteria include cost, time, simplicity and other practical and technical considerations (e.g. cost of obtaining additional data to support Tier 2 or Tier 3 approaches, risks associated with residual contamination, cost and commitment to long-term management and monitoring).

The Tier 1 criteria-based approach is applicable only where site conditions, receptors, and exposure pathways are similar with those assumed in the development of the criteria.

A summary of Tier 1 remediation criteria (mg/kg) for PHC in 'surface' soil is provided in Table 1.

Tier 1 criteria may also be used for the remediation of 'subsoil' even though PHC contaminated subsoil usually has a lower level of risk associated with direct human contact, vapour inhalation and ecological soil contact. The responsible party should balance the benefits associated with using Tier 1 criteria for the remediation of subsoil with the additional commitments associated with undertaking a Tier 2 modified-criteria approach. EPD must be consulted in all cases where PHC concentrations in 'subsoil' exceed Tier 1 criteria.

Table 1.

Land Use	Soil Texture	Fraction 1 (C6-C10)	Fraction 2 (>C10-C16)	Fraction 3 (>C16-C34)	Fraction 4 (>C34)
Agricultural/Wildland	Fine-grained soil	210 (170[a])	150	1300	5600
	Course-grained soil	30[b]	150	300	2800
Residential/Parkland	Fine-grained soil	210 (170[a])	150	1300	5600
	Course-grained soil	30[b]	150	300	2800
Commercial	Fine-grained soil	320 (170[a])	260 (230[a])	2500	6600
	Course-grained soil	320 (240[a])	260	1700	3300
Industrial	Fine-grained soil	320 (170[a])	260 (230[a])	2500	6600
	Course-grained soil	320 (240[a])	260	1700	3300

a = Where applicable, for protection against contaminated groundwater discharge to an adjacent surface water body or for protection of potable groundwater.
b = Assumes contamination near residence.

Additional Tier 1 criteria for PHC in soils can be found in Appendix 3. Remediation criteria for other contaminants in soil (e.g. BTEX, metals, PAHs) can be found in Appendix 4.

If the remediation of soil to Tier 1 criteria for the associated land use is not practical from a cost, logistical or technological perspective, then the responsible party will have to move to Tier 2 or Tier 3 site management.

Tier 2 - Modified-Criteria Approach

In certain circumstances, remediation criteria may be modified, within specified limits, and adopted for use as the site-specific remediation criteria when site conditions exist that modify human and ecological exposure to PHC contamination relative to the generic conditions used to derive Tier 1 criteria. In general, this modified-criteria approach is utilized in situations where site conditions, land use, receptors or exposure pathways differ only slightly from those assumed in the development of Tier 1 criteria. However, as pointed out above, the decision to undertake Tier 2 adjustments implies a commitment to increase the accuracy of information on site-specific factors, including exposure and risk estimates.

The acceptability of a Tier 2 approach for evaluation of site-specific impacts is subject to review by EPD. If the impacts also extend off-site, then the responsible party must seek the acceptance of other affected parties before proceeding with a Tier 2 approach.

Specific guidance on situations where modifications are allowed to the Tier 1 criteria, as well as details concerning implementation of the modified-criteria approach are provided in the *Canada-Wide Standard for Petroleum Hydrocarbons in Soil User Guide (CCME 2008).*

Tier 3 - Risk-Based Approach

In certain circumstances, neither the criteria-based or modified-criteria approach may be suitable for a site because pathways of exposure, target chemicals, receptors or other site characteristics differ significantly from those used to develop these more generic approaches. If this is the case, risk assessment procedures may be required to develop site-specific remediation objectives that correspond to an acceptable level of risk to human or ecological receptors. The Tier 3 approach involves completion of a site-specific risk assessment and development of a risk management plan, including long-term monitoring.

A contaminated site is a candidate for the risk-based approach when there are:

- significant ecological concerns (e.g. critical or sensitive habitats for wildlife; rare, threatened or endangered species; parkland or ecological reserves; special hunting or trapping resources);
- unacceptable data gaps (e.g. exposure conditions are particularly unpredictable or uncertain; lack of information about receptors; high degree of uncertainty about hazard levels); or
- special site characteristics (e.g. site is large or remote; the contamination is complex; estimated cost of remediation is prohibitive; site conditions, receptors and/or exposure pathways differ significantly from those assumed in the derivation of Tier 1 and Tier 2 criteria).

Further guidance on human health and ecological risk assessment is beyond the scope of this document. If the reader wishes to proceed with a risk-based approach to site remediation, they are encouraged to contact EPD and professionals competent in the field of human health and ecological risk assessment.

2.5 Preparation of a Remedial Action Plan

At this point the responsible party will review the results of the site assessment and determine whether to remediate the site to the generic Tier 1 criteria or develop site-specific remediation criteria using either a modified-criteria or risk-based approach. The selection should take into consideration factors such as effectiveness in achieving the remediation goals, practicality, safety and cost.

Once remediation criteria have been determined, the responsible party must prepare a Remedial Action Plan for the site which reflects the preferred remediation method. Where practical, the plan should favour permanent remediation solutions, and not solutions that require long-term management and monitoring. The Remedial Action Plan should:

- include names and contact information of all key personnel, consultants and contractors;
- summarize all data collected on contaminants identified during the site investigation(s);
- identify contaminants of concern and the media (e.g. soil, water) affected;
- identify the remediation criteria and the method(s) by which they have been derived;
- identify, quantify and characterize the materials to be treated, removed and disposed;
- summarize remedial options evaluated and the method used to select the preferred remedial strategy;
- describe the selected remediation method and its technical feasibility;
- detail an implementation plan, including a schedule for implementing the plan;

- discuss control measures to minimize fugitive air emissions, surface water control, and worker health and safety;
- identify the fate of any residual contaminants that may remain on-site following remediation; and
- identify remedial verification and long-term monitoring plans (if required).

The Remedial Action Plan should be submitted to EPD, and other regulatory agencies as appropriate, for review prior to the plan being implemented in order to confirm all regulatory requirements are being met.

2.6 Implementation of a Remedial Action Plan

Once all necessary approvals have been obtained, the responsible party shall implement the Remedial Action Plan in a timely manner and submit monitoring reports to EPD on the pre-determined schedule. The responsible party must advise EPD if any activities deviate from the approved Remedial Action Plan. In these cases, EPD will assess the significance of any deviations and advise accordingly.

The completion of remediation activities should be validated by comparing the results of confirmatory samples to the selected remediation criteria. Where the remediation criteria fail to be achieved, the responsible party would be required to re-evaluate the Plan and implement alternative remediation activities.

2.7 Site Closure

When the responsible party and is satisfied that all the requirements of the Remedial Action Plan have been met, a closure report should be prepared and forwarded to EPD. The closure report includes a description of all site activities conducted and remediation methods used, the quantity of contaminated material treated or disposed, and all analytical data generated.

Provided the remediated site complies with all appropriate criteria, management to Tier 1 or Tier 2 would normally enable unrestricted future use of the land within the particular land use designation. This is referred to as ‘unconditional closure’. Where a Tier 3 risk-based approach is used, land use controls and restrictions and long-term monitoring would likely be required to ensure human health, safety and environmental risks do not increase. This is referred to as ‘conditional closure’.

In the case of unconditional closure, EPD will conclude the management process upon receipt and acceptance of the closure report by issuing a letter advising the responsible party that no further remedial action is required. In the case of conditional closure, the letter would state that the management process remains on-going and confirm what land-use controls and restrictions and long-term monitoring is required.

Conclusion

This is a brief introduction to the contaminated site remediation process and is intended to inform the reader about the basic issues involved in contaminated site management. Once a contaminated site has been discovered or verified, the Environmental Protection Division of the Department of Environment must be contacted before proceeding though the contaminated site management process.

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Department of Environment
Inuksugait Plaza, Box 1000, Station 1360
Iqaluit, Nunavut, X0A 0H0

Phone: (867) 975-7729;
Fax: (867) 975-7739
Email: EnvironmentalProtection@GOV.NU.CA
Website: http://www.gov.nu.ca/env/environment

References

Canadian Council of Ministers of the Environment (CCME). Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil, (2008).

Canadian Council of Ministers of the Environment (CCME). Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil: Scientific Rationale Supporting Technical Document, (2008).

Canadian Council of Ministers of the Environment (CCME). Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil: User Guidance, (2008).

Canadian Council of Ministers of the Environment (CCME). Canadian Environmental Quality Guidelines, (1999, updated 2007).

Canadian Council of Ministers of the Environment (CCME). Guidance Document on the Management of Contaminated Sites in Canada, (1997).

Canadian Council of Ministers of the Environment (CCME). Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites, Volume 1: Main Report, (1993).

Canadian Council of Ministers of the Environment (CCME). Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier 1 Method (2001).

Canadian Council of Ministers of the Environment (CCME). Subsurface Assessment Handbook for Contaminated Sites, (1994).

Canadian Standards Association (CSA). CSA Standard Z768-01 Phase I Environmental Site Assessment, (2001).

Canadian Standards Association (CSA). CSA Standard Z769-00 Phase II Environmental Site Assessment, (2000).

Government of Nunavut, Department of Environment. Environmental Guideline for Site Remediation (2002).

Government of the Northwest Territories, Department of Environment and Natural Resources. Environmental Guideline for Contaminated Site Remediation, (2003)

APPENDICES

APPENDIX 1 - *ENVIRONMENTAL PROTECTION ACT*

The following are excerpts from the *Environmental Protection Act*

1. "Contaminant" means any noise, heat, vibration or substance and includes such other substance as the Minister may prescribe that, where discharged into the environment,
   (a) endangers the health, safety or welfare of persons,
   (b) interferes or is likely to interfere with normal enjoyment of life or property,
   (c) endangers the health of animal life, or
   (d) causes or is likely to cause damage to plant life or to property;

   "Discharge" includes, but not so as to limit the meaning, any pumping, pouring, throwing, dumping, emitting, burning, spraying, spreading, leaking, spilling, or escaping;

   "Environment" means the components of the Earth and includes
   (a) air, land and water,
   (b) all layers of the atmosphere,
   (c) all organic and inorganic matter and living organisms, and
   (d) the interacting natural systems that include components referred to in paragraphs (a) to (c).

   "Inspector" means a person appointed under subsection 3(2) and includes the Chief Environmental Protection Officer.

2.2 The Minister may
   (a) establish, operate and maintain stations to monitor the quality of the environment in the Territories;
   (b) conduct research studies, conferences and training programs relating to contaminants and to the preservation, protection or enhancement of the environment;
   (c) develop, co-ordinate and administer policies, standards, guidelines and codes of practice relating to the preservation, protection or enhancement of the environment;
   (d) collect, publish and distribute information relating to contaminants and to the preservation, protection or enhancement of the environment:

3. (1) The Minister shall appoint a Chief Environmental Protection Officer who shall administer and enforce this Act and the regulations.

   (2) The Chief Environmental Protection Officer may appoint inspectors and shall specify in the appointment the powers that may be exercised and the duties that may be performed by the inspector under this Act and regulations.

5. (1) Subject to subsection (3), no person shall discharge or permit the discharge of a contaminant into the environment.

   (3) Subsection (1) does not apply where the person who discharged the contaminant or permitted the discharge of the contaminant establishes that
   (a) the discharge is authorized by this Act or the regulations or by an order issued under this Act or the regulations;
   (b) the contaminant has been used solely for domestic purposes and was discharged from within a dwelling house;
   (c) the contaminant was discharged from the exhaust system of a vehicle;

(d) the discharge of the contaminant resulted from the burning of leaves, foliage, wood, crops or stubble for domestic or agricultural purposes;
(e) the discharge of the contaminant resulted from burning for land clearing or land grading;
(f) the discharge of the contaminant resulted from a fire set by a public official for habitat management of silviculture purposes;
(g) the contaminant was discharged for the purposes of combating a forest fire;
(h) the contaminant is a soil particle or grit discharged in the course of agriculture or horticulture; or
(i) the contaminant is a pesticide classified and labelled as "domestic" under the *Pest Control Products Regulations* (Canada).

(4) The exceptions set out in subsection (3) do not apply where a person discharges a contaminant that the inspector has reasonable grounds to believe is not usually associated with a discharge from the excepted activity.

5.1. Where a discharge of a contaminant into the environment in contravention of this Act or the regulations or the provisions of a permit or license issued under this Act or the regulations occurs or a reasonable likelihood of such a discharge exists, every person causing or contributing to the discharge or increasing the likelihood of such a discharge, and the owner or the person in charge, management or control of the contaminant before its discharge or likely discharge, shall immediately:
(a) subject to any regulations, report the discharge or likely discharge to the person or office designated by the regulations;
(b) take all reasonable measures consistent with public safety to stop the discharge, repair any damage caused by the discharge and prevent or eliminate any danger to life, health, property or the environment that results or may be reasonably expected to result from the discharge or likely discharge; and
(c) make a reasonable effort to notify every member of the public who may be adversely affected by the discharge or likely discharge.

6. (1) Where an inspector believes on reasonable grounds that a discharge of a contaminant in contravention of this Act or the regulations or a provision of a permit or license issued under this Act or the regulations has occurred or is occurring, the inspector may issue an order requiring any person causing or contributing to the discharge or the owner or the person in charge, management or control of the contaminant to stop the discharge by the date named in the order.

7. (1) Notwithstanding section 6, where a person discharges or permits the discharge of a contaminant into the environment, an inspector may order that person to repair or remedy any injury or damage to the environment that results from the discharge.

(2) Where a person fails or neglects to repair or remedy any injury or damage to the environment in accordance with an order made under subsection (1) or where immediate remedial measures are required to protect the environment, the Chief Environmental Protection Officer may cause to be carried out the measures that he or she considers necessary to repair or remedy an injury or damage to the environment that results from any discharge.

APPENDIX 2 - GLOSSARY

Accreditation	Formal recognition of the competence of an environmental analytical laboratory to carry out specified tests. Formal recognition is based on an evaluation of laboratory capability and performance. Site inspections are utilized in the evaluation of capability.
Adverse Effect	An undesirable or harmful effect to an organism, indicated by some result such as mortality, altered food consumption, altered body and organ weights, altered enzyme concentrations or visible pathological changes.
Assess or Assessment	Investigations, monitoring, testing and other information-gathering activities to identify: (1) the existence, source, nature and extent of contamination resulting from a release into the environment of a hazardous material or chemical substance; and (2) the extent of danger to the public health, safety, welfare, and the environment. The term also includes studies, services, and investigations to plan, manage, decommission and clean up a contaminated site.
Background	An area not influenced by contaminants released from the site.
Background Samples	Matrices minus the analytes of interest that are carried through all steps of the analytical procedure. They are used to provide a reference for determining whether environmental test sample results are significantly higher than "unpolluted" samples, which contain "zero", low, or acceptable levels of the analytes of interest. All matrices, sample containers, reagents, glassware, preparations, and instrumental analyses are included in the analysis of background samples.
Blank	The measured value obtained when a specified component of a sample is not present.
Borehole	A hole drilled into the earth, and into which casing or screen can be installed to construct a well.
Chemical	Any element, compound, formulation or mixture of a substance that might enter the environment through spillage, application or discharge. Examples of chemicals are insecticides, herbicides, fungicides, and agents for treating oil spills.
Clean up	The removal of a chemical substance or hazardous material from the environment to prevent, minimize or mitigate damage to public health, safety or welfare, or the environment that may result from the presence of the chemical substance or hazardous material. The clean up is carried out to attain specified remediation criteria.

Concentration	The amount of chemical or substance in a given environmental medium. Concentration is typically expressed as milligrams per litre (mg/L) in water, milligrams per kilogram (mg/kg) in soil and food and micrograms per cubic metre (µg/m^3) in air. Concentrations may also be expressed as parts per million (ppm) or parts per billion (ppb). 1 mg/litre = 1 ppm or 1000 ppb 1 mg/kg = 1 ppm or 1000 ppb
Criteria	Numerical standards that are established for concentrations of chemical parameters in various media to determine the acceptability of a site for a specific land use.
Detection Limit	The smallest concentration of a substance that can be reported as present with a specified degree of precision and accuracy by a specific analytical method.
Environmental Analytical Laboratory	A laboratory engaged in the physical, chemical or biological measurements of either the receiving environment or discharges to the receiving environment.
Ground Penetrating Radar	A geophysical method in which bursts of electromagnetic energy are transmitted downward from the land surface, to be reflected and refracted by velocity contrasts within the subsurface.
Groundwater	All subsurface water that occurs beneath the water table in rocks and geologic formations that are fully saturated.
Guidelines	Statements outlining a method, procedure, process or numerical value which, while not mandatory, should be followed unless there is a good reason not to do so, and includes the numerical limits or narrative statements that are recommended to protect and maintain the specified uses of water, sediment, soil or air. Guidelines also assist in clarifying the intent of the *Environmental Protection Act* and regulations.
Hazardous Material	Material that, because of its quality, concentration, chemical composition or corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, constitutes a present or potential threat to human health and safety or the environment, when improperly stored, treated, transported, disposed of, used or otherwise managed.
Headspace	The empty volume in a container between the cap and the solid or liquid level of the sample.
Migration	The movement of chemicals, bacteria and gases in flowing water or vapour in the subsurface.

Monitoring	The routine (e.g. daily, weekly, monthly, quarterly) checking of quality or collection and reporting of information.
Monitoring Well	A well that is used to extract groundwater for physical, chemical or biological testing, or to measure water levels.
Objective	A numerical limit or narrative statement that has been established to protect and maintain a specified use of water, sediment or soil at a particular site by taking into account site-specific conditions. Objectives may be adopted directly from generic criteria or formulated to account for site-specific conditions.
Quality Assurance/Quality Control (QA/QC)	Those procedures and controls designed to monitor the conduct of a study in order to ensure the quality of the data and the integrity of the study.
Receptor	A person or organism subjected to chemical exposure. An ecosystem component that is, or may be, adversely affected by a pollutant or other stress emanating from a contaminated site. Receptors may include biological or abiotic (e.g. air or water quality) components.
Risk	Risk is a measure of both the severity of effects arising from exposure to a substance and the probability of its occurrence.
Risk Assessment	Procedure designed to determine the qualitative aspects of hazard identification and usually a quantitative determination of the level of risk based on deterministic or probabilistic techniques.
Screening	Rapid analysis to determine if further action (e.g. detailed analysis or clean up) is warranted.
Site-Specific Remedial Objectives	The objectives established for a specific site to be met by implementation of a Remedial Action Plan and, if appropriate, ongoing site management.
Subsoil	Soil which is 1.5 metres (approximately 5 feet) or deeper from the surface.
Surface Soil	Soil which is less than 1.5 metres (approximately 5 feet) from the surface.
Surface Water	Natural water bodies, such as rivers, streams, brooks and lakes, as well as artificial water courses, such as irrigation, industrial and navigational canals.
Test Pit	A shallow pit made to characterize the subsurface.

APPENDIX 3 - REMEDIATION CRITERIA FOR PETROLEUM HYDROCARBONS

The term 'Petroleum Hydrocarbons' (PHC) describes a mixture of organic compounds found in and derived from oil, bitumen and coal. Petroleum products typically contain thousands of compounds in varying proportions, composed predominantly of carbon and hydrogen, with minor amounts of nitrogen, sulphur and oxygen. The properties of PHC contamination in soils varies with the soil type, petroleum source and composition, degree of processing (crude, blended or refined) and the extent of weathering caused by exposure to the environment. Such factors complicate the assessment of the human health, safety and environmental risks associated with PHC contamination. This complicated assessment of risk makes it necessary to evaluate PHC as four fractions: F1, F2, F3, and F4. This differs from the previous guideline (2002) where PHC contamination in soil was assessed using one parameter - Total Petroleum Hydrocarbons.

PHCs are subdivided according to specified ranges of equivalent carbon number (ECN). Each fraction is, in turn, made of subfractions. These subfractions are described according to their relevant physical and chemical properties and toxicological characteristics. These divisions between the fractions have been established in consideration of analytical factors, physical and chemical properties, the expected relevance to biological response in soils and the ability to utilize the definitions and associated properties.

Fraction 1 (F1) The range of ECN from C6 to C10. It includes gasoline and represents the volatile fraction of most hydrocarbon mixtures. The F1 fraction consists of aromatic subfractions in the range C8 to C10, as well as aliphatic subfractions in the ranges of C6 to C8 and >C8 to C10. The fraction is generally considered to be high in mobility, volatility and solubility

Fraction 2 (F2) The range of ECN from >C10 to C16. It includes kerosene, jet fuel and light fuel oils (No. 2 fuel oil, Arctic diesel) and represents the semi-volatile fraction of petroleum hydrocarbons. The F2 fraction is comprised of aromatics and aliphatic subfractions in the ranges >C10 to C12 and >C12 to C16.

Fraction 3 (F3) The range of ECN from >C16 to C34 and includes medium fuel oils (No. 4 fuel oil, Bunker B), heavy fuels oils (Bunker C) and lubricating and motor oils. It is comprised of both aromatics and aliphatics in the ranges >C16 to C21 and >C21 to C34.

Fraction 4 (F4) The range of ECN from >C34 to C50+. PHC within this range often make up a significant proportion of crude oils. The fraction is generally considered to be of low mobility, volatility and solubility.

Some specific aromatic compounds found within the F1 fraction are managed separately from PHC. Benzene ("B") has been excluded because of its carcinogenic properties while toluene, ethylbenzene and xylene ("TEX") have been excluded because of the relatively long history of managing these compounds. Collectively these compounds are referred to as "BTEX".

Tier 1 and Tier 2 remediation criteria are prescribed for coarse-grained and fine-grained soils. As a result, sufficient textural information needs to be obtained through environmental site assessments to permit classification of the soils as either coarse or fine. These classifications are defined as follows:

Fine-grained soil	Soil having a medium grain size of <75 µm as defined by the American Society for Testing and Materials, and includes silts and clays.
Course-grained soil	Soil having a median grain size of >75 µm as defined by the American Society for Testing and Materials, and includes sands and gravels.

Tier 1 remediation criteria for PHC in soils are presented in Tables A3-1, A3-2 and A3-3. Remediation criteria for BTEX are identified separately in Appendix 4.

Table A3-1
Summary of Tier 1 Criteria (mg/kg) for PHC for Surface Soil.*

Land Use	Soil Texture	Fraction 1 (C6-C10)	Fraction 2 (>C10-C16)	Fraction 3 (>C16-C34)	Fraction 4 (>C34)
Agricultural/Wildland	Fine-grained soil	210 (170[a])	150	1300	5600
	Course-grained soil	30[b]	150	300	2800
Residential/Parkland	Fine-grained soil	210 (170[a])	150	1300	5600
	Course-grained soil	30[b]	150	300	2800
Commercial	Fine-grained soil	320 (170[a])	260 (230[a])	2500	6600
	Course-grained soil	320 (240[a])	260	1700	3300
Industrial	Fine-grained soil	320 (170[a])	260 (230[a])	2500	6600
	Course-grained soil	320 (240[a])	260	1700	3300

* EPD must be consulted if PHC concentrations in 'subsoil' exceed these criteria.
a = Where applicable, for protection against contaminated groundwater discharge to an adjacent surface water body or for protection of potable groundwater.
b = Assumes contamination near residence.

Table A3-2. Pathway-Specific Tier 1 Levels (mg/kg) for PHC for Fine-Grained Surface Soils.

Land Use	Exposure Pathways*	F1 (C6-C10)	F2 (>C10-C16)	F3 (>C16-C34)	F4 (>C34)
Agricultural/ Wildland	Direct Contact (Ingestion + Dermal Contact)	12 000	6800	15 000	21 000
	Vapour Inhalation (indoor, basement)	710	3600	NA	NA
	Vapour Inhalation (indoor, slab-on-grade)	610	3100	NA	NA
	Protection of Potable GW	170	230	NA	NA
	Protection of GW for Aquatic Life[a]	RES	RES	NA	NA
	Protection of GW for Livestock Watering	4200	10 000	NA	NA
	Nutrient Cycling	NC	NC	NC	NC
	Eco Soil Contact	210	150	1300	5600
	Eco Soil Ingestion	NC	NC	NC	NC
	Produce, Meat and Milk Ingestion	NC	NC	NC	NC
	Management Limit[b]	800	1000	3500	10 000
Residential/ Parkland	Direct Contact (Ingestion + Dermal Contact)	12 000	6 800	15 000	21 000
	Vapour Inhalation (indoor, basement)	710	3600	NA	NA
	Vapour Inhalation (indoor, slab-on-grade)	610	3100	NA	NA
	Protection of Potable GW	170	230	NA	NA
	Protection of GW for Aquatic Life[a]	RES	RES	NA	NA
	Nutrient Cycling	NC	NC	NC	NC
	Eco Soil Contact	210	150	1300	5600
	Produce Ingestion	NC	NC	NC	NC
	Management Limit[b]	800	1000	3500	10 000
Commercial	Direct Contact (Ingestion + Dermal Contact)	19 000	10 000	23 000	RES
	Vapour Inhalation (indoor)	4600	23 000	NA	NA
	Protection of Potable GW	170	230	NA	NA
	Protection of GW for Aquatic Life[a]	RES	RES	NA	NA
	Nutrient Cycling	NC	NC	NC	NC
	Eco Soil Contact	320	260	2500	6600
	Offsite Migration	NA	NA	19 000	RES
	Management Limit[b]	800	1000	5000	10 000
Industrial	Direct Contact (Ingestion + Dermal Contact)	RES	RES	RES	RES
	Vapour Inhalation (indoor)	4600	23 000	NA	NA
	Protection of Potable GW	170	230	NA	NA
	Protection of GW for Aquatic Life[a]	RES	RES	NA	NA
	Nutrient Cycling	NC	NC	NC	NC
	Eco Soil Contact	320	260	2500	6600
	Offsite Migration	NA	NA	19 000	RES
	Management Limit[b]	800	1000	5000	10 000

NA = Not applicable. Calculated value exceeds 1,000,000 mg/kg or pathway excluded.
RES = Residual PHC formation. Calculated value exceeds 30,000 mg/kg and solubility limit for PHC fraction.
NC = Not calculated. Insufficient data to allow derivation.
a = Assumes surface water body at 10 metres from site.
b = Includes additional considerations such as free phase formation, explosive hazards, and buried infrastructure effects.

Table A3-3. Pathway-Specific Tier 1 Levels (mg/kg) for PHC for Course-Grained Surface Soils.

Land Use	Exposure Pathways*	F1 (C6-C10)	F2 (>C10-C16)	F3 (>C16-C34)	F4 (>C34)
Agricultural/ Wildland	Direct Contact (Ingestion + Dermal Contact)	12 000	6800	15 000	21 000
	Vapour Inhalation (indoor, basement)	40	190	NA	NA
	Vapour Inhalation (indoor, slab-on-grade)	30	150	NA	NA
	Protection of Potable GW	240	320	NA	NA
	Protection of GW for Aquatic Life[a]	970	380	NA	NA
	Protection of GW for Livestock Watering	5300	14 000	NA	NA
	Nutrient Cycling	NC	NC	NC	NC
	Eco Soil Contact	210	150	300	2800
	Eco Soil Ingestion	NC	NC	NC	NC
	Produce, Meat and Milk Ingestion	NC	NC	NC	NC
	Management Limit[b]	700	1000	2500	10 000
Residential/ Parkland	Direct Contact (Ingestion + Dermal Contact)	12 000	6800	15 000	21 000
	Vapour Inhalation (indoor, basement)	40	190	NA	NA
	Vapour Inhalation (indoor, slab-on-grade)	30	150	NA	NA
	Protection of Potable GW	240	320	NA	NA
	Protection of GW for Aquatic Life[a]	970	380	NA	NA
	Nutrient Cycling	NC	NC	NC	NC
	Eco Soil Contact	210	150	300	2800
	Produce Ingestion	NC	NC	NC	NC
	Management Limit[b]	700	1000	2500	10 000
Commercial	Direct Contact (Ingestion + Dermal Contact)	19 000	10 000	23 000	RES
	Vapour Inhalation (indoor)	320	1700	NA	NA
	Protection of Potable GW	240	320	NA	NA
	Protection of GW for Aquatic Life[a]	970	380	NC	NC
	Nutrient Cycling	NC	NC	NC	NC
	Eco Soil Contact	230	260	1700	3300
	Offsite Migration	NA	NA	4300	RES
	Management Limit[b]	700	1000	3500	10 000
Industrial	Direct Contact (Ingestion + Dermal Contact)	RES	RES	RES	RES
	Vapour Inhalation (indoor)	320	1700	NA	NA
	Protection of Potable GW	240	320	NA	NA
	Protection of GW for Aquatic Life[a]	970	380	NC	NC
	Nutrient Cycling	NC	NC	NC	NC
	Eco Soil Contact	320	260	1700	3300
	Offsite Migration	NA	NA	4300	RES
	Management Limit[b]	700	1000	3500	10 000

NA = Not applicable. Calculated value exceeds 1,000,000 mg/kg or pathway excluded.
RES = Residual PHC formation. Calculated value exceeds 30,000 mg/kg and solubility limit for PHC fraction.
NC = Not calculated. Insufficient data to allow derivation.
a = Assumes surface water body at 10 metres from site.
b = Includes additional considerations such as free phase formation, explosive hazards, and buried infrastructure effects.

APPENDIX 4 – REMEDIATION CRITERIA FOR OTHER CONTAMINANTS

Table A4-1. Canadian Soil Quality Guidelines (mg/kg soil).

Substance[y]	Land Use and Soil Texture: Agricultural/ Wildland[*] Course	Agricultural/ Wildland[*] Fine	Residential/ Parkland[*] Course	Residential/ Parkland[*] Fine	Commercial[*] Course	Commercial[*] Fine	Industrial[*] Course	Industrial[*] Fine
Arsenic (inorganic)	12[b]		12[b]		12[b]		12[b]	
Barium	750[c]		500[c]		2000[c]		2000[c]	
Benzene								
Surface[w]	0.03[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]
Subsoil[w]	0.03[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]
Surface[x]	0.0095[t,u]	0.0068[t,u]	0.0095[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]
Subsoil[x]	0.011[t,u]	0.0068[t,u]	0.011[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]	0.03[t,u]	0.0068[t,u]
Benzo(a)pyrene	0.1[e]		0.7[f]		0.7[f]		0.7[f]	
Cadmium	1.4[b]		10[g]		22[b]		22[b]	
Chromium								
Total chromium	64[b]		64[b]		87[b]		87[b]	
Hexavalent chromium (IV)	0.4[h]		0.4[h]		1.4[h]		1.4[h]	
Copper	63[b]		63[b]		91[b]		91[b]	
Cyanide (free)	0.9[b]		0.9[b]		8.0[b]		8.0[b]	
DDT (total)	0.7[i]		0.7[i]		12[i,j]		12[i,j]	
Diisopropanolamine (DIPA)[z]	180[b]		180[b]		180[b]		180[b]	
Ethylbenzene								
Surface	0.082[t]	0.018[t,u]	0.082[t]	0.018[t,u]	0.082[t]	0.018[t,u]	0.082[t]	0.018[t,u]
Subsoil	0.082[t]	0.018[t,u]	0.082[t]	0.018[t,u]	0.082[t]	0.018[t,u]	0.082[t]	0.018[t,u]
Ethylene glycol	960[k]		960[k]		960[k]		960[k]	
Lead	70[b]		140[b]		260[b]		600[b]	
Mercury (inorganic)	6.6[b]		6.6[b]		24[b]		50[b]	
Naphthalene	0.1[d]		0.6[h]		22[h]		22[h]	
Nickel	50[l]		50[l]		50[l]		50[l]	
Nonylphenol (and its ethyloxylates)	5.7[p]		5.7[p]		14[p]		14[p]	
Pentachlorophenol	7.6[b]		7.6[b]		7.6[b]		7.6[b]	
Phenol	3.8[b]		3.8[b]		3.8[b]		3.8[b]	
Polychlorinated biphenyls (PCB)	0.5[m]		1.3[l]		33[j,l]		33[j,l]	
Polychlorinated di-benzo-p-dioxins/dibenzofurans (PCDD/Fs)	4 ng TEQ/kg[q]		4 ng TEQ/kg[q]		4 ng TEQ/kg[r]		4 ng TEQ/kg[s]	
Propylene glycol	Insuff Info[v]		Insuff Info[v]		Insuff Info[v]		Insuff Info[v]	
Selenium	1[b]		1[b]		2.9[b]		2.9[b]	
Sulfolane[z]	0.8[b]		1[b]		1[b]		1[b]	
Tetrachloroethylene	0.1[e]		0.2[f]		0.5[f]		0.6[f]	
Thallium	1[n]		1[o]		1[o]		1[o]	
Toluene								
Surface	0.37[t]	0.08[t]	0.37[t]	0.08[t]	0.37[t]	0.08[t]	0.37[t]	0.08[t]
Subsoil	0.37[t]	0.08[t]	0.37[t]	0.08[t]	0.37[t]	0.08[t]	0.37[t]	0.08[t]
Trichloroethylene	0.01[b,u]		0.01[b,u]		0.01[b,u]		0.01[b,u]	
Uranium[z]	23[t]		23[t]		33[t]		300[t]	
Vanadium	130[l]		130[l]		130[i]		130[i]	
Xylenes								
Surface	11[t]	2.4[t]	11[t]	2.4[t]	11[t]	2.4[t]	11[t]	2.4[t]
Subsoil	11[t]	2.4[t]	11[t]	2.4[t]	11[t]	2.4[t]	11[t]	2.4[t]
Zinc	200[l]		200[l]		360[l]		360[l]	

Notes (Table 4A-1):

Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health are published in "Canadian Environmental Quality Guidelines (CCME, 1999, updated 2007).

SQG_E = Soil Quality Guideline for Environmental Health
SQG_{HH} = Soil Quality Guideline for Human Health

[*] For guidelines derived prior to 2004, differentiation between soil texture (coarse/fine) is not applicable.

[a] Guidelines released in 1997 were originally published in a working document entitled "Recommended Canadian Soil Quality Guidelines" (CCME 1997) and have been revised, edited and reprinted here. Guidelines revised/released in 1999 are published here for the first time.
[b] Data are sufficient and adequate to calculate an SQG_{HH} and an SQG_E. Therefore the soil quality guideline is the lower of the two and represents a fully integrated *de novo* guideline for this land use, derived in accordance with the soil protocol (CCME 1996; 2006).
[c] Data are insufficient/inadequate to calculate an SQG_{HH}, a provisional SQG_{HH}, an SQG_E or a provisional SQG_E. Therefore, the interim soil quality criterion (CCME 1991) is retained as the soil quality guideline for this land use.
[d] Data are sufficient and adequate to calculate only a provisional SQG_E. It is greater than the corresponding interim soil quality criterion (CCME 1991). Therefore, in consideration of receptors and/or pathways not examined, the interim soil quality criterion is retained as the soil quality guideline for this land use.
[e] Data are sufficient and adequate to calculate an SQG_{HH} and a provisional SQG_E. Both are greater than the corresponding interim soil quality criterion (CCME 1991). Therefore, in consideration of receptors and/or pathways not examined, the interim soil quality criterion is retained as the soil quality guideline for this land use.
[f] Data are sufficient and adequate to calculate an SQG_{HH} and a provisional SQG_E. Both are less than the corresponding interim soil quality criterion (CCME 1991). Therefore, the interim soil quality guideline supersedes the soil quality criterion for this land use.
[g] The soil-plant-human pathway was not considered in the guideline derivation. If produce gardens are present or planned, a site-specific objective must be derived to take into account the bioaccumulation potential (e.g. adopt the agricultural/wildland guideline as objective). The off-site migration check should be recalculated accordingly.
[h] Data are sufficient and adequate to calculate only a provisional SQG_E, which is less than the existing interim soil quality criterion (CCME 1991). Therefore, the provisional soil quality guideline supersedes the interim soil quality criterion for this land use.
[I] Data are sufficient and adequate to calculate only an SQG_E. An interim soil quality criterion (CCME 1991) was not established for this land use therefore, the SQG_E becomes the soil quality guideline.
[j] In site-specific situations where the size and/or the location of commercial and industrial land uses may impact primary, secondary or tertiary consumers, the soil and food ingestion guideline is recommended as the SQG_E.
[k] Data are sufficient and adequate to calculate only a provisional SQG_E.
[l] Data are sufficient and adequate to calculate only an SQG_E, which is less than the interim soil quality criterion (CCME 1991) for this land use. Therefore the SQG_E becomes the soil quality guideline for this land use.
[m] Data are sufficient and adequate to calculate only an SQG_E, which is greater than the interim soil quality criterion (CCME 1991) for this land use. Therefore the interim soil quality criterion (CCME 1991) is retained as the soil quality guideline for this land use.
[n] Data are sufficient and adequate to calculate a provisional SQG_{HH} and an SQG_E. The provisional SQG_{HH} is equal to the SQG_E and to the existing interim soil quality criterion (CCME 1991) and thus becomes the soil quality guideline for this land use.
[0] Data are sufficient and adequate to calculate a provisional SQG_{HH} and an SQG_E. The provisional SQG_{HH} is less than SQG_E and thus becomes the soil quality guideline for this land use.
[p] Data are sufficient and adequate to calculate only an SQG_E. An interim soil quality criterion (CCME 1991) was not established for these substances therefore, the SQG_E becomes the soil quality guideline.
[q] Data are sufficient and adequate to calculate only a provisional SQG_{HH} which is less than the existing interim soil quality criterion (CCME 1991). Thus the provisional SQG_{HH} becomes the soil quality guideline for this land use.
[r] Data are sufficient and adequate to calculate only a provisional SQG_{HH}. An interim soil quality criterion (CCME 1991) was not established for this land use therefore, the provisional SQG_{HH} becomes the soil quality guideline.
[s] Data are sufficient and adequate to calculate only an SQG_{HH}. An interim soil quality criterion (CCME 1991) was not established for this land use therefore, the SQG_{HH} becomes the soil quality guideline.
[t] Data are sufficient and adequate to calculate an SQG_{HH} and an SQG_E. Therefore the soil quality guideline is the lower of the two and represents a fully integrated *de* novo guideline for this land use.
[u] This guideline may be less than the common limit of detection.
[v] Data are sufficient and adequate to calculate only a provisional SQG_{FWAL} (Soil Quality Guideline for Freshwater Aquatic Life). This value is 6,210 mg/kg.
[w] 10^{-5} incremental risk.
[x] 10^{-6} incremental risk.
[y] Unless otherwise indicated supporting documents are available from the National Guidelines and Standards Office, Environment Canada.
[z] Supporting documents are available from the Canadian Council of Ministers of the Environment.

Table A4-2. Interim Remediation Criteria (mg/kg soil).

These interim remediation criteria should only be used when soil quality guidelines have not yet been developed for a given contaminant (see table A4-1).

Substance	Land Use and Soil Texture			
	Agricultural/ Wildland	Residential/ Parkland	Commercial	Industrial
General Parameters				
Conductivity [dS/m]	2	2	4	4
pH	6 to 8	6 to 8	6 to 8	6 to 8
Sodium adsorption ratio	5	5	12	12
Inorganic Parameters				
Antimony	20	20	40	40
Beryllium	4	4	8	8
Boron (hot water soluble)	2	-	-	-
Cobalt	40	50	300	300
Fluoride (total)	200	400	2000	2000
Molybdenum	5	10	40	40
Silver	20	20	40	40
Sulphur (elemental)	500	-	-	-
Tin	5	50	300	300
Monocyclic Aromatic Hydrocarbons				
Chlorobenzene	0.1	1	10	10
l,2-Dichlorobenzene	0.1	1	10	10
l,3-Dichlorobenzene	0.1	1	10	10
l,4-Dichlorobenzene	0.1	1	10	10
Styrene	0.1	5	50	50
Phenolic Compounds				
Chlorophenols[a] (each)	0.05	0.5	5	5
Nonchlorinated[b] (each)	0.1	1	10	10
Polycyclic Aromatic Hydrocarbons (PAHs)				
Benzo(*a*)anthracene	0.1	1	10	10
Benzo(*b*)fluoranthene	0.1	1	10	10
Benzo(*k*)fluoranthene	0.1	1	10	10
Dibenz(*a,h*)anthracene	0.1	1	10	10
Indeno(l,2,3-c,d)pyrene	0.1	1	10	10
Phenanthrene	0.1	5	50	50
Pyrene	0.1	10	100	100
Chlorinated Hydrocarbons				
Chlorinated aliphatics[c] (each)	0.1	5	50	50
Chlorobenzenes[d] (each)	0.05	2	10	10
Hexachlorobenzene	0.05	2	10	10
Hexachlorocyclohexane (Lindane)	0.01	-	-	-
Miscellaneous Organic Parameters				
Nonchlorinated aliphatics (each)	0.3	-	-	-
Phthalic acid esters (each)	30	-	-	-
Quinoline	0.1	-	-	-
Thiophene	0.1	-	-	-

Notes (Table 4A-2):

All values are in mg/kg soil unless otherwise indicated.

Interim remediation criteria were published in 1991 in "Interim Canadian Environmental Quality Criteria for Contaminated Sites (CCME, 1991).

These interim remediation criteria are considered generally protective of human and environmental health and were based on experience and professional judgement.

These interim criteria (CCME, 1991) should only be used when soil quality guidelines based on the CCME soil protocol (CCME, 1996; 2006) have not yet been developed for a given chemical. Also, because the interim remediation criteria were not developed using the soil protocol and its integral checks, they cannot be modified through the site specific remediation objective procedure.

a = Chlorophenols include
- Chlorophenol isomers (ortho, meta, para)
- Dichlorophenols (2,6- 2,5- 2,4- 3,5- 2,3- 3,4-)
- Trichlorophenols (2,4,6- 2,3,6- 2,4,5- 2,3,4- 3,4,5-)
- Tetrachlorophenols (2,3,5,6- 2,3,4,5- 2,3,4,6-)

b = Nonchlorinated phenolic compounds include
- 2,4-dimethylphenol
- 2,4-dinitrophenol
- 2-methyl 4,6-dinitrophenol
- Nitrophenol (2-,4-)
- Phenol
- Cresol

c = Aliphatic chlorinated hydrocarbons include
- Chloroform
- Dichloroethane (1,1- 1,2-), Dichloroethene (1,1- 1,2-)
- Dichloromethane
- 1,2-dichloropropane, 1,2-dichloropropene (cis and trans)
- 1,1,2,2-tetrachloroethane, tetrachloroethene
- Carbon tetrachloride
- Trichloroethane (1,1,1- 1,1,2-), trichloroethene

d = Chlorobenzenes include
- All trichlorobenzene isomers
- All tetrachlorobenzene isomers
- Pentachlorobenzene

APPENDIX 5 – FIELD SCREENING AND INTRUSIVE SAMPLING

Field screening and sampling methods are to be consistent with current professional standards. Because soils on any given site can be variable and complex (e.g. type of soil, grain size, depth of permafrost), all reasonable efforts must be made to ensure samples provide a true 'representation' of the site. Efforts should also be made to minimize the spread of contamination from one location to another as a result of activities during site assessment and cleanup.

Field screening methods help to identify suitable locations for more intrusive sampling and analysis. Screening with portable instruments is acceptable if the instruments are capable of calibrating measurements to relative or absolute levels of contamination, if the screening is verifiable in regard to procedures and results and finally, if results of such techniques can be correlated to *Canadian Association for Environmental Analytical Laboratories (CAEAL*) accredited laboratory results.

On sites where it cannot be determined through historical records that previous tanks and lines have been removed, an appropriate survey (e.g. ground penetrating radar) should be carried out before drilling, to determine whether tanks and lines are present.

Sample locations should provide an adequately detailed description of the nature and extent of contamination in three dimensions and provide information on potential subsurface contaminant migration pathways. The following are considered minimum requirements:

- Soil - 3-5 boreholes or test pits for each potential source area, except very small sites where a minimum of 1 borehole or test pit is sufficient. Potential source areas include storage tanks and barrels, lines, pump islands, loading areas, previous underground installations and areas of discoloured or stained soil. At a typical community POL facility with 1 tank nest, 1 set of lines, 1 pump island, and 1 waste oil tank, this would equate to 4 source test locations.
- Groundwater - Sufficient test locations to determine the direction of groundwater flow on-site should be selected (minimum of 3 groundwater monitoring wells or piezometers, including at least 1 multilevel installation to assess vertical gradients). Shallow wells are to be screened across the water table to intercept floating product.
- All soil test holes should extend to the bottom of the contaminated soil zone or to an impermeable layer (e.g. bedrock), whichever is shallower.
- All test holes and wells should be monitored for the presence of free product.
- At least 1 'control' site should be established to determine accurate background concentrations of the suspected contaminant.

Each sample location should be marked or documented so it can be found again, if needed.

APPENDIX 6 – SAMPLE ANALYSIS

Soil samples may be screened in the field for vapours, staining or odour in order to reduce the number of samples to be analyzed by the laboratory. All field observations must be included in reports.

Chemical analyses are to be conducted on at least 2 soil samples per test hole location - one surface <1.5 m depth, one subsurface >1.5 m depth. Chemical analyses are to be conducted on at least one groundwater sample from each well sampled.

Chemical analyses for petroleum hydrocarbon impacted sites are to include PHC and BTEX (benzene, toluene, ethylbenzene, xylene)[1]. Analysis for additional site-specific parameters may be required, depending on past or present land use (e.g. PAHs, lead, PCBs).

Grain size analyses are to be conducted on at least 1 sample per hydrogeologic unit if soil grain size criteria are to be applied.

Quality Assurance/Quality Control (QA/QC) – For small batches of soil samples (less than 10 samples), at least one blind duplicate should be analyzed per batch of samples. For larger batches of soil samples (greater than 10 samples), 10% duplicates should be analyzed. For groundwater samples, a blind duplicate and field blank sample should be collected and analyzed with each batch of samples tested. The QA/QC results should be presented and interpreted in the closure report.

All sampling, sample handling and chemical analysis must be consistent with accepted practices. In particular, samples for volatile organics must be collected such that there is a minimum headspace in soil samples and no headspace in water samples. Samples should be kept cool, but not frozen, until they are delivered to the laboratory. Sample handling procedures should be verified with the receiving laboratory and chemical analysis should be consistent with the PHC Canada-Wide Standard reference method. See *Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites, Volume 1: Main Report (*CCME, 1993), and *Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier 1 Method (CCME, 2001)*.

Accredited Laboratory

Laboratory analysis of contaminated soil, water and other materials must be conducted by laboratories that have been formally recognized as competent to perform specified tests by the Canadian Association for Environmental Analytical Laboratories (CAEAL*)*. CAEAL is a non-profit organization dedicated to raising the level of competency, consistency, capability, and communication within environmental testing laboratories in Canada. Their member laboratories voluntarily participate in rigorous programs of proficiency testing and accreditation, demonstrating their commitment to generate high quality and consistent data (see Appendix 8).

[1] Soils with high natural organic carbon (such as peats) may give a “false positive” result when analyzed. If this is suspected, it may be beneficial to collect additional background soil samples for organic carbon analysis.

APPENDIX 7 - TRANSPORTATION OF CONTAMINATED SOIL

Contaminated soil must be transported in accordance with requirements of the appropriate transport authority. The road transportation of contaminated soil is administered by the Nunavut Department of Economic Development and Transportation under the territorial *Transportation of Dangerous Goods Act* and Regulations (TDGR). The transportation of contaminated soil by air and marine mode is administered by Transport Canada under the federal *Transportation of Dangerous Goods Act* and *International Maritime Dangerous Goods Code,* respectively.

The TDGR require that a waste manifest form accompany shipments of contaminated oil and other hazardous waste. The completed manifest form provides:

- Detailed information on the types and amounts of hazardous waste shipped;
- A record of the parties involved in the shipment;
- Information on the storage, treatment or disposal of the waste; and
- Confirmation that the waste reached the final destination.

No chemical test of the hydrocarbon is required as "petroleum distillate" is a specified dangerous good in List II, Schedule II of TDGR. The word "waste" must precede the shipping name.

Manifest requirements:

	Shipping name:	WASTE SOLIDS CONTAINING FLAMMABLE LIQUID, n.o.s.*, (gasoline or diesel, as appropriate)
	Classification:	4.1
	UN number:	UN3175
	Packing group:	II
or	Shipping name:	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, n.o.s.*, (gasoline or diesel, as appropriate)
	Classification:	9
	UN number:	UN3077
	Packing group:	III

Further assistance in completing a waste manifest can be obtained by referring to the *User's Guide for the Hazardous Waste Manifest* produced by Environment Canada or by contacting the Motor Vehicles Division of the Department of Economic Development and Transportation. Further information on hazardous waste management in Nunavut can be obtained by referring to the *Environmental Guideline for the General Management of Hazardous Waste (January 2002)* produced by the Department of Environment.

APPENDIX 8 - ADDITIONAL CONTACTS

Canadian Council of Ministers of the Environment (CCME)
CCME works to promote effective intergovernmental cooperation and coordinated approaches to interjurisdictional issues such as air pollution and toxic chemicals. Under the auspices of CCME, the federal, provincial and territorial ministers of environment collectively establish nationally consistent environmental standards, strategies and objectives so as to achieve a high level of environmental quality across the country. Comprehensive literature and technical documentation is available from:

Canadian Council of Ministers of the Environment
123 Main Street, Suite 360
Winnipeg, Manitoba R3C 1A3
Phone: (204) 948-2090; Fax: (204) 948-2125
Website: http://www.ccme.ca
E-mail: info@ccme.ca

Canadian Association for Environmental Analytical Laboratories (CAEAL)
CAEAL is a not-for-profit organization formed in 1989 dedicated to raising the level of competency, consistency, capability, and communication within environmental testing laboratories in Canada. Membership in CAEAL is open to individuals, institutions, user groups, consultants, industrial organizations, regulatory agencies, materials and laboratory equipment suppliers, and others interested in the work being carried out in environmental analytical laboratories. More information on CAEAL may be obtained from:

Canadian Association for Environmental Analytical Laboratories
300-265 Carling Avenue
Ottawa, Ontario K1S 2E1
Phone: (613) 233-5300; Fax: (613) 233-5501
Website: http://www.caeal.ca/

Canadian Standards Association (CSA)
CSA is a not-for-profit membership-based association serving business, industry, government and consumers in Canada and the global marketplace. As an organization, CSA works to develop standards that address a wide variety of needs, such as enhancing public health and safety, occupational health and safety, and the environment. More information on CSA may be obtained from:

Canadian Standards Association
5060 Spectrum Way
Mississauga, Ontario L4W 5N6
Phone: (416) 747-4000; Fax (416) 747-2473
Website: http://www.csa.ca

Appendix B

Site Photos

Appendix C

Operational Procedures for Site Personnel

LANDFARM OPERATION AND MAINTENANCE PROCEDURES
FOR SITE PERSONNEL

The following describes specific procedures for the the operation and maintenance of the contaminated soil facility ("landfarm") at the Meadowbank site. Operation and monitoring of the facility will come under the responsibility of the Environmental Superintendent. Any questions about operation and maintenance procedures should be directed to the Environment Department.

1 TYPE OF CONTAMINATION

1.1 Acceptable Types of Contamination

The landfarm facility is designed to accept, treat and/or store petroleum hydrocarbon contaminated soils that have been generated through mine-related activities (i.e. spills) at the Meadowbank Gold Project and the Meadowbank exploration camp. The following products may be treated in the landfarm if used onsite and spilled on soil or snow:

- Gasoline
- Diesel fuel
- Aviation fuel (Jet A)
- Hydraulic oil
- Other light oils e.g. engine oil, lubricating oil

If the source of contamination is unknown, or the contaminated material is suspected to contain any non-PHC contaminants, additional analyses should be performed (see Section 1.2).

1.2 Unknown Contamination

In the event that the contaminant source is unknown, Environment Department should be notified so that soil can be analyzed for petroleum hydrocarbons and possibly additional contaminants prior to placement in the landfarm.

- Additional parameters could include:
    - Total heavy metals
    - Heavy oil and grease
    - Volatile organic compounds
- Concentrations of additional contaminants will be compared to the site background values (for metals) and/or criteria in the Government of Nunavut (GN) Guidelines for Contaminated Site Remediation.

- If non-PHC soil contamination is below background or agricultural/wildland GN guidelines (whichever is higher), the material will be accepted into the landfarm as usual (see Section 2).
- If non-PHC contamination is above background or GN agricultural/wildland criteria but below GN industrial use criteria, soil will be placed in a designated area in the landfarm for PHC remediation prior to disposal in the Portage Rock Storage Facility (PRSF).
- If non-PHC contamination is above GN industrial criteria, the material cannot be remediated in the landfarm. Spills of > 100 L of non-PHC material (e.g. solvents, glycol) will be placed in drums and stored in the site Hazmat area for shipment south to approved facilities during barge season. Spills of non-PHC material < 100 L will be placed in the TSF.

2 HANDLING CONTAMINATED SOIL AND SNOW

2.1 Spill Excavation

2.1.1 General Procedures

- All spills must be reported to the Environment Department in accordance with AEM's Spill Reporting Procedures. Spills that are acceptable as described in Section 1 will be excavated for treatment in the landfarm.
- Prior to excavation, absorbent pads will be used to contain the spill and minimize excavated soil volumes. Used absorbent pads will be disposed of in the onsite incinerator.
- During excavation, larger coarse material (>1") should be separated as much as possible. Coarse and fine material will be treated separately in the landfarm.
- Care should be exercised to ensure that the entire spill is excavated. The excavation should be thoroughly assessed for any visible remaining product or odour, and the extents of excavation approved by Environment Department.

2.1.2 Spills on Snow

- For spills < 100 L, PHC-contaminated snow will be placed in a designated area of the landfarm and treated as contact water after snowmelt.
- For spills > 100L, excavated snow will be stored in drums until it has melted. The melt water will be processed in the oil/water separator (carbon filter) to remove PHC residue. The treated water will be sampled per Part F, Item 6 of the Water License, and discharged to the Stormwater Management Pond if criteria are met. If criteria not met, water will be treated as hazardous material.

2.1.3 Records

- In addition to the regular spill report provided by the affected department, the following information should be recorded by Environment Department at the excavation of potentially landfarmable material:
    - Time and date of excavation
    - Estimated quantity of excavated material (soil or snow)
    - Destination of excavated material (storage or landfarm)

2.2 Addition of Soil to the Landfarm

- Environment Department should be contacted prior to any additions of soil or snow to the landfarm.
- During transport to the landfarm, care should be exercised to ensure that no contaminated material is lost. If this occurs, it should be cleaned up immediately, ensuring none is left behind.
- If not already removed, efforts should be made to separate larger coarse material (> 1”) from the finer material in the landfarm, using a screen sieve if necessary.
- Each load of contaminated soil will be placed in an area designated by Environment Department staff. The layout of the landfarm should be prepared by the Environment Department and provided to Site Services and the Mine Department as changes occur.
- Location will be based on:
    - Year
        - New windrows will be developed annually at a minimum so that new product is not added to partially remediated piles
    - Grain size
        - Material < 1” will be piled and shaped into windrows with maximum dimensions of ~15 m wide at base x 4 m high x 50 m long
        - Material > 1” will be spread out in a thin layer (< 30 cm) for volatilization
    - Presence of other contaminants
        - Material contaminated with concentrations of other contaminants above background/GN wildland criteria will be treated in a separate area in the landfarm
    - Nutrient amendment
        - Certain windrows are treated with sewage sludge as a nutrient amendment

2.3 Remedial Activities

Environment Department will determine the timing of all remedial activities, and will maintain detailed records.

2.3.1 Absorbent material

- Oil-absorbent pads will be used to help remove visible product from coarse material as necessary.
- Used absorbent materials will be incinerated.

2.3.2 Aeration

- Windrows will be mixed mechanically with earth-moving equipment two - four times per year, during the summer months.
- Prior to turning, site personnel will ensure that soil is not so dry as to generate significant dust, nor overly saturated.
    - If soil is dry, water from within the landfarm containment area will be used as a moisture source and sprayed on the piles. If no accumulated water is available, a freshwater supply will be used.
    - If the windrows are saturated, aeration will be conducted at a later date.

2.3.3 Nutrient Amendment – Pilot Project

- Two pilot piles in the landfarm facility were treated in 2012 with 400 gallons of sewage sludge as a nutrient source.
- Depending on the effectiveness of this treatment (to be determined by Fall 2013), future additions of sewage sludge will be determined by Environment Department, and procedures updated at that time.

2.4 Sampling

All sampling of the landfarm will be conducted by the Environment Department.

- Windrows will be sampled annually at the end of the summer season to determine if remediation objectives have been met.
- For each 10 m of windrow length, one composite sample will be collected, each consisting of three sub-samples from the surface and three sub-samples at 1 m depth. Sub-samples will be taken approximately 3.3 m apart, and will be taken from both sides of the windrow.
- Samples should be analyzed for BTEX and PHC Fractions 1 – 4.

2.5 Removal of Soil from the Landfarm

- All removal of soil from the landfarm will be directed by the Environment Department, who will maintain a record of all soil removal operations, including the date, quantity of soil, location in the landfarm and end use.

2.5.1 Coarse-grained Material

- Will be assessed near the end of the summer season by Environment Department technicians for PHC product and odour.
- When PHC odours are no longer detected, this material will be removed to the PRSF and disposed of as PAG material.

2.5.2 Fine-grained Material

- When sample analysis indicates that concentrations of PHC contaminants are below GN guidelines, a soil pile or the appropriate section of a pile will be deemed acceptable for removal from the facility.
- The soil to be removed will be delineated by Environment Department staff.
- If agricultural/wildland criteria are met, soil can be stockpiled outside the landfarm and used in site works or reclamation activities.
- If industrial criteria are met, soil will be placed in the PRSF as PAG.
- GN criteria for agriculture/wildland use are targeted, but if remediation to this level is not feasible based on time/space, industrial-use criteria will be used (discretion of Environment Department).

3 WATER MANAGEMENT

3.1 Winter

- Snow should be removed as much as possible before spring to minimize the quantity of melt water inside the berm.
- This activity is to be undertaken by Site Services.
- Care should be taken to ensure contaminated snow/soil is not removed by leaving a base layer of snow (> 10 cm) in place.
- Removed snow will be placed in the TSF.

3.2 Summer

The monitoring and removal of any water accumulated within or around the berm will be directed by the Environment Department.

- Monitoring for water accumulation within the berm, or seepage through the berm will be conducted on a weekly basis, after freshet, when water is likely to be present.
- In the event of water accumulation or seepage, the ponded water will either be:
    - Collected and pumped to the adjacent Tailings Storage Facility after analysis for BTEX, lead, oil and grease per Part F, Item 6 of the Water License OR

- Sprayed on the windrows to increase moisture content, if required

- Water accumulating in the landfarm should not be discharged to the environment.

4 SUMMARY OF ACTIVITIES

The following table summarizes landfarm-related activities, possible analyses, and the records to be maintained. Environment Department will direct all activities.

Activity	Analysis	Frequency of Analysis	Record
Excavation of spill and transport of contaminated material	If unsure of full excavation - F1-F4, BTEX	As needed	Date and time of excavation; estimated quantity of excavated soil; storage/disposal location of excavated soil, if applicable; any evidence of remaining product
Contaminated soil additions to landfarm	If contaminant source unknown, F1-F4, BTEX, metals, oil and grease, VOCs (at discretion of Environment Department)	Prior to soil addition at facility	Date and time; quantity of soil; original location; landfarm location; spill/excavation record # or storage container label
Soil aeration	N/A	Two - four times during summer	Date and time; location; soil condition (moisture, odour, etc.)
Soil treatment with sewage sludge as nutrient supplement	Visual inspection to ensure proper incorporation	At least once during summer on selected windrows	Date and time; type of treatment (aeration or nutrient amendment); location in landfarm; any odour noticed during aeration
Sampling for progress of remediation	Hydrocarbon vapour in headspace (by PID); F1-F4, BTEX (laboratory)	Vapour – as needed; Laboratory - annually	Date and time; location; odour; laboratory report;
Soil removal from landfarm	Removal subject to meeting GN criteria	N/A	Date and time; location; quantity of soil removed; final location
Ponded contact water	BTEX, oil and grease, lead – as per Part F, Item 6 of Water License	Prior to any dewatering; if re-used in landfarm, no sampling necessary	Date and time, location, laboratory report, Annual Report
Seepage	Visual inspection	Weekly during summer	Location, extent, approximate depth, evidence of sheen
Identification of maintenance requirements	Visual inspection of facility	Twice annually during summer	Inspected areas; condition of berm and base; previously unidentified safety concerns

5 ASSESSMENT AND REPORTING

5.1 Feasibility

After two seasons of treatment in the landfarm (Fall 2013), degradation rates of PCH contaminants will be assessed to estimate the total remediation time required under these conditions.

- If remediation to GN guidelines is feasible within the life-of-mine timeframe, landfarm operations will continue, with aeration and possible nutrient amendments as described above.
- If rates of TPH degradation are not sufficient through this method, alternate options will be further investigated (see Landfarm Design and Management Plan – Section 5).

5.2 Reporting

- A report of landfarm activities will be prepared annually by Environment Department, indicating the volume of material added to the facility, amount of material removed and disposal or re-use location, all analysis results, volume and type of nutrient addition, visual inspection results and volume of contact water pumped.
- This information will be appended to AEM's NWB Annual Report.

5.3 Plan Review and Continual Improvement

- The Landfarm Design and Management Plan will be reviewed annually by the Meadowbank Environmental Superintendent in consultation with the Mine General Manager and be updated at least every two years of operation.

CONSTRUCTION COMMERCIALE & INSTALLATION PÉTROLIÈRE INC.

ESSAIS ET INSPECTIONS DE LA TUYAUTERIE

TERMINAL: Agnico EAGLE (meadowbank) N° TERMINAL: ____

PROJET: ____ N° PROJET: ____

DATE DE L'ESSAI: 18 septembre 2013

TRAVAUX EFFECTUÉS PAR: Denis Plamondon

TYPE DE L'ESSAI ☐ AIR ☐ AZOTE ☑ HYDROSTATIQUE

PRESSION DE L'ESSAI 125 LB/PO²

LIQUIDE DE DÉTECTION DE FUITE: ____

N° DESSIN: ____

IDENTIFICATION DE LA CONDUITE	PRODUIT	LONGUEUR APPROX. PIEDS	DIA. PO.	# DE JOINTS	SYMBOLE DES SOUDEURS	CONDITIONS INITIALES PRESSION LB/PO²	HEURE	T (°F)	CONDITION FINALES PRESSION LB/PO²	HEURE	T (°F)	RÉSULTATS A	R
conduite alimentation réservoir powerhouse	Diesel		4"	/	/	125 Lbs	11h25	0°C	132	VAlve de Fectueuse Reprise			↓
conduite alimentation réservoir power House	Diésel		4"	/	/	130 lbs	13h20	0°C	128	15h30	-3°C		X

RADIOGRAPHIE 5% REQUISE ☐ OUI ☑ NON

RADIOGRAPHIE 100% REQUISE ☐ OUI ☑ NON SI OUI, LOCALISER LE OU LES JOINTS

SIGNATURE DU REPRÉSENTANT DE ~~L'IMPÉRIALE~~ La mine AGNICO EAGLE ____ DATE: 18 sept 2013

SIGNATURE DU REPRÉSENTANT DE L'ENTREPRENEUR ____ DATE: 18 sept 2013

Shawn Valiquette

SM CONSTRUCTION INC.

SIEGE SOCIAL
15971, boul. de la Colline Québec (Québec) G3G 3A7 Tél. : (418) 849-7104
Téléc. : (418) 849-6464 (418) 849-8599

SUCCURSALE
3430, boul. des Entreprises Terrebonne (Québec) J6X 4J8
Tél. : (450) 477-7986 Téléc. : (450) 477-3942

PIPING - TESTS AND INSPECTION

SITE: Agnico-Eagle (Meadow Bank)

PROJECT: ______ PROJECT No: ______

TEST DATE: September 18th 2013

WORK DONE BY: Denis Plamondon

TEST TYPE: [ ] AIR [ ] AZOTE [X] HYDROSTATIC

PRESSURE TEST: 125 LB/IN²

LIQUID FOR LEAK DETECTION: ______

DRAWING No: ______

PIPE IDENTIFICATION	PRODUCT	LENGHT APPROX. (FT)	DIA. IN.	# OF WELD SEAM	WELDER SYMBOL	INITIAL CONDITIONS PRESSURE LB/IN²	INITIAL CONDITIONS TIME	INITIAL CONDITIONS T (°C)	FINAL CONDITIONS PRESSURE LB/IN²	FINAL CONDITIONS TIME	FINAL CONDITIONS T (°F)	RESULTS A	RESULTS R
Power House, tank supply piping	Diesel		4"	--	--	125	11 h 25	0 °C	132	Defective valve, take over			X
Power House, tank supply piping	Diesel		4"	--	--	130	13 h 20	0 °C	128	15 h 30	-3 °C	X	

X-RAY 5% REQUIRED: [ ] YES [X] NO

X-RAY 100% REQUIRED: [ ] YES [X] NO IF YES, LOCATE WELD SEAMS

AGNICO-EAGLE'S REPRESENTATIVE SIGNATURE: ***See original version for signature*** DATE: 2013-09-18

SM CONSTRUCTION'S REPRESENTATIVE SIGNATURE: ***See original version for signature*** DATE: 2013-09-18

Aboriginal Affairs and Northern Development Canada | Affaires autochtones et Développement du Nord Canada

WATER USE INSPECTION REPORT FORM

Date: June 5 and 6, 2013	**Licensee Rep.** Jeffery Pratt, Environmental Coordinator, Kevin Buck Environmental Superintendent
Licensee: Agnico-Eagle Mines Ltd. (AEM)	**Licence No: 2AM-MEA0816**

Comments: A compliance inspection was conducted on the 05th and 06th of June, 2013. Jeffery Pratt, Environmental Coordinator accompanied C. Wilson and A. Shouldice on the inspection of the Meadowbank Gold Project.

WATER SUPPLY

Source(s): Third Portage Lake	**Quantity used:** NI
Owner:/Operator: Agnico-Eagle Mines Ltd.	

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Intake Facilities: A	**Storage Structure:** A	**Treatment Systems:** A	**Chemical Storage:** A
Flow Meas. Device: NI	**Conveyance Lines:** A	**Pumping Stations:** A	**Screen :** A

Comments:

- Water is pumped from Third Portage Lake to a central holding tank that supplies both the camp facilities and mill. For safety reason the Inspector was unable to enter the mill facilities to photograph the flow meter for the fresh water intake during the inspection; the Proponent shall provide the Inspector will the total fresh water consumed to date for June 06, 2013.
- The Proponent foresaw overages in the annual water consumption despite the water reclaim project. They applied in April 2013 to the Nunavut Water Board for an amendment to the total annual water volume.
- Water volumes have exceeded the licensed amount since May.

WASTE DISPOSAL

Comment:

Waste water

- Seepage from the east dyke is directed into two sumps which are located in the "D" and "C" Pit.
- It is unclear to the inspector the specific routes of the water management system. The Inspector requests a site map and a brief elaboration of current water pumping routes.
- What appeared to be a water line was noted from Second Portage Lake over East dyke to a pump shack near pit "C".
- The Proponent will clarify the measure being taken to protect the fish habitat of Vault Lake. The Vault rock storage facility is being utilized though water management systems appear to not be in place. While the construction continues around Vault Lake in preparation for dewatering, the Lake is protected as it is fish bearing waters. Waste water must be managed to ensure no access into this natural water body.

Tailings and Rock Storage Facilities

- Waste rock is sorted in the pit into marginal, PAG and NPAG. The PAG rock is secured in a pile which is capped with 4m of NPAG.
- Due to freshet the site is experiencing an increase in surface runoff water. Water was noted entering into the tailing facility from the diversion ditch though a culvert. The Inspector was informed that the tailing facility was experiencing low levels of water due to: over estimated levels of annual precipitation, runoff water and freezing issues during the winter. This has all contributed to the reclaim water barge to be temporary offline.
- During the winter tailings discharge pipes segments froze which must be left to thaw. Tailings discharge was noted on the surface of Stormwater dyke and adjacent to the waste rock storage facility's RF-1. This discharged material must be secured in the tailings facility before the term of the next inspection. The Proponent is encouraged to manage incidents like this as all tailing must be directed to the facility.
- The construction of the vault dyke is complete. Waste rock is being sorted and deposited at the vault waste rock storage facility. The monitoring requirements shall be fulfilled as soon as practically possible to ensure all waste water is secured.
- The Proponent shall submit a Construction Summary Report to the Board and Inspector 90 days following the completions of any structure designed to contain, withhold, divert, or retain water or waste as per item 26 Part D, Schedule D item 1. Specifically the diversion ditches constructed this winter

Contaminated Soils

- Contaminated soils from spills around site have historically been stored in Quarry 22 located on the All Weather Road near the Meadowbank Exploration Project.
- Soil will continue to be moved to the Landfarm facility within the mine site before November 2013.
- The Proponent will submit a Plan with the 2013 Annual report which will consider the measure that will be taken to clean up and monitor Quarry 22 and 5.
- Contaminated soils from Quarry 22 will be shaken and have large rocks and garbage

removed before entering into the Landfarm.

- The Proponent will submit to the Inspector a Rock Reject Plan (or an alternative) which will consider the removal and treatment of rocks from the Landfarm before November 30th, 2013.
- The Proponent will submit to the Inspector the monitoring results from the Landfarm sump (ST-14) before the term of the next inspection (July 2013)

Progressive Reclamation

- The Proponent is encouraged to continue to progressively reclamate old buildings and unused equipment and material. This will reduce overall reclamation at the end of mine.
- A loose sediment curtain used during dewatering still remains in the third portage lake. As soon as practically possible this curtain will be removed reasonably this has been noted in the last three inspection therefore action is require as it is considered litter.

Sewage: Sewage Treatment System: BIODISK

Natural Water Body: Yes	**Continuous Discharge** (land or water): **Water**	
Seasonal Discharge: NA	**Wetlands Treatment: NA**	**Trench:** None

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Discharge Quality: NI	**Decant Structure:** A	**Erosion:** A
Discharge Meas. Device: NI	**Dyke Inspection:** NA	**Seepages:** NI
Dams, Dykes: NA	**Freeboard:** NA	**Spills:** NI
Construction: A	**O&M Plan:** NI	**A&R Plan:** NI
Periods of Discharge: Cont	**Effluent Discharge Rate:** NI	

Comments:

- Treated sewage is discharged to Teardrop Lake from the sites Water Treatment Facility.
- Currently 3 biodisk are in operation to accommodate the sites 500-520 staff.

FUEL STORAGE:

Owner/Operator:

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Berms & Liners: NI	**Water within Berms:** NI	**Evidence of Leaks:** NA
Drainage Pipes: NI	**Pump Station & Catchments Berm:** NI	
Pipeline Condition: A	**Condition of Tanks:** NI	

Comments:

- A few small spills noted around site. The environment division deploy necessary measures immediately upon discovery.
- The site is experiencing low level of fuel. Some programs have been scaled back in a fuel conservation project while awaiting the arrival of the first barge in July.

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected	**Owner /Operator:** Agnico-Eagle Mines Ltd.	
0	**AANDC:**	
Signs Posted	**SNP:** A	**Warning: None**
Records & Reporting: Annual Report submitted		
Geotechnical Inspection: NI		

Comments:

- Monitoring stations and waste disposal facilities have been furnished with signage

General Comments:

- During the inspection it was noted that dust control measures needed to be deployed. The Proponent will discuss further the Plan with regards to dust suppression with the Inspector before the term of the next inspection.
- The Proponent shall secure; wind blow debris like expanded foam, wire, and plastic associated with the project the site before the term of the next inspection. Debris was noted in numerous places around site.
- Grouting will not be undertaken this year at the east or bay goose dyke.
- A capping program took place on the bay goose dyke earlier this year and is complete.
- Some areas of subsidence were noted along the driving surface of both dykes and a large area on the boat launch.

Non-Compliance of Act or Licence:

All issues identified during this inspection have or will be address as discussed in this report.

Failure to undertake the actions required as described in this inspection report, and to the satisfaction of the Inspector, may result in enforcement action(s) being undertaken pursuant to

RP

the *Nunavut Waters and Nunavut Surface Rights Tribunal Act.*

Christine Wilson
Inspector's Name

Inspector's Signature

Jeffrey Pratt
Representative Name, Title

Representative Signature

Cc: Erik Allain- Manager Field Operations
Cc: Phyllis Beaulieu – Manager Licensing- Nunavut Water Board

Contact Information:
Christine Wilson
Resource Management Officer
Aboriginal Affairs and Northern Development Canada
Building 918 – Box 100
Iqaluit, Nunavut XOA OHO
867-975-4296 Ph
867-979-6445 Fx
Christine.Wilson@aandc.gc.ca

AGNICO EAGLE

July 14, 2013

Christine Wilson
Resource Management Officer
Nunavut Regional Office
Tel: 1-(867)-975-4296
Fax: 1-(867)-979-6445
Christine.Wilson@aandc.gc.ca

RE: RESPONSE TO WATER USE INSPECTION REPORT – DATED JUNE 5 & 6 2013 – LIC#: 2AM-MEA0816

Ms. Wilson,

Thank you for your inspection report dated June 5 & 6, 2012.

Please note the following actions in response to your inspection and the concerns raised in your report,

1) **Water Supply – The inspector was unable to enter the mill facilities to photograph the flow meter for the fresh water intake during the inspection: the Proponent shall provide the inspector will the total fresh water consumed to date for June 06, 2013;**

You will find, attached, a table indicating the quantities of fresh water used at the Meadowbank Site between January 1 and the date of your report, June 6, as you requested.

2) **Waste Water – a) It is unclear to the inspector the specific routes of the water management system. The Inspector requests a site map and a brief elaboration of current water pumping routes;**

I have provided a map of the current water pumping locations on the Meadowbank site. As discussed during your inspection, the internal sumps within the mine will move as the mine progresses. However the location, in which the water is pumped, does not change. I have also attached a chart that depicts where each sump location is pumped to.

b) What appeared to be a water line was noted from Second Portage Lake over East dyke to a pump shack near pit "C";

The pipe that was identified during this inspection was put in place to be used as a discharge for East Dike seepage (if needed). In April, 2013 a request for a modification was submitted to the NWB to allow for the pumping of the seepage to Second Portage Arm. The modification was approved by the Board on July 3, 2013. For now, AEM has not decided if they will discharge the seepage to Second Portage Arm. If AEM decides to use it, the inspector will be notified 10 days before proceeding.

***c)* The Proponent will clarify the measure being taken to protect the fish habitat of Vault Lake. The Vault Rock storage facility is being utilized though water management systems appear to not be in place. While the construction continues around Vault Lake in preparation of dewatering, the Lake in protected as it is a fish bearing waters. Waste water must be managed to ensure no access into this natural body;**

The Vault starter pit/ Quarry that was constructed will self-contain any runoff water in the vicinity of stripping waste rock and pit/quarry area.t. Regular visual inspections of the Vault Lake area have taken place to ensure that no run off water containing TSS is impacting Vault Lake. In addition our Engineering Department staff have conducted regular structural inspections and daily checks of waste rock – no wastewater to date has entered Vault Lake – if turbid runoff is noted then silt curtains will be deployed.

3) **Tailings and Rock Storage Facilities – a) The proponent shall submit a Construction Summary Report to the Board and Inspector 90 days following the completions of any structure designed to contain, withhold, divert, or retain water or waste as per item 26 Part D, Schedule D item 1. Specifically the diversion ditches constructed this winter;**

A construction report of the TSF, Diversion Ditch and Vault Dike s will be provided to AANDC Inspector on or before the next inspection..

b) During the winter tailings discharge pipes segments froze which must be left to thaw. Tailings discharge was noted on the surface of Stormwater dyke and adjacent to the waste rock storage facility's RF-1. This discharged material must be secured in tailings facility before the term of the next inspection. The

Proponent is encouraged to manage incidents like this as all tailing must be directed to the facility;

This area has been cleaned. As well, AEM will make sure that any future thawing of tailings lines be directed to the TSF.

c) The construction of Vault dyke is complete. Waste rock is being sorted and deposited at Vault waste rock storage facility. The monitoring requirements shall be fulfilled as soon as practically possible to ensure all waste water is secured;

As *stated in 2 c) of this letter: Engineering Department conducted regular structural inspections as well as daily checks of waste rock – no wastewater to date has entered Vault Lake – if turbid runoff is noted then silt curtains will be deployed. No seepage has been observed to date but any observed will be sampled in accordance with our Water License Part D and Item 24.*

4) **Contaminated Soils – a) The Proponent will submit a Plan with the 2013 Annual report which will consider the measure that will be taken to clean up and monitor Quarry 22 and 5;**

A plan will be submited with the 2013 Annual report which will consider measures that will be taken to remediate and monitor Quarry 22 and 5;

b) The Proponent will submit to the Inspector a Rock Reject Plan (or an alternative) which will consider the removal and treatment of rocks from the Landfarm before November 30, 2013;

This item is addressed in the Landfarm Design and Management Plan (February 2013) in section 4.2.2 & 4.3.2 on page 8. A copy of this management plan is included with this letter.

c) The Proponent will submit to the Inspector the monitoring results from the Landfarm sump (ST-14) before the term of the next inspection;

A copy of the results of the water from the Landfarm is attached. The results met the criteria stated in our Water License. The water was pumped back onto the piles for moisture addition.

d) Contaminated soils from Quarry 22 will be shaken and have large rocks and garbage removed before entering into the landfarm;

This item is addressed in the Landfarm Design and Management Plan (February 2013) in section 4.2.2 & 4.3.2 on page 8. The project to clean up Q22 commenced on July 8. Contaminated *materials will be separated from large rocky material and garbage. Contaminated soils will be brought to the onsite Landfarm.*

4) **Progressive Reclamation – a) The Proponent is encouraged to continue to progressively reclamate old buildings and unused equipment and material. This will reduce overall reclamation at the end of mine;**

AEM has actively implemented a progressive reclamation plan. To date 4M of NPAG waste rock has been placed around the perimeter of the Portage Rock Storage Facility. This information is contained in our revised Waste Rock and Tailings Management Plan (submitted to NWB with Annual Report, April, 2013 and is part of our overall Closure Plan). Currently we are updating our Closure Plan. In regards to infrastructure, unused buildings, equipment, and material, these items will be removed once we are sure they will no longer be needed.

b) A loose sediment curtain used during dewatering still remains in Third Portage Lake. As soon as practically possible this curtain will be removed reasonably this has been noted in the last three inspections therefore action is require as it is considered litter;

Removal of this curtain will take place in August 2013.

5) **Fuel Storage - A few small spills noted around site. The environment division deploy necessary measures immediately upon discovery;**

The environment department continues to work with the site services department at cleaning the small spills that have appeared since the snow melt. These spills will be cleaned prior to the next scheduled inspection

6) **General Comments – a) During the inspection, it was noted that dust control measures needed to be deployed. The proponent will discuss further the Plan with regards to dust suppression with the Inspector before the term of the next inspection;**

AEM has a Dust Suppression program. The program includes the application of liquid calcium chloride on site and selected mine site roads. The airstrip is watered approximately 30 minutes prior to the plane landing and again prior to takeoff. In addition the water truck is utilized on a *continuous basis when required. A written program will be provided prior to the next scheduled inspection.*

b) The Proponent shall secure; wind blow debris like expanded foam, wire, and plastic associated with the project the site before the term of the next inspection. Debris was noted in numerous places around site;

AEM has utilized the services of the summer students hired at the mine to clean up the areas around the site. Expanded foam, blasting wires, etc. noted especially around the diversion ditches and TSF were removed and disposed of in the onsite landfill.

c) Some areas of subsidence were noted along the driving surface of both dykes and a large area on the boat launch;

Engineering is monitoring all subsidence along the dikes. Some will be repaired and others will be left like that to monitor evolution. In addition an annual Geotechnical inspection is undertaken yearly by a third party and all results are discussed with the Meadowbank Dike Review Board annually.

I trust this meets with your requirements. Should you have any questions or concerns please feel free to contact me at (867) 793-4610 ext. 6728 or by email at jeffrey.pratt@agnicoeagle.com.

Sincerely,

Jeffrey Pratt
Environmental Coordinator
Agnico Eagle Mines Ltd.
Meadowbank Division
(867) 793-4610 ext. 6728
jeffrey.pratt@agnicoeagle.com

CC: Kevin Buck –AEM
Stephane Robert – AEM
Erik Allain – AANDC

Aboriginal Affairs and Northern Development Canada / Affaires autochtones et Développement du Nord Canada

WATER USE INSPECTION REPORT FORM

Date: July 29th-30th, 2013	**Licensee Rep.** Jeffery Pratt -Environmental Coordinator, Kevin Buck- Environmental Superintendent
Licensee: Agnico-Eagle Mines Ltd. (AEM)	**Licence No: 2AM-MEA0815**

Comments: A compliance inspection was conducted on the 29th-30th of July, 2013. Jeffery Pratt, Environmental Coordinator accompanied Inspector C. Wilson and A. Shouldice on the inspection of the Meadowbank Gold Project.

Pre inspection compliance review
On July 14th, 2013 Jeffery Pratt provided a response to the inspection report from June 5th-6th. The following is a summary of actions taken by AEM in response to deficiencies identified in the June Inspection report.

- Construction report for Tailing Storage Facility (TSF), Vault Dike, and Diversion Ditches has been submitted to the Nunavut Water Board and the Inspector.
- Areas where tailings were spilled have been cleaned up, with all signs of tailings removed.
- Removal of contaminated soils from quarries 22 and 5 is complete. All contaminated soil has been secured inside the landfarm facility.
- Progress has been made on sorting and separating reject materials entering landfarm.
- Windblown garbage and debris around site has been reduced through a site cleanup initiative.

Outstanding items
- Contaminated soil piled against the rear wall of the landfarm containment berm. AEM has committed to pushing the piles back once the rear pile is aerated. This is an ongoing concern from inspections conducted in 2012, specifically with regards to the containment of contaminated water.
- A Remediation Plan for quarries 22 and 5 is to be submitted with the 2013 Annual Report.
- Removal of a silt curtain in Third Portage Lake. The Licensee informed the Inspector that a dive team has been contracted to complete this task before year end.

Below is a summary of a pre inspection meeting on July 29th, 2013. The attendees include Kevin Buck, Environmental Superintendent; Jeffery Pratt, Environmental Coordinator with Agnico-Eagle Mines Limited; and Erik Allain, Manager Field Operations; Peterloosie Papatsie, Student; Atuat Shouldice, Casual; and Christine Wilson, Water Resource Officer, with Aboriginal Affairs and Northern Development Canada (AANDC).
- Fish out program of Vault Lake started on July 19th, 2013. The end date is projected for mid-September with a total of 58% of all the fish transferred from Vault to Wally Lake.
- A total of 400 fish netted to date in Vault Lake.
- North South Consulting contracted to coordinate fish out program.
- AEM employees are taking part in the release of live fish; this is an environmental initiative to introduce mine employees to the marine life in the area.
- The first barge has arrived and departed from Baker Lake. In total four (4) barges are scheduled to service Meadowbank's shipping needs for this 2013 season.
- The last barge is scheduled to haul the hazardous waste from the site.
- The dust suppression fluid which was being applied to the airstrip is no longer authorized by the charter airline. AEM has return to the application of water before each landing.
- Dust sampling program is being completed this year and will be submitted with the annual report.
- Silt curtain removal has been approved for this year and will commence in 2013.
- Phase two of the Central Dike has been delayed due to unavailable resources.
- A total of ten (10) deposition points for tailings slurry are being utilized around the TSF.
- Non- contact water diversion ditches are completed around the tailings storage facility.

WATER SUPPLY

Source(s): Third Portage Lake	**Quantity used:** 985396m^3
Owner:/Operator: Agnico-Eagle Mines Ltd.	

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Intake Facilities: NI	**Storage Structure:** NI	**Treatment Systems:** NI	**Chemical Storage:** NI
Flow Meas. Device: NI	**Conveyance Lines:** NI	**Pumping Stations:** NI	**Screen :** NI

Comments:
- As of June 6th, 2013 total water volume consumed was 985396 m^3. This is over the allowable limit by more than 250000 m^3
- The Proponent foresaw overages in the annual water consumption due to a reduced amount of reclaim water available in the TSF. Tailings deposition was limited to one

side of the facility during the winter months causing a reduction in beaching which contributes to the available reclaim water. AEM applied in April 2013 to the Nunavut Water Board for an additional 1000000 m^3 to the total annual water volume. This amendment has not yet been approved by the Board, though the Proponent continues to exceed the licensed amount.
- Water volumes in 2013 have exceeded the licensed amount since May.

WASTE DISPOSAL
Comment:

Waste water
- A map detailing the sumps and pumping station routes was provided to the Inspector.
- A pipe noted during the last inspection was confirmed as a discharge line for seepage water from East Dyke sumps. AEM was approved to discharge the East Dyke seepage water back into Second Portage Lake in 2013. The Inspector was informed by AEM that this discharge location will not be utilized in 2013 as resources are unavailable for sampling.

Tailings and Rock Storage Facilities
Vault
- The construction of the Vault Dyke is complete.
- Waste rock is being sorted and deposited at the vault waste rock storage facility. The Inspector requested a map detailing the proposed monitoring locations within the Vault deposit area.

Portage
- Water reclaim barge continues to be offline in the North Cell of the TSF.
- At the rear of the PRSF an area is filled with potentially contact/tailings water; this water is red in colour, and very cloudy. A road constructed around the PRSF separates this water from a lake referred to as NP-2. This water in NP-2 which borders the PRSF shows signs of seepage from the PRSF contact water sump. Note: the water in NP-2 immediately adjacent to the PRSF contact water sump has white foam floating on top and a red colour of sedimentation on the shore. The vegetation around NP-2 Lake is brown and appears to be dead.
- Samples have been collected at the PRSF contact water sump and NP-2 Lake.
- Results from these samples confirmed that contact water has seeped into NP-2 Lake.
- The Licensee will report to the Nunavut Water Board detailing the entirety of the situation surrounding the seepage water before October 5th, 2013.
- All contact water is to be managed as prescribed in the Water Management Plan (WMP) in accordance with Part H item 19.

Contaminated Soils
- All soils from quarries 22 and 5 have been moved into the Landfarm facility.
- The remediation pilot project is underway; sewage sludge was added to the center of the piles after aeration.
- The Proponent has committed to submitting a Plan with the 2013 Annual report which will consider the measure that must be taken to clean up and monitor quarry 22 and 5.
- All waste water from the landfarm facilities are to be contained within the landfarm. Any discharge from this facility must meet ST-35 discharge limits for fecal coliforms.

Progressive Reclamation
- The Proponent is encouraged to continue to progressively reclaim old buildings, unused equipment and material. This will reduce overall reclamation at the end of mine.
- An additional area has been created in the PRSF to house non-potentially acid generating rock (NPAG) material which will cap the TSF during reclamation.
- The proponent continues to cap the PRSF with 4m of NPAG material which will reduce the amount of reclamation work required during closure activities.

Landfill
- Unacceptable material was found in the landfill; aerosol containers, domestic waste, and oily rags.
- The Proponent will police this facility and operate it as detailed in the Landfill Design and Management Plan.
- Failure to properly police the Land fill facility will result in additional monitoring which will require the logging and reporting of all materials entering the facility to ensure compliance with the criteria set out in the current authorization.

Sewage: Sewage Treatment System: BIODISK

Natural Water Body: Yes	**Continuous Discharge** (land or water)**:** Water	
Seasonal Discharge: NA	**Wetlands Treatment:** NA	**Trench:** None

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Discharge Quality: NI	**Decant Structure:** NI	**Erosion:** NI
Discharge Meas. Device: NI	**Dyke Inspection:** NI	**Seepages:** NI
Dams, Dykes: NI	**Freeboard:** NI	**Spills:** NI
Construction: NI	**O&M Plan:** NI	**A&R Plan:** NI
Periods of Discharge: Cont	**Effluent Discharge Rate:** NI	

Comments:
During this inspection the Sewage Treatment System (STP) was not inspected.

FUEL STORAGE:

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Berms & Liners: NI	**Water within Berms:** NI	**Evidence of Leaks:** NA
Drainage Pipes: NI	**Pump Station & Catchments Berm:** NI	
Pipeline Condition: NI	**Condition of Tanks:** NI	

Comments:

Marshaling Facilities

- Expansion of the marshaling facilities tank farm is underway.
- The Inspector was informed by the Proponent that a small excavation that was noted in the 2012 inspection was due to the repair of a tear which occurred during general maintenance.

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected	**Owner /Operator:** Agnico-Eagle Mines Ltd.	
2	**AANDC:** 2	
Signs Posted: U	**SNP:** U	**Warning:** A
Records & Reporting: Annual Report submitted		
Geotechnical Inspection: To be completed in September of 2013		

Comments:

- Waste disposal facilities have been furnished with signage
- Sampling locations are lacking signage. This is ongoing from previous years. All sampling location will be fitted with signage before the November 1st, 2013. These locations will be photographed and logged for sampling consistency purposes and submitted to the Inspector before June 15, 2014.
- A review of the QA/QC and sampling collection protocols is recommended. Sampling and analysis of such samples will be a focus of the next Inspection.

General Comments:

- Quarry 23 is being used as a storage area for old or unused materials and equipment.
- This area is found to be in an unacceptable state; pieces of broken/burnt equipment are located throughout the quarry.
- All maintenance is to be completed in a designated area; many pieces of equipment have hydrocarbon staining beneath them and/or the batteries were found to still be attached. The Proponent will conduct these activities in accordance with Part H item 8.
- During the inspection it was noted that dust control measures needed to be deployed. The Proponent has provided to the Inspector with an account of the measures taken to suppress dust onsite. The results of the on-going dust monitoring program will be submitted to the Inspector before the date of the next inspection.
- Material used during the construction of the airstrip extension is noted along the shore of Third Portage Lake. This material if not to be utilized during construction must be removed before winter as this is considered waste.

Non-Compliance of Act or Licence:

Part H item (8): Failure to implement spill control measures
Part H item (19): Failure to carry out plans to their full extent

AEM is reminded of their duty to report to the Nunavut Water Board before October 5th, 2013 with regards to the situation surround the seepage water at ST-16.

Failure to undertake the actions required as described in this inspection report, and to the satisfaction of the Inspector, may result in enforcement action(s) being undertaken pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act.*

Christine Wilson
Inspector's Name

Inspector's Signature

Representative Name, Title

Representative Signature

Cc: Andrew Keim- A/Manager Field Operations
Cc: Erik Allain- Manager Field Operations
Cc: Phyllis Beaulieu – Manager Licensing- Nunavut Water Board

Contact Information:
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Resource Management Officer
Aboriginal Affairs and Northern Development Canada
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AGNICO EAGLE

November 12, 2013

Christine Wilson
Water Resource Officer- Kivalliq Region
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Aboriginal Affairs and Northern Development Canada
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RE: RESPONSE TO WATER USE INSPECTION REPORT – DATED JULY29th-30th, 2013 – LIC#: 2AM-MEA0816

Ms. Wilson,

Thank you for your inspection report dated July 29 & 30, 2013 and received September 24th.

Please note the following actions in response to your inspection and the concerns raised in your report.

Outstanding items

- ***Contaminated soil piled against the rear wall of the landfarm containment berm. AEM has committed to pushing the piles back once the rear pile is aerated. This is an ongoing concern from inspections conducted in 2012, specifically with regards to the containment of contaminated water.***

On October 18th the edges of the contaminated soil piles within the Landfarm were moved to allow for accumulation of potential run off water. Please see pictures below. This was preformed around the entire edge not just the pile against the rear wall. As a result any water collected will be diverted to the landfarm floor. As per our Landfarm Management Plan this water is sampled and would be pumped to the Tailings Facility (if necessary at freshet – in 2012 it was not necessary to pump any water out).

AGNICO EAGLE

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- ***A Remediation Plan for quarries 22 and 5 is to be submitted with the 2013 Annual Report.***

In summer 2013, all the material of quarries 22 and 5 was removed and sent to the landfarm (below industrial guidelines) or waste rock pad (above industrial guidelines). In 2014, we will conduct soil sampling to confirm all the contaminated material has been removed. A complete description of the remediation of quarries 22 and 5 will be included in the 2013 Annual Report.

- ***Removal of a silt curtain in Third Portage Lake. The Licensee informed the Inspector that a dive team has been contracted to complete this task before year end.***

Here is a September 25th excerpt, from a report given by the Dyke General Foreman, who was also one of the divers:

"Just a small report about the silt curtain removal work that was done the past week.

We did our first dives day has inspection and analysis, we founded that the curtain is more than the 800m, depth varies from 15ft up to 50ft. The barrier is divided by section of 20 to 30m long, all attached by tie-rap in the middle and the curtain have either ropes or metal cables that are along each sides attached by metal shackles at the extremity. The curtain who was installed in a V shape had drowned and closed on herself at the bottom so we had a 2 liner thickness to work on. It is actually cover with sediments, has some rock on it at some points and even went through a metal casing that was left from old exploration research. Those are the main points that are making it difficult to lift up the barrier at the surface because it creates a lot of a suction effect.

At our second dives day, we were able to retrieve a 30m piece and bring it on shore, the proper work sequence is to detach the shackles, attach the extremities with a rope on to the boat, lift it up a bit then cut all the tie-raps and finally pull it out with the boat. We fought a lot with the boat to lift up and bring that part at the surface, it finally ripped off and we were able to tow it at the shore.

The bottom of the lake is very muddy and creates a big sediment fog so we had to work blind every time we wanted to attach ropes, cut the curtain and unscrew the shackles.

We could have done more but external factors such as the plane delay for 24hrs and the bad weather we had on Saturday has slowed us down quite a bit. We had some problem with the over board motor of the Alaskan, the propeller wouldn't go reverse and we had to start it by hand every time it stalled.

After debriefing, we came to a conclusion that it would be a job for at least one week with 2 divers. We would repeat the same sequence of work but we could attach longer sections with a long metal cable that we could bring to shore and linked it up to a dozer(for example) that could pull it, the 50 force motor on the boat doesn't have the capacity to lift up a whole section."

Further review and planning for the removal of this curtain will take place throughout the winter. Items to considered are:

a) Is there going to be more of an environmental effect removing the barrier now that there is a buildup of TSS on top of the curtain, therefore better off to leave the curtain in place ?

b) If removal is determined: Logistics of when this will take place, equipment required and contractor (diver) availability.

Water Supply

i) Update: Amendment for fresh water consumption: NWB technical meeting and pre-hearing conference completed in Baker Lake on October 16th and 17th, 2013. Final written hearing planned for January 17th, 2014. There were no objections from intervenors or the NWB to the increase in water consumption.

Waste Disposal

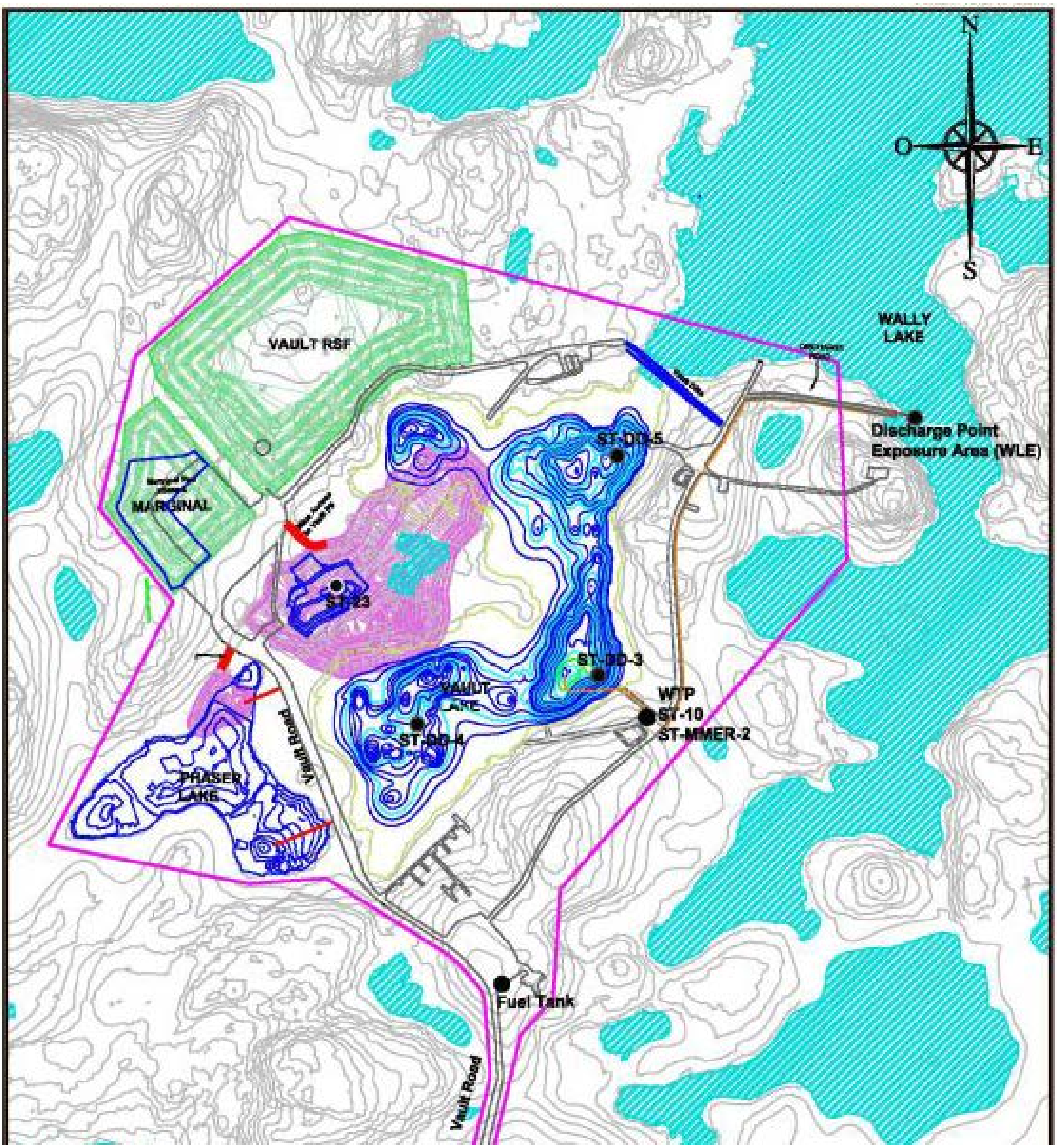
Tailings and Rock Storage Facilities

Vault

- ***Waste rock is being sorted and deposited at the vault waste rock storage facility. The Inspector requested a map detailing the proposed monitoring locations within the Vault deposit area.***

Please find the following map depicting the monitoring locations within the Vault area.

AGNICO EAGLE



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Portage

- ***At the rear of the PRSF an area is filled with potentially contact/tailings water; this water is red in colour, and very cloudy. A road constructed around the PRSF separates this water from a lake referred to as NP-2. This water in NP-2 which borders the PRSF shows signs of seepage from the PRSF contact water sump. Note: the water in NP-2 immediately adjacent to the PRSF contact water sump has white foam floating on top and a red colour of sedimentation on the shore. The vegetation around NP-2 Lake is brown and appears to be dead.***
- ***Samples have been collected at the PRSF contact water sump and NP-2 Lake.***
- ***Results from these samples confirmed that contact water has seeped into NP-2 Lake.***
- ***The Licensee will report to the Nunavut Water Board detailing the entirety of the situation surrounding the seepage water before October 5th, 2013.***
- ***All contact water is to be managed as prescribed in the Water Management Plan (WMP) in accordance with Part H item 19.***

AEM provided to the NWB a copy of the "Preliminary AEM Report – Seepage Water From Waste Rock Storage Facility – Sample Location ST-16" on October 5, 2013. A more detailed report will be provided in the next weeks to the inspectors.

Contaminated Soils

- ***The Proponent has committed to submitting a Plan with the 2013 Annual report which will consider the measure that must be taken to clean up and monitor quarry 22 and 5.***

A complete description of the remediation of quarries 22 and 5 will be included in the 2013 Annual Report

- ***All waste water from the landfarm facilities are to be contained within the landfarm. Any discharge from this facility must meet ST-35 discharge limits for fecal coliforms.***

As described in the Landfarm Design and Management Plan ver 3 (Feb. 2013), under section 4.7.2 AEM will sample for parameters outlined in Part F, Item 16 which refers to discharge to land from a fuel containment area. As described in the plan the water will either be sprayed back on the piles within the Landfarm for moisture or it will be transferred into the Tailings Storage Facility (TSF). No discharge will be send to the environment. The Landfarm water may have fecal coliforms present from the use of the sewage sludge on the piles for bioremediation, especially in the spring in summer months when there will be open water and the piles can be opened and have the sludge added. Fecal Coliforms within the piles or ice will not survive the winter season due to freezing temperatures. If water is to be removed it will be pumped to the adjacent TSF. The adjacent TSF already accepts water from the Stormwater Management Pond (Tear Drop Lake) as per our approved Operation & Maintenance Manual - Sewage Treatment Plant. The Stormwater Management Pond, which is the former ST-35 location and is related to a former Type B License when this water was discharged to Third Portage Lake (TPL), is no longer discharged to TPL. In fact ST-35 is no longer a sampling station. Further to this any water in the TSF is not discharged to the environment (TPL) AEM does not believe it necessary to sample for fecal coliforms for these reasons.

Progressive Reclamation

- ***The Proponent is encouraged to continue to progressively reclaim old buildings, unused equipment and material. This will reduce overall reclamation at the end of mine.***

As suggested by the AANDC officers, AEM moved forward with minimizing the amount of seacans stored in Q23. A total of 86 seacans were removed from Q23 and sent south during the sealift season. The contents were sorted for later use or sent south as scrap.

AEM also continues to add our final cover of NPAG material to the edges of the RSF and commenced a 2:1 slope in Q22.

Landfill

- ***Unacceptable material was found in the landfill; aerosol containers, domestic waste, and oily rags.***
- ***The Proponent will police this facility and operate it as detailed in the Landfill Design and Management Plan.***
- ***Failure to properly police the Land fill facility will result in additional monitoring which will require the logging and reporting of all materials entering the facility to ensure compliance with the criteria set out in the current authorization.***

Please find the below Landfill inspection form in which the environmental technicians complete when doing formal inspections of the landfill. I have also attached a completed form for your convenience. Daily visual inspections are completed and any findings are entered into our interdepartmental communication tool. Formal inspections are completed on a weekly basis and the findings are recorded on the inspection form. If any improper items are observed every effort is given to find out who would have disposed of the material in the improper manner. Meetings are held with the offending department/personnel to prevent reoccurrences.

The environment department has also continued to attend intradepartmental tool box meetings to discuss various environmental programs around the mine site. One of the programs specifically pertains to the proper waste management.

Agnico-Eagle Mines: Meadowbank Division
Environment Department

Landfill Environmental Inspection report

Date: **Inspected By:**
Location: **Responsible department:**

Subject	Conform	Non-conform	N/A	Picture(s) #
Visual sign of leachate				
Visual sign of runoff or seepage. If so, record and report the observation and the flow (PART I Item 10 and 15 of the NWB)				
Visual sign of windblown debris				
Presence of a rockfill berm to act as a wind shield				
Ash testing done (once per year) and Ashes colder than 60°				
Geotechnical inspection conducted (once per year) NWB PART I Item 12				
Volume of waste send to the landfill compiled (month end data)				
Presence of salvageable material				
Presence of hazardous material				
Latest sub-landfill covered by a minimum of 0.3 to 1 meter of waste rock				
Sign or presence of wildlife				

Note: Refer to the Landfill Design and Management Plan section 3.2 and 3.3 for Acceptable and Unacceptable waste at the landfill

Comments:

1

Agnico-Eagle Mines: Meadowbank Division
Environment Department

Recommendations:

Picture 1: Description

2

SURVEILLANCE NETWORK PROGRAM (SNP)

- ***Sampling locations are lacking signage. This is ongoing from previous years. All sampling location will be fitted with signage before the November 1st, 2013. These locations will be photographed and logged for sampling consistency purposes and submitted to the Inspector before June 15, 2014.***

As discussed with the inspector all signs had been erected in the fall of 2012 and the particular location in which the inspector had not seen a sign was due to the increase in water of the area during the freshet.

All monitoring stations do have appropriate signage. Please find the attached pictures.

AGNICO EAGLE

Example of the signage in place:

MW-08-02

The following are our locations with the signage:

ST-5

ST-6

ST-9

Regional Office:
93, Rue Arseneault
Bureau 202
Val d'Or, Quebec J9P 0E9
Tel: 819-825-3744

Baker Lake Office:
P.O. Box 540
Baker Lake, Nunavut X0C 0A0
Tel: 867-793-4610 Fax: 867-793-4611

AGNICO EAGLE


ST-10


ST-14


ST-16


ST-18


ST-19


ST-20


ST-21


ST-23


ST-40


MW-08-03


ST-S-1


ST-S-2

Regional Office:
93, Rue Arseneault
Bureau 202
Val d'Or, Quebec J9P 0E9
Tel: 819-825-3744

Baker Lake Office:
P.O. Box 540
Baker Lake, Nunavut X0C 0A0
Tel: 867-793-4610 Fax: 867-793-4611

General Comments:

- ***Quarry 23 is being used as a storage area for old or unused materials and equipment.***
- ***This area is found to be in an unacceptable state; pieces of broken/burnt equipment are located throughout the quarry.***
- ***All maintenance is to be completed in a designated area; many pieces of equipment have hydrocarbon staining beneath them and/or the batteries were found to still be attached. The Proponent will conduct these activities in accordance with Part H item 8.***

Quarry 23 is being used as a temporary storage area for equipment that is not currently being used, but may be used in the future. It also contains some drill cores, which AEM is required to keep, steel and pipe product and electrical products. The broken and/or burnt equipment in this area continue to be stripped for the parts on the equipment. There is no maintenance being performed at this site

AEM is working on a plan to remove the unusable derelict equipment during the upcoming 2014 sealift. .

The minor hydrocarbon staining that was noted has been cleaned up. Inspections are completed regularly in quarry 23 by the environment department.

- ***During the inspection it was noted that dust control measures needed to be deployed. The Proponent has provided to the Inspector with an account of the measures taken to suppress dust onsite. The results of the on-going dust monitoring program will be submitted to the Inspector before the date of the next inspection.***

Please find below the up to date results from the dust monitoring study. No standards for dustfall are available for Nunavut. Results of the dustfall analysis will be compared to the Alberta Environment Department recreational area guideline of 0.53mg/cm2/30d, to provide context. This table depicts the average monthly results at the Meadowbank project.

Regional Office:
93, Rue Arseneault
Bureau 202
Val d'Or, Quebec J9P 0E9
Tel: 819-825-3744

Baker Lake Office:
P.O. Box 540
Baker Lake, Nunavut X0C 0A0
Tel: 867-793-4610 Fax: 867-793-4611

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	Exposure	Total dustfall	Total dustfall 30 days	Total fixed dustfall	Total fixed dustfall (30 days)
Units	days	mg	mg/cm²/ 30 days	mg	mg/cm²/30 days
Alberta Environment Department Recreational Area Guideline		NA	NA	NA	0.53
DF-1 (Emulsion)	28.2	47.9	0.6148	44.2	0.5702
DF-2 (TCG)	28.2	33.8	0.4344	27.9	0.3644
DF-3 (TPE)	28.2	37	0.4636	32.9	0.4212
DF-4 (Vault Road)	28.2	17.1111	0.2087	13.8889	0.1668

AEM has a dust control program and will continue to monitor for dust and follow our program. All the results from 2013 will be submitted in the annual report.

Dust Suppression Plan

1) Mine roads are water continuously using water truck.   As needed.

2) Site roads have liquid calcium chloride applied, including from Meadowbank Gatehouse to Exploration Camp

3) Air strip has water applied 30 minutes or less prior to the arrival of aircraft. And again 15 minutes before take-off of the aircraft. We are currently researching a more permanent dust suppressant method for the air strip; this is subject to Airline approval.

4) Calcium Chloride Flakes have been order for Dust suppression 2014. These will be arriving during the 2013 barge season.

- ***Material used during the construction of the airstrip extension is noted along the shore of Third Portage Lake. This material if not to be utilized during construction must be removed before winter as this is considered waste.***

AGNICO EAGLE

Removal of this material will take place prior to November 30, 2013. AEM decided to wait until the tundra froze to remove this material to avoid rutting and creating an even worse environmental impact. Photos of the removal from this location will be sent to the inspector as soon as this project is completed.

Non-Compliance of Act or Licence:

Part H item (8): Failure to implement spill control measures

The area in Q23 in which the minor spill was noted has been cleaned up. Departments involved were also made aware that spill control measures must be put in place to prevent spillage and to immediately clean up any spillage if it occurs.

Part H item (19): Failure to carry out plans to their full extent

There is no Part H Item (19) in Licence No: 2AM-MEA0815. AEM ask the inspector for clarification on this prior to commenting.

I trust this meets with your requirements. Should you have any questions or concerns please feel free to contact me at (867) 793-4610 ext. 6728 or by email at jeffrey.pratt@agnicoeagle.com.

Sincerely,

Jeffrey Pratt
Environmental Coordinator
Agnico Eagle Mines Ltd.
Meadowbank Division
(867) 793-4610 ext. 6728
jeffrey.pratt@agnicoeagle.com

CC: Kevin Buck –AEM
Stephane Robert – AEM
Erik Allain – AANDC
Phyllis Beaulieu – Nunavut Water Board

Landfill Environmental Inspection report

Date: *2013-10-14* **Inspected By: Martin Theriault**
Location: Landfill **Responsible department: Site services/Mine**

Subject	Conform	Non-conform	N/A	Picture(s) #
Visual sign of leachate			X	
Visual sign of runoff or seepage. If so, record and report the observation and the flow (PART I Item 10 and 15 of the NWB)			X	
Visual sign of windblown debris	X see comments			
Presence of a rockfill berm to act as a wind shield	X			
Ash testing done (once per year) and Ashes colder than 60°	X July 2013			
Geotechnical Inspection conducted (once per year) NWB PART I Item 12	X			
Volume of waste send to the landfill compiled (month end data)		X Missing September data		
Presence of salvageable material	X			
Presence of hazardous material	X			
Latest sub-landfill covered by a minimum of 0.3 to 1 meter of waste rock	X			
Sign or presence of wildlife	X		X	

Note: Refer to the Landfill Design and Management Plan section 3.2 and 3.3 for Acceptable and Unacceptable waste at the landfill

Comments: Very windy the day of the inspection, some debris were flying but not going out of the landfill as the rockfill berm were about 10 meters high.
We need the amount of waste transfert to the landfill for the month of September

Recommendations: Make sure to keep track of every load going in the landfill and to send the month end report to the environment department

Picture 1: Landfill

NUNAVUT IMPACT REVIEW BOARD
NUNAVUMI AVATILIKIYIN KATIMAYIN

NIRB File No.: 03MN107
NWB File No.: 2AM-MEA0815

November 14, 2013

Kevin Buck
Environment Superintendent
Agnico Eagle Mines Limited - Meadowbank Division
P.O. Box 540
Baker Lake, NU X0B 0C0

Sent via email: kevin.buck@agnico-eagle.com

Re: <u>The Nunavut Impact Review Board's 2013 Site Visit Report for the Meadowbank Gold Project</u>

Dear Kevin Buck:

The Nunavut Impact Review Board (NIRB) would like to thank Agnico Eagle Mines Ltd. (AEM) for the opportunity to visit the Meadowbank Gold mine project on September 13, 2013. As a result of the site visit, a report has been prepared outlining the observations made.

Please find enclosed the *2013 Site Visit Report for the Nunavut Impact Review Board's Monitoring of Agnico Eagle Mines Ltd.'s Meadowbank Gold Project* for your information and note that it has also been posted to the NIRB's online public registry at the following link: http://ftp.nirb.ca/03-MONITORING/03MN107-MEADOWBANK%20GOLD%20MINE/04-SITE%20VISITS/2013/01-REPORT/.

Should you have any questions regarding the NIRB's Monitoring program for the Meadowbank Gold project, please do not hesitate to contact the undersigned at (867) 793-4633 or sgranchinho@nirb.ca.

Sincerely,

Granchinho

Sophia Granchinho, M.Sc., EP
Senior Technical Advisor & Meadowbank Project Monitoring Officer
Nunavut Impact Review Board

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cc: Meadowbank Distribution List
Stéphane Robert, Agnico-Eagle Mines Ltd.

Enclosure: 2013 Site Visit Report for the Nunavut Impact Review Board's Monitoring of Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project (*November 2013*)

2013 Site Visit Report

for the NIRB's Monitoring of
Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project

Nunavut Impact Review Board
File No. 03MN107
November 2013

Full Report Title:	2013 Site Visit Report for the Nunavut Impact Review Board's Monitoring of Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project (NIRB File No. 03MN107)
Project:	Meadowbank Gold Project
Project Location:	Kivalliq Region, Nunavut
Project Owner:	Agnico Eagle Mines Ltd. PO Box 540 Baker Lake, NU X0C 0A0
Proponent Contact:	Kevin Buck, Environment Superintendent
Telephone:	(819) 759-3555, ext. 6838
Visit conducted by:	Sophia Granchinho, M.Sc., EP Senior Technical Advisor/Monitoring Officer
Telephone:	(866) 233-3033
Site visit dates:	September 13, 2013
Last site visit:	September 12-13, 2012
Photos by:	Sophia Granchinho
Cover photos:	1) View of Meadowbank Mine Site 2) View of Baker Lake Docking Facility

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LIST OF PHOTOGRAPHS

1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) was established through Articles 10 and 12 of the Nunavut Land Claims Agreement (NLCA) and is responsible for post environmental assessment monitoring of projects in accordance with Part 7 of Article 12 of the NLCA.

This report provides the findings that resulted from the NIRB's site visit of the Meadowbank Gold Project that took place on September 13, 2013 as part of the NIRB's monitoring program.

1.1 Objectives & Purpose of Site Visit

In December 2006, pursuant to Section 12.5.12 of the NLCA, the NIRB issued Project Certificate No. 004 for the Meadowbank Gold Project (the Project), allowing the Project to proceed in accordance with the Terms and Conditions issued therein. In November 2009, the NIRB formally amended the Project Certificate [No. 004] to include an amendment to Condition 32 pursuant to NLCA 12.8.2 and an approval to change the name of the holder of the Project Certificate [No. 004] from Cumberland Resources Ltd. to Agnico-Eagle Mines Ltd. (NIRB, 2009).

The Board is responsible for the monitoring of this Project as per Sections 12.7.1 and 12.7.2 of the NLCA. The objective of the NIRB's site visit was to determine whether, and to what extent, the land or resource use in question is being carried out within the predetermined terms and conditions of the NIRB's Meadowbank Gold Project Certificate [004] (Section 12.7.2(b) of the NLCA).

The observations resulting from this site visit shall, wherever possible, be incorporated into the measurement of the relevant effects of the project (Section 12.7.2(a), provide the information necessary for agencies to enforce terms and conditions of land or resource use approvals (Section 12.7.2(c)), and will further be used to assess the accuracy of the predictions contained in the project impact statements (Section 12.7.2(d)).

1.2 Meadowbank Project Description

The Project involves the construction and operation of an open pit gold mine located in the Kivalliq Region of Nunavut, approximately 70 kilometres (km) north of the hamlet of Baker Lake on Inuit-owned surface lands. The current Project owner, Agnico Eagle Mines Limited (AEM or Proponent), indicated in its December 2011 Reserves and Resources report that Meadowbank had at the time, proven and probable gold reserves of 2.2 million ounces; lower than the initial value predicted (AEM, 2011). In February 2012, AEM announced that its Meadowbank ore reserves had been reduced as a result of it being unable to economically mine the lower grade ore which subsequently, reduced the expected life of the mine by approximately 3 years (AEM, 2012). AEM provided a revised mine plan to the Kivalliq Inuit Association which predicted that its Meadowbank operations are now scheduled to be completed by 2017 instead of 2020 (AEM, 2012).

In addition to the mining infrastructure and activities, ancillary Project infrastructure is located approximately 2 km east of the hamlet of Baker Lake and consists of barge unloading facilities, a laydown storage and marshalling area, a 60 million litre (ML) fuel tank farm, associated interconnecting roads and a 110 km all-weather private access road (access road) from the hamlet of Baker Lake to the Meadowbank mine site. Supplies are shipped from locations within Canada via sealift to Baker Lake where they are offloaded at AEM's marshalling area and transported to the Meadowbank site via truck haul along the 110 km access road.

1.3 Preparations for the Site Visit

The Monitoring Officer reviewed the following items to prepare for the site visit: Meadowbank Project Certificate [No. 004], 2012 Site Visit Report, AEM's 2012 Annual Report and associated appendices, and follow-up correspondence from the NIRB's 2012 site visit.

2 SITE VISIT

The 2013 site visit was conducted by Sophia Granchinho, NIRB Monitoring Officer. On September 13, 2013 the Monitoring Officer was driven to the Meadowbank mine site from the AEM office in Baker Lake with other AEM staff. Once at the site, the Monitoring Officer was met by Kevin Buck, AEM's Environment Superintendent. Mr. Buck and the Monitoring Officer discussed issues which were related to the 2012 site visit. In the afternoon, Mr. Buck and Martin Therialut led a tour of the site, which included the waste rock facility, landfarm, landfill/pilot remediation site, tailings storage facility, Vault Pit, active mine areas including Portage pits and Bay-Goose basin, the waste and hazardous materials storage area, the incinerator, fuel storage area, air monitoring station and dust monitoring station. At the conclusion of the tour of the mine site, the Monitoring Officer met with Mr. Buck to discuss the site visit and further issues related to environmental compliance. Afterwards, Mr. Tom Thomson drove the Monitoring Officer along with a Golder consultant, Yves Boulianne, to the hamlet of Baker Lake via the access road. Prior to being dropped off at the AEM office, Mr. Tom Thomson and Mr. Yves Boulianne accompanied the Monitoring Officer to the following Baker Lake facilities: diversion channel at Third Portage Lake, quarry 22, quarry 5, bridge at kilometre 22/23, culvert at kilometre 1 and the Baker Lake bulk fuel storage facility/marshalling area.

The site visit provided the Monitoring Officer with a tour of all major project components and further, provided an opportunity for the Monitoring Officer and AEM staff to discuss relevant issues related to the project.

2.1 General Observations

The following are general observations made during the site visit and do not pertain specifically to any particular terms or conditions of the Project Certificate:

a. While travelling along the access road to and from the Meadowbank site and the hamlet of Baker Lake, the Monitoring Officer observed very little wildlife. The only observable wildlife included two caribou, Snow geese (and blue geese) and a Peregrine falcon along the access road. No wildlife was observed at site; however, it was noted by staff that a muskox had been lingering around the Vault Pit area.

b. Mr. Buck mentioned that the pilot remediation program undertaken this year at the Meadowbank site using on-site nutrients (sewage sludge) to initiate biodegradation of contaminated hydrocarbon soil worked very well and that AEM was planning on using the same technique next year for all hydrocarbon contaminated soils (see Photo 1). This method would be used instead of general landfarming techniques (see Landfarm Plan for further information [AEM, 2013]).

Photo 1: Contaminated soil storage/pilot remediation site

c. AEM indicated that additional grid samples would be taken at both Quarry 5 and Quarry 22 (both sites previously used for storage of contaminated hydrocarbon soil) and confirmed that if samples indicate that no hydrocarbons are present, remediation of both quarries would commence. Photo 2 through Photo 4 show the condition of Quarry 5 from the storage of contaminated soils in 2011 to clean-up in 2013, while Photo 5 and Photo 6 show the condition of Quarry 22 in 2012 and 2013.

Photo 2: Quarry 5 in 2011 containing contaminated soil from fuel spill at kilometre 22 along the access road

Photo 3: Quarry 5 in 2012

Photo 4: Quarry 5 in 2013

Photo 5: Quarry 22 in 2012, serving as a storage area for contaminated soil

Photo 6: Quarry 22 in 2013

d. The Monitoring Officer noted that the environmental emergency sea-cans containing booms, shovels, absorbent pads, and other miscellaneous spill response equipment were located at most bridge crossing (one was not observed at the km 22/23 bridge). Further, two additional environmental emergency sea-cans, one containing spill response equipment and another containing a boat with motor were located at the Baker Lake laydown facility.

e. Active blasting and drilling were ongoing at the North, Central and South Portage pits, with daily geotechnical inspections being undertaken to ensure the safety of all employees and contractors working in the active mine area (see Photo 7).

Photo 7: Portage Pit

f. Development of the Bay-Goose Dike and causeway was completed in 2010 with the instrumentation on the Bay-Goose Dike and the jet grouting program completed in 2011. Mining of the Bay-Goose basin started in May 2012 (Photo 8).

Photo 8: Bay-Goose basin

g. Construction of the Vault Road was completed by the end of 2012 and AEM commenced stripping, quarrying and related construction activities in 2013 (Photo 9). During the site visit, it was noted that dewatering of Vault Lake would commence in late September, once the fish-out program had been completed (see Photo 10). Mining of Vault Pit is planned for 2014.

Photo 9: Vault Lake Quarry site

Photo 10: Site of future Cell B, Vault Lake Pit

h. Inspection of the tailings storage facility did not reveal any apparent rips to the liners that were exposed within Saddle Dam #1 and Saddle Dam #2 (Photo 11).

Photo 11: Tailings storage facility

i. Mr. Buck indicated that the extension of the airstrip was completed in April 2013. This extension was previously screened and approved pursuant to NIRB File No. 10XN039.

j. The Monitoring Officer noted that the water within the diversion ditch constructed around the tailings facility and flowing into Third Portage Lake appeared to be turbid, likely due to the high volume of rainfall over the previous few days (see Photo 12). Further, the silt curtains installed in Third Portage Lake did not appear to be functioning properly as there was evidence of turbid water/sediment along the shoreline of Third Portage Lake and flowing into the lake. The diversion ditch was built to control freshet water from entering the tailings facility (see Photo 13).


Photo 12: Diversion ditch around tailings facility


Photo 13: Turbid water entering Third Portage Lake

k. While travelling along the access road from Meadowbank back to Baker Lake, the Monitoring Officer noted that the culvert crossing at kilometre 1 was damaged and that there was evidence of sediment deposit at the outflow of the culvert into Airport Lake. AEM indicated that it would assist the hamlet of Baker Lake in any work(s) required to upgrade/repair the culvert. AEM indicated that this particular section of the access road is owned by the hamlet and is not leased by AEM (see Photo 14).

Photo 14: Culvert crossing at kilometre 1

2.2 Observations based on NIRB's Project Certificate [004]

Sections 2.2.1 through 2.2.6 relate to those sections of the Meadowbank Project Certificate as indicated, with specific terms and conditions providing a basis for the noted observations.

2.2.1 Water Quality and Waste Management

Condition 8

> *"…At the time samples are taken Cumberland shall also assess the condition of existing groundwater monitoring wells and replace any defective wells. Cumberland shall continue to undertake semi-annual groundwater samples and re-evaluate the groundwater quality after each sample collection…"*

At the time of the site visit, only one groundwater monitoring well appeared to be operational. AEM noted that the last operational groundwater monitoring well of those installed in 2003 became damaged from frost action in 2010. Three of the four defective wells were replaced in 2006 but were again damage by frost action. Two of the wells were again replaced in 2008 with a more robust design. In 2011, two monitoring wells were installed, one on Goose Island to replace one of the 2003 wells and one at the tailings storage facility to replace one of the 2007 wells. Only one of the wells replaced in 2008 was sampled in 2011 as the second well showed blockage and no samples could be taken. Mr. Buck indicated that although groundwater sampling did occur at the operational wells for the 2013 sampling program, well number MW11-02 could not be sampled due to blockage from the previous year. AEM is planning on using production wells instead of groundwater wells to evaluate the groundwater quality but for the 2013 year, AEM staff indicated that as there was limited water flowing at the selected production wells, no sampling had been conducted for this year.

Condition 25

> *"Cumberland shall manage and control waste in a manner that reduces or eliminates the attraction to carnivores and/or raptors. Cumberland shall employ legal deterrents to carnivores and/or raptors at all landfill and waste storage areas…incorporated into the final Waste Management Plan."*

As per previous site visits, the Monitoring Officer noted in 2013 that AEM continued to segregate and store all domestic, hazardous, and combustible wastes in marked sea-cans prior to these materials being incinerated or shipped to appropriate and approved off-site disposal facilities (Photo 15). AEM indicated that sea-cans filled with waste are backhauled via truck haul to Baker Lake and are then moved via the annual sea lift to southern Canada (Photo 16). AEM has also initiated other recycling programs to reduce the amount of wastes going to the landfill; *e.g.*, puncturing aerosol cans which could then be recycled as metal (Photo 17 and Photo 18).

Photo 15: Sea-cans used for waste segregation and storage area

Photo 16: Sea-cans waiting to be backhauled

Photo 17: Landfill at Meadowbank mine site

Photo 18: Waste rock facility

The Meadowbank site dual chamber forced air incinerator remains in service for the combustion of all non-hazardous, combustible materials at the site (Photo 19). AEM staff noted that approximately 1.7 tonnes of domestic garbage is incinerated per day; however, Mr. Buck indicated AEM has plans in place to continually improve waste management by reducing the amount of domestic garbage produced at site. Some examples include completely replacing paper coffee cups with plastic coffee cups, using plastic lunch boxes and trays instead of paper bags, recycling wood products by finding second uses for these at site or by backhauling it to Baker Lake where it may be claimed and used by community members.

Photo 19: Dual chamber forced air incinerator at the Meadowbank site

Mr. Buck indicated that there have not been any issues with wildlife around site and that staff are encouraged to leave wildlife alone. Mr. Buck indicated that caribou and muskox have been around the Vault Lake site and that a few fox dens with pups have also been observed around site. In addition, Mr. Buck indicated that active falcon nests had also been observed within various quarry sites along the access road with most adult pairs having fledged at least one chick successfully.

Condition 26

"Cumberland shall ensure that spills, if any, are cleaned up immediately and that the site is kept clean of debris, including wind-blown debris."

During the 2012 visit to the Meadowbank site, the Monitoring Officer noted that all areas were kept in an impressively clean state, with no obvious spills. There were a few instances of wind-blown material observed around the Meadowbank site.

Mr. Buck indicated that clean-up of the spill that occurred near kilometre 22 of the access road in October 2010 was complete and the booms previously deployed in the watercourse had been removed in July 2013 (Photo 20). Mr. Buck confirmed that the site would continue to be monitored as part of AEM's aquatic effects monitoring program.

Photo 20: Bridge near kilometre 22

Condition 27

"Cumberland shall ensure that the areas used to store fuel or hazardous materials are contained using safe, environmentally protective methods based on practical, best engineering practices."

During the 2013 site visit, the Monitoring Officer observed that all of AEM's fuel and hazardous materials associated with the Meadowbank project appeared to be stored in a safe and environmentally protective manner (i.e. secondary containment at fuel storage areas and secure containment of hazardous materials; see Photo 21 and Photo 22).

Photo 21: Meadowbank on-site fuel tank farm

Photo 22: Baker Lake bulk fuel storage facility

The fuel transfer stations on site (Photo 23) and at the Baker Lake bulk fuel storage facility (Photo 24) appeared to be well contained and properly set up for the re-fuelling of vehicles. No hydrocarbon odours were noted at either the Meadowbank fuel tank farm or the Baker Lake bulk fuel storage facility. No sheen was observed on the water within the Meadowbank fuel tank farm or the Baker Lake bulk fuel storage facility.

The Monitoring Officer noted that a Jet-A pad had been installed near the Baker Lake bulk fuel storage facility and that it had 20 fuel tanks in place (Photo 25).

Photo 23: Meadowbank on-site fuel transfer station


Photo 24: Baker Lake fuel transfer station (taken in 2012)

Photo 25: Jet-A pad at Baker Lake storage facility

2.2.2 All-Weather Private Access Road (AWPAR)

Amended **Condition 32**

"AEM shall operate the all-weather road as a private access road, and implement all such measures necessary to limit non-mine use of the road to authorized, safe and controlled use by all-terrain vehicles for the purpose of carrying out traditional Inuit activities. The measures AEM shall undertake include, but are not limited to:

a. Maintaining a gate and manned gatehouse at kilometre 5 of the Private Access Road;
b. In consultation with the Hamlet of Baker Lake, the local HTO, and the KivIA, update the All-Weather Private Access Road Management Plan to set out the criteria and processes to authorize and ensure safe and controlled non-mine use of the road by all-terrain vehicles for the purpose of carrying out traditional Inuit activities, and measure to limit all other non-mine use of the road. The updated Plan is to be submitted to the GN, INAC, and KivIA for approval no later than one (1) month after the approval of revised Condition 32;
c. The posting of signs in English and Inuktitut at the gate, each major bridge crossing, and each 10 kilometres of road, stating that unauthorized public use of the road is prohibited;
d. The posting of signs in English and Inuktitut along the road route to identify when entering or leaving crown land;
e. Prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain vehicle for the purpose of carrying out traditional Inuit activities;
f. Place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of the road limited to authorized, safe and controlled use by all-terrain vehicles for the purpose of carrying out traditional Inuit activities;

g. *Record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one (1) year after the road is opened and annually thereafter; and*
h. *Report all accidents or other safety incidents on the road, to the GN, KivIA, and the Hamlet immediately and to NIRB annually."*

AEM maintains one gatehouse at kilometre 5 of the access road, and another gatehouse close to the entrance to the mine site and camp at Meadowbank. Both gatehouses are manned by guards who monitor the safety and security of all personnel using the road. All traffic is required to check in (via radio or in person) with the employee at the gatehouse prior to proceeding past either gatehouse along the road (see Photo 26). The AEM employee manning the kilometre 5 gatehouse maintains a daily logbook of all persons travelling the access road for non-mine use. Members of the public travelling along the road are required to sign-off an indication of having read AEM's *All Weather Private Access Road Safety Rules & Procedures for Road Access* policy prior to being granted access to the road.

Photo 26: Gatehouse at kilometre 5, near Baker Lake

As per Condition 32(b), AEM submitted a copy of its updated Transportation Management Plan to the NIRB on May 13, 2010. One of the features of the access road as described within the plan is the placement of refuge stations every 10 kilometres. The Monitoring Officer noted that these refuge stations (emergency sea-cans) were not located on the road and was informed by Mr. Buck in 2012 that the sea-cans were removed because items within the stations were being stolen and that the refuge stations were not serving the original and intended purpose. The signs as required per Condition 32(c) were posted in both English and Inuktitut at the gatehouse (Photo 27), at each major bridge crossing (on the side of the environmental emergency sea-cans) and at every at 10 kilometre intervals along the road.

Photo 27: Signs posted at gatehouse at kilometre 5

2.2.3 Wildlife and Terrestrial

Condition 56

> *"Cumberland shall plan, construct, and operate the mine in such a way that caribou migration paths through the Project, including the narrows west of Helicopter Island are protected. Maps of caribou migration corridors shall be developed in consultation with Elders and local HTOs, including Chesterfield Inlet and placed in site offices and upgraded as new information on corridors becomes available. Information on caribou migration corridors shall be reported to the GN, KivIA and NIRB's Monitoring Officer annually."*

Condition 59

> *"Cumberland shall, in consultation with Elders and the HTOs, design and implement means of deterring caribou from the tailing ponds, such as temporary ribbon placement or Inukshuks, with such designs not to include the use of fencing."*

The Monitoring Officer noted that the updated maps 2012 which outline caribou migration corridors were posted in high traffic areas such as the bulletin board outside the check-in office. AEM indicated that all employees must report to the check-in office upon arrival to site at the commencement of their two-week shift and again upon departure from site and would be able to review the updated caribou migration corridor maps.

As indicated earlier in the report, no wildlife were observed around site during the 2013 site visit except along the access road to the mine site.

2.2.4 Noise

Condition 62

> *"Cumberland shall develop and implement a noise abatement plan…will be developed in consultation with Elders, GN, HC, and EC and include:*

a. *The use of sound meters to monitor sound levels in and around the mine site, including workers' on-site living/sleeping quarters and any summer camps adjacent to the site, and in the local study area, with the locations and design of the sound meters selected in consultation with HC and EC. Sound meters are to be set up immediately upon issuance of the Project Certificate for the purpose of obtaining baseline data, and monitoring during and after operations;*
b. *...*
c. *Restrictions on blasting and drilling when migrating caribou, or sensitive local carnivores or birds may be affected;*
d. *...*
e. *..."*

AEM staff indicated that five locations were monitored for noise during the 2013 summer period. AEM staff noted that monitoring indicated that the dominant mine noise sources included activities such as helicopter and other air traffic, the use of construction and operation heavy equipment and blasting. Monitoring stations were removed prior to the site visit due to windy conditions.

2.2.5 Air Quality

Condition 71

"Cumberland shall, in consultation with EC, install and fund an atmospheric monitoring station to focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported annually to NIRB."

The air monitoring stations were installed by the end of October 2011 and monitoring started in November 2011 (see Photo 28). The partisol sampling stations required heated shelter and electricity in order to operate properly, and these were installed in 2012. During the 2013 site visit, Mr. Buck noted that an air monitoring station installed in 2012 near the Vault Lake road had been relocated. The road alignment to Vault Lake was modified from the original design plan which in turn required that the air monitoring station be moved to a location further away from the road.

Photo 28: Air monitoring station

Condition 74

> *"Cumberland shall employ environmentally protective techniques to suppress any surface dust."*

AEM staff indicated that calcium chloride and water are administered on the roads to suppress dust around the Meadowbank site and from the Baker Lake dock facility to the gatehouse. AEM staff also noted that it would be using calcium chloride flakes for 2014 as it is lighter to transport and easier to use. AEM noted that it is currently waiting for the results of studies conducted along the access road in 2013 to determine whether or not the dust from the access road is impacting the vegetation around the area. During the site visit, AEM confirmed that no dust suppressants are currently in use along the access road.

2.2.6 Other

Condition 81

> *"Beginning with mobilization, and for the life of the Project, Cumberland shall provide full 24 hour security, including surveillance cameras and a security office at the Baker Lake storage facility/marshalling area, and take all necessary steps to ensure the safe and secure storage of any hazardous or explosive components within the Hamlet of Baker Lake boundaries."*

During the visit to the Baker Lake bulk fuel storage facility/marshalling area, the Monitoring Officer noted that a security office was located at the shore with AEM employees on site. The Monitoring Officer did note that these areas were kept impressively clean with sea-cans well organized during the 2013 site visit (see Photo 29).

Photo 29: Bake Lake dock and laydown facility

3 FINDINGS AND SUMMARY

Based on the observations made during this site visit, all facilities which are in operation and all sites currently under construction appear to be well managed and maintained with adequate environmental protection measures and procedures in place.

As with years past, the Proponent appears to be in compliance with a majority of the terms and conditions contained within the Meadowbank Project Certificate as applicable to the NIRB's 2013 Site Visit. However, there may be certain situations in which the Proponent has not yet fully met the requirements of the Meadowbank Project Certificate and which require further consideration and attention.

The Monitoring Officer notes that the pilot remediation program undertaken this year at the Meadowbank mine site appeared to have worked well. The Monitoring Officer was informed that the rate of biodegradation of the contaminated soil containing nutrients (sewage sludge) was faster compared to contaminated soils with no nutrients added. AEM indicated that it plans to use this method again next year for the treatment of all of its contaminated soils.

The Monitoring Officer also noted that the silt curtains put in place downstream of the diversion ditch flowing into Third Portage Lake did not appear to be functioning properly as sedimentation was evident around the shoreline and flowing into the lake.

Regarding Condition 8, only one groundwater well appeared to have been operational during the 2013 site visit. AEM indicated that further re-evaluation of the groundwater well monitoring program would be conducted, including an evaluation of the potential use of production wells instead of groundwater wells to assess the existing groundwater conditions.

Condition 25 requires that the Proponent employ legal deterrents to deter carnivores and/or raptors from the Meadowbank site. AEM noted that wildlife had been observed at the site including caribou, muskox and foxes, with a few fox dens around the site as well. .

Condition 26 requires that spills be cleaned up immediately and that the site be kept clean of debris. The Monitoring Officer was informed during the 2013 site visit that the clean-up of the spill at kilometre 22 was complete, but that the site would continue to be monitored as part of AEM's ongoing aquatics effects monitoring program. Some instances of wind-blown debris scattered around the site were noted during the 2013 site visit.

Condition 27 requires that the Proponent use safe, environmentally protective methods at areas used to store fuel or hazardous materials. The Monitoring Officer noted that the fuel storage facilities appeared to be well contained and properly set up for the re-fuelling of vehicles.

The Proponent did not appear to have fully met the requirements of Condition 74, as dust suppression techniques had been applied at the Meadowbank site but were not in use along the access road from Baker Lake to site. AEM did indicate that plans were in place to determine the effects of dust on vegetation along the access road and to determine the best options to deal with the dust created.

Prepared by: Sophia Granchinho
Title: Senior Technical Advisor/Monitoring Officer
Date: November 1, 2013

Signature: Granchinho

Reviewed by: Amanda Hanson
Title: Director, Technical Services
Date: October 29, 2013

Signature:

REFERENCES

AEM (Agnico Eagle Mines Ltd). 2011. *Agnico-Eagle Mines Limited Detailed Mineral Reserves and Resources Data*. December 2011. Available at: http://agnico-eagle.com/English/Our-Business/Operating-Mines/Meadowbank/Reserves-and-Resources/default.aspx. Accessed November 14, 2012.

AEM (Agnico Eagle Mines Ltd).. 2012. *Meadowbank Employee Bulletin*. Released February 16, 2012.

AEM (Agnico Eagle Mines Ltd).. 2013. *Meadowbank Gold Project Landfarm Design and Management Plan.* In Accordance with Water Licence 2AM-MEA0815. Prepared by Agnico Eagle Mines Limited – Meadowbank Division, Version 3. February 2013.

NIRB (Nunavut Impact Review Board). 2009. *In the matter of an Application by Agnico-Eagle Mines Limited for the Mine development of the Meadowbank Gold Mine Project Proposal in the Kivalliq Region of Nunavut, Project Certificate NIRB [No. 004]*. Prepared by the Nunavut Impact Review Board for the Meadowbank Gold Mine Project. Original issued December 2006. Amendment issued November 2009.

From:	Kevin Buck
To:	Sophia Granchinho (sgranchinho@nirb.ca)
Cc:	Jeffrey Pratt; Marie-Pier Marcil
Subject:	Barrels at Landfill
Date:	September-15-13 5:47:54 PM
Attachments:	image005.png

Hi Sophia – I wanted to update you on the barrels observed at the MB landfill. Please note,

- The material in the barrels is wax generated by the explosive manufacturer on site. The material is a solid non-hazardous waste and is not regulated by WHMIS or TDGA
- The Nitrate prill previously used on site had a wax coating. When the prill is put into the process – basically added to water at 70 C temps, the wax melts and disassociates from the prill and floats to the top of the process tank. It is then skimmed off and put into the empty barrels and hardens (as wax does) as the temp cools. The contractor had contacted our department previously about this and we advised to try to re melt and get it out of the drums but it proved to difficult. It was deemed safe to put in the landfill. The barrels we observed represents two years of material.
- The contractor has since changed product source and the different product does not have this protective wax coating so there will be no more generated.
- So, the material is in solid form and not hazmat. And no more will be generated.
- There will be no environmental impact from this other than we are trying to recycle as much steel as possible.

I trust this satisfies your concern – if you have any additional questions feel free to contact me anytime

Regards,

Kevin Buck
Environmental Superintendent

kevin.buck@agnicoeagle.com

T: 819.759.3555 x6838
C: 819.856.1956

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Meadowbank Division
Baker Lake, Nunavut, Canada
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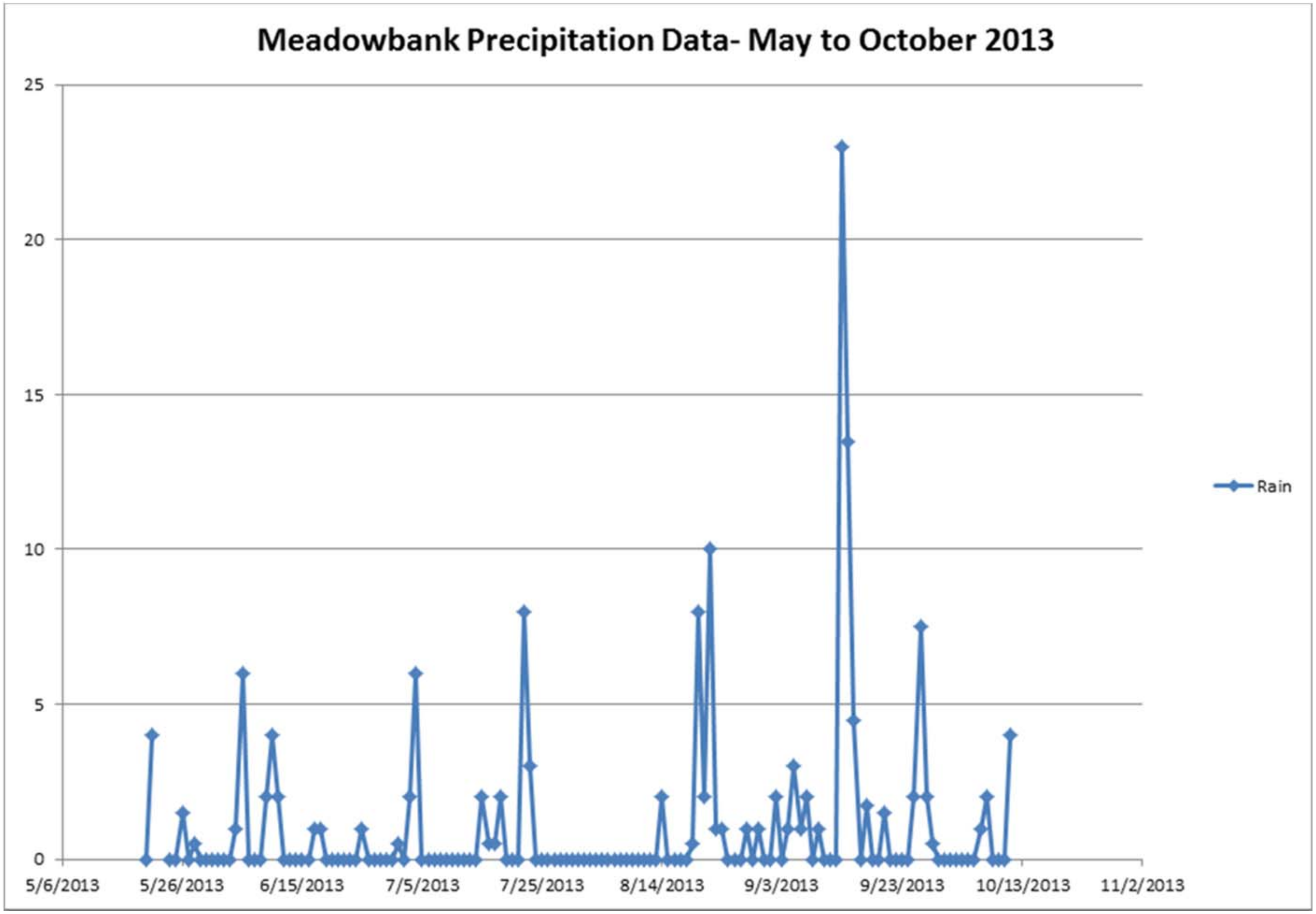
AGNICO EAGLE

Marie-Pier Marcil

Subject: FW: NIRB 03MN107: The Nunavut Impact Review Board's 2013 Site Visit Report for the Meadowbank Gold Project

Hello Elizabeth,

The elevated turbidity that NIRB referred to on Page 8 of their site visit report on September 13, 2013 was not considered an occurrence by the technicians onsite and therefore not reported by AEM. AEM thoroughly monitored the turbidity during the spring freshet and at that time set up turbidity barriers and silt fences to control sediment deposits. It is clear from the photos that the heavy rain caused some sediments to escape the curtains; as a result the curtains were reconfigured after the site visit. As you can see from the precipitation data and the Type A License monitoring results at ST-6 below, this was a rare event of high rains that was short in duration and the resulting elevated turbid water noted by the inspector was not deemed an occurrence by onsite staff at the time. This was primarily due to the fact that the technicians felt some of the TSS were natural inputs, the volume wasn't large (compared to spring freshet runoff) and when adjusted, the turbidity curtains were more effective at containing the TSS. We will discuss this event with the technicians and site services department on-site to ensure that monitoring protocols (visual inspections, followed by turbidity monitoring and adaptive management) are followed to support decisions of reporting occurrences to DFO in the future.



As per the Type A License, monthly monitoring indicates TSS levels below the limits throughout the summer at Station ST-6.

	Date	6/24/2013		7/29/2013	8/13/2013	9/3/2013	10/6/2013
Parameter	Units	Original ID	Duplicate	Original ID	Original ID	Original ID	Original ID
pH		7.04		8.82	6.8	7.52	7.21
Turbidity	NTU	15.48		54.9	0.91	0.8	0.71
Conductivity	µs/cm				32	48.1	42.4

Temperature	°C	14.14			22.24	11.2	14.7
CN	mg/L	0.009	0.007	<0.005	0.005	0.005	0.011
Tss	mg/l	2	3	2	1	8	2
Ra	Bq/l	< 0.002	< 0.002	<0.002	0.002	0.002	< 0.002
Al	mg/l	0.348	0.247	0.023	0.006	< 0.006	0.038
As	mg/L	0.0005	0.0017	<0.0005	0.0005	0.0017	0.0016
Cu	mg/L	0.0018	0.0022	0.0141	0.0005	0.0047	< 0.0005
Ni	mg/L	0.002	0.0025	0.0011	0.0005	0.001	< 0.0005
Pb	mg/L	< 0.0003	< 0.0003	<0.0003	0.0003	0.0077	< 0.0003
SO4	mg/L	7	6	7	0.6	13.9	6
Zn	mg/L	< 0.001	0.001	0.002	0.001	0.002	0.003

As we have discussed previously, Airplane lake crossing is the responsibility of the hamlet - please contact the hamlet in regards to Airplane Lake crossing issues.

If you have any questions, please contact Kevin Buck or myself,

Ryan VanEngen MSc.
Environment Biologist
ryan.vanengen@agnicoeagle.com
C:519.400.7979

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AGNICO EAGLE

Please consider the environment before printing this email

From: Patreau, Elizabeth [mailto:Elizabeth.Patreau@dfo-mpo.gc.ca]
Sent: Friday, November 15, 2013 10:35 AM
To: Kevin Buck; Stephane Robert; Ryan Vanengen
Cc: Info at NIRB
Subject: RE: NIRB 03MN107: The Nunavut Impact Review Board's 2013 Site Visit Report for the Meadowbank Gold Project

DFO has reviewed the NIRB September 2013 site visit monitoring report and would like to provide the following comments:

Occurrences into fish bearing waters such as that noted by NIRB's monitoring officers on Page.8 of their report regarding turbid water entering Third Portage Lake and Airplane Lake must be sent to DFO at that time (by the Proponent). There is a duty to notify an inspector (Inspector, Fishery Officer or prescribed authority) of DFO when this serious harm to fish is not authorized under the Act, or when there is a serious and imminent danger of such an occurrence (Sec.38 of Fisheries Act).
To my knowledge, DFO did not receive a report of this occurrence in September. AEM, can you please confirm whether or not notice was provided to DFO in September (and if so, to whom?). If not, why not? And, has this issue been resolved?

Should you have any questions concerning the above, please contact me.

Elizabeth Patreau
Senior Fisheries Protection Biologist
Telephone - Téléphone: *867 979-8019*
Email - Courriel: Elizabeth.Patreau@dfo-mpo.gc.ca

2012 – 2013 Annual Monitoring Report

for Agnico Eagle Mines Ltd.'s Meadowbank Gold Project

Nunavut Impact Review Board
File No. 03MN107
November 2013

Report Title:	The Nunavut Impact Review Board's 2012 – 2013 Annual Monitoring Report for the Meadowbank Gold Project (NIRB File No. 03MN107)
Project:	Meadowbank Gold Project
Project Location:	Kivalliq Region, Nunavut
Project Owner:	Agnico Eagle Mines Ltd. PO Box 540 Baker Lake, NU X0C 0A0
Monitoring Officer:	Sophia Granchinho, M.Sc., EP
Monitoring Period:	October 2012 – September 2013
Date Issued:	November 22, 2013
Cover photos:	1) Front end loader bucket 2) Bridge at kilometre 23 3) Outflow into Third Portage Lake 4) Tailings storage facility 4) Baker Lake dock facility

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List of Appendices

LIST OF ACRONYMS

AANDC	Aboriginal Affairs and Northern Development Canada
AEM	Agnico Eagle Mines Ltd.
AEMP	Aquatic Effects Management Program
AWPAR	All-weather private access road
CaCl	calcium chloride
CCME	Canadian Council of Ministers of the Environment
CN	Cyanide
CREMP	Core Receiving Environment Monitoring Program
dBA	A-weighted decibels
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EC	Environment Canada
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
GN	Government of Nunavut
GN-DoE	Government of Nunavut, Department of Environment
HC	Health Canada
INAC	Indian and Northern Affairs Canada
KivIA	Kivalliq Inuit Association
km	kilometre
ML	million litre
MW	Monitoring Well
NIRB	Nunavut Impact Review Board
NLCA	Nunavut Land Claims Agreement
NWB	Nunavut Water Board
PEAMP	Post-environmental assessment monitoring program
PM	Particulate Matter
QAQC	Quality Assurance/Quality Control
RPD	Relative percent difference
TC	Transport Canada
TSP	Total suspended particulates

1.0 INTRODUCTION

In December 2006, pursuant to Section 12.5.12 of the Nunavut Land Claims Agreement (NLCA), the Nunavut Impact Review Board (NIRB or Board) issued Project Certificate No. 004 for the Meadowbank Gold Project (the Project), allowing the Project to proceed in accordance with the Terms and Conditions issued therein. The NIRB is responsible for the monitoring of this Project as per Sections 12.7.1 and 12.7.2 of the NLCA, and the Project Certificate [004].

This report provides findings that resulted from the Board's monitoring program for this Project from October 2012 to September 2013.

1.1. PROJECT HISTORY AND CURRENT STATUS

In early 2007, Agnico Eagle Mines Ltd. – Meadowbank Division (AEM or the Proponent) acquired Cumberland Resources Ltd.'s assets which included the Meadowbank Gold Mine. Construction of an access road from the hamlet of Baker Lake to the Meadowbank mine site was completed in 2008 and the road opened to mine-related transportation in March 2008. The Meadowbank Gold Mine entered the operations phase of the project in February 2010, and is currently entering its fourth year of operations. By the end of 2012, the Meadowbank mine had reportedly produced 366,030 ounces of gold, an increase from 2011 in which the mine had reportedly produced 270,801 ounces of gold.

The Type A Water Licence (2AM-MEA0815) required for the Project was issued by the Nunavut Water Board (NWB) in June of 2008. This licence was amended in May 2010 to allow for an expansion to the Baker Lake fuel tank farm facility which included 2 additional 10 ML fuel tanks to a combined total of six 10 ML fuel tanks.

An expansion to the Meadowbank airstrip was screened by the NIRB in September 2010 with the NIRB having issued a 12.4.4(a) recommendation to the then-Minister of Indian and Northern Affairs Canada (INAC, now Aboriginal Affairs and Northern Development Canada or AANDC) indicating that the proposed project could proceed subject to additional project specific terms and conditions, and that additionally the NIRB would expand its Part 7 NLCA monitoring program for the Meadowbank Project to apply to the airstrip expansion (NIRB File No. 10XN039). On January 27, 2013 AEM submitted an application to the NWB to allow for the expanded airstrip. The request indicated a revision to the original 2010 request (NIRB File No. 10XN039) which substantially reduced the impact to Third Portage Lake and included construction of the expansion during the winter season. On April 4, 2013 NWB approved the proposed modification and the Monitoring Officer was informed during the September 2013 site visit that the airstrip expansion had been completed in April 2013.

Following a request by the Hamlet of Baker Lake and the Proponent in 2008, in November 2009 the NIRB formally amended the Meadowbank Gold Mine Project Certificate [No. 004] pursuant to NLCA 12.8.2 to include a modified Condition 32 and an approval by the Board to change the name of the holder of the Project Certificate [No. 004] from Cumberland Resources Ltd. to Agnico-Eagle Mines Ltd (NIRB, 2009).

On July 14, 2011 the NIRB issued *Appendix D – Meadowbank Monitoring Program* to AEM in accordance with the Meadowbank Project Certificate [004] (NIRB, 2011). The Meadowbank monitoring program includes responsibilities for AEM, the NIRB, and several authorizing agencies and government departments.

During the 2012 year, AEM started pit operations of the Bay Goose pit; completed the construction of the Vault road; commenced initial stripping and quarry construction near the Vault pit; installed thermistors in the waste rock storage facility and tailings pond to measure freeze back; completed the construction of the Central Dike to an elevation of 115 metres; and completed dewatering activities related to the Central Dike.

AEM applied for an amendment to its Type A Water Licence (No. 2AM-MEA0815) with the NWB on April 23, 2013 to increase the amount of freshwater drawdown and use from the Third Portage Lake from the originally permitted amount to a total of 1,870,000 cubic metres per year (m^3/year) in 2013; and to 1,150,000 m^3/year for each year thereafter until 2018. The NIRB considered two alternatives under the NLCA to determine the impact assessment requirements applicable to AEM's amendment application and following the receipt of comments from interested parties, issued correspondence on October 1, 2013 indicating that it had determined no further assessment was required. This request is further discussed in Section 2.2.4.

In July 2013 AEM also applied for amendments to its existing *Fisheries Act* Authorizations No. NU-03-0190 – All Weather Private Access Road (AWPAR) and No. NU-03-0191.3 with Fisheries and Oceans Canada (DFO). AEM requested an amendment to the monitoring frequency and a reduction to the amount of the existing letters of credit from $25.675 Million to $8.6 Million. This request for amendment is further discussed in Section 2.2.4.

1.2. PROJECT COMPONENTS

The Meadowbank Gold Project as operated by AEM consists of an open pit gold mine located approximately 70 kilometres (km) north of the hamlet of Baker Lake on Inuit-owned surface lands. In addition to mining infrastructure and activities, ancillary Project infrastructure is located approximately 2 km east of the hamlet of Baker Lake and consists of barge unloading facilities, a laydown storage and marshalling area, a 60 million litre (ML) fuel tank farm, associated interconnecting roads and a 110 km all weather private access road (access road) from the hamlet of Baker Lake to the Meadowbank mine site. Supplies are shipped from locations within Canada via sealift to Baker Lake where they are offloaded at AEM's marshalling area and transported to the Meadowbank site via truck haul along the 110 km access road.

The original Project proponent and owner, Cumberland Resources Inc., estimated in 2006 that the Meadowbank project comprised of a total proven and probable gold reserves of 2.7 million ounces (NIRB, 2006). The current Project owner, AEM, indicated in its December 2011 Reserves and Resources Report that Meadowbank has proven and probable gold reserves of 2.2 million ounces; lower than the initial value predicted (AEM, 2011). Further, in February 2012, AEM issued a press release announcing that its Meadowbank ore reserves had been reduced as a result of it being unable to economically mine the lower grade ore which has also resulted in a mine life that is reduced by approximately 3 years from initial estimates (AEM, 2012). AEM provided a revised mine plan to the Kivalliq Inuit Association (KivIA) in 2012 and predicted that its Meadowbank operations were scheduled to be completed by 2018 instead of 2020 (AEM, 2012).

2.0 MONITORING ACTIVITIES

2.1. REPORTING REQUIREMENTS

2.1.1. General Reporting Requirements

During the 2012 – 2013 monitoring period, the Proponent demonstrated a general compliance with reporting requirements imposed through commitments resulting from the NIRB's Review of the Project, including those contained in related reports, plans, and the NIRB's Project Certificate. The Proponent has provided the following items as required by the terms and conditions contained within the Meadowbank Project Certificate [No. 004] for the current monitoring period of October 2012 through September 2013:

- AEM's 2012 Annual Report to the NWB, NIRB, DFO, AANDC and KivIA which included:
- Revised *Fisheries Act* Authorization for Second Portage and Third Portage (NU-03-0191.3)
- Revised *Fisheries Act* Authorization for Vault Lake (NU-03-0191.4)
- Revised Landfarm Design and Management Plan, version 2 (2012)
- Groundwater Monitoring Plan, version 3 (2012)
- 2012 Groundwater monitoring and water quality Report, Meadowbank Mine, Nunavut
- Emergency Response Plan, version 4 (2012)
- Hazardous Materials Management Plan, version 2 (2012)
- Oil Handling Facility Oil Pollution Emergency Plan, version 1 (2012)
- Spill Contingency Plan, version 3 (2012)
- Wildlife Protection and Response Plan, version 2 (2012)
- Incinerator Waste Management Plan, version 4 (2012)
- Operation and Maintenance Manual, version 3 (2013)
- Core Receiving Environment Monitoring Program (CREMP), Design Document, version 2 (2012)
- Aquatic Effects Management Program (AEMP), version 2 (2012)
- All Weather Private Access Road, 2012 Water Quality Management Report

The following reports have not been forwarded to the NIRB and remain outstanding:

- Updated Access and Air Traffic Management Plan (last version provided in 2005) – no updated version for mine site access and/or air traffic provided since 2005
- Groundwater Plan (to be submitted August/September 2013)

2.1.2. Annual Report as per Project Certificate [No. 004] Appendix D

Appendix D of the Project Certificate is designed to provide direction to the Proponent, the NIRB's Monitoring Officer, government departments and authorizing agencies with regard to the monitoring program established for the project pursuant to Section 12.7 of the NLCA. Appendix D also outlines the Proponent's responsibilities to establish a monitoring program, the requirement of NIRB's Monitoring Officer to support the production and interpretation of various monitoring reports, and also outlines the NIRB's requirements of various authorizing agencies in reporting compliance monitoring activities. As outlined in Appendix D, the Proponent is required to submit an annual report that provides an updated status of Project operations, an overview of the site and its operation during the reporting period, as well as a discussion of the observations made as a result of, or illustrated through, the monitoring program (NIRB, 2011).

In April 2013 the NIRB received AEM's *Meadowbank Gold Project 2012 Annual Report* (2012 Annual Report) (AEM, 2013a) and distributed the report to interested parties with a request that they provide comments relating to effects and compliance monitoring as well as other areas of expertise or mandated responsibility. The NIRB received comments from the following parties regarding AEM's 2012 Annual Report:

- Aboriginal Affairs and Northern Development Canada
- Environment Canada
- Fisheries and Oceans Canada

Comments received by parties identified specific areas that may require further attention and/or discussion; these are addressed throughout the remainder of this report and are considered in the recommendations the Board sets forth for subsequent action, attention, or remedial activity by the Proponent.

2.2. COMPLIANCE MONITORING

Compliance monitoring involves an assessment undertaken by regulators and other agencies to establish whether or not a project is being carried out within the legislation, regulations, instruments, commitments and agreements as such are applicable to certain project activities, and further, is a requirement of the NIRB's Appendix D to the Meadowbank Project Certificate [No. 004].

2.2.1. Compliance with the NIRB Screening Decision Reports

2.2.1.1. Screening Decision Report 10XN039

One of the requirements in the Board's Screening Decision Report for NIRB File 10XN039 related to the expansion of the Meadowbank airstrip was for AEM to undertake efforts to communicate its plans to expand the airstrip with the community of Baker Lake. It appears from the review of the 2012 annual report that AEM's community meetings may not have included a discussion with community members on AEM's plans for expansion. The Monitoring Officer was informed during the 2013 site visit that the airstrip expansion occurred in April 2013.

2.2.1.2. Screening Decision Report 11EN010

2.2.2. Compliance with the NIRB Project Certificate

Within its 2012 Annual Report, AEM provided a summary of exploration activities undertaken as permitted by the Board within its screening decision report.

2.2.2.1. Compliance Achievements

a) <u>Condition 33(2)</u>

33(2) Cumberland shall update the Access and Air Traffic Management Plan to: … 2. to facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required, including responding to any concerns regarding the locked gates.

In its 2012 Annual Report, AEM provided a summary of reported road usage and harvesting activities since the construction of the road began in 2007. Total caribou harvest activities within 5 kilometres of the access road appeared to have increased every year up to 2011 followed by a decrease in 2012. AEM's report indicated that road use was important to hunters in the winter season, despite relatively unrestricted access to other areas in the Baker Lake area. Harvesting along the access road in the winter season has increased every year since 2008 with a peak observed in November 2012.

2.2.2.2. AEM Responses to the Board's 2012 Recommendations

The Board made a number of recommendations as a result of its 2011 – 2012 monitoring efforts including the 2012 site visit. The following provides an overview of AEM's responses to the Board's recommendations as outlined in correspondence provided to the NIRB on January 9, 2013.

a) <u>Appendix D and the Annual Report</u>

Following review of the 2011 Annual Report it was noted that AEM did not provide a full discussion and summary on the post-environmental assessment monitoring program (PEAMP) for the Project as required. The Board recommended that AEM provide a full discussion and summary on the PEAMP for the Project in accordance with commitments made within the FEIS, during the Final Hearing, and as required throughout the Project Certificate (including Appendix D). In its response, AEM indicated a need for further clarification from the NIRB on how best to present the data and to summarize the results. AEM also indicated that it had worked closely with regulatory agencies and continually refined and updated monitoring programs to reflect changes to the mine site and to ensure the effectiveness of the monitoring studies to evaluate and predict mine related impacts. In addition, AEM indicated that it would submit a 2012 Aquatic Effects Monitoring Program (AEMP) annual report which would provide a complete summary of the related aquatic monitoring programs to both the NWB and the NIRB and further, that it would propose a reporting structure that summarizes the data in a means that meets the expectations of the NIRB.

b) Terrestrial wildlife impact predictions

The Board requested that AEM provide a full analysis of the predicted impact thresholds against the actual results of surveys conducted in 2011 for raptor nest surveys, mine site ground surveys, hunter harvest surveys, and the caribou radio-collaring program. In its response, AEM provided summary tables that compared the 2011 monitoring data to the impact prediction thresholds for all the requested surveys with the exception of mine site ground surveys. Mine site ground surveys had been conducted as a general surveillance of the mine site to ensure activities were not causing any unpredicted harm to wildlife, to evaluate waste management procedures and evaluate spills. As a result, there were no specific thresholds to be compared to, as that type of survey would be employed for operational due diligence and have not been specified in the original TEMP.

c) Compliance with licences and authorizations

The Board requested that AEM indicate what next steps it would pursue in regards to its on-site water management practices. The Board had requested that this be provided once the results of AEM's investigations regarding the increased use of reclaim water which would decrease requirements of freshwater became available. In its response, AEM indicated that it intended to minimize freshwater use at the Meadowbank site and that it had been investigating and designing methods to reduce freshwater usage. Since the summer of 2012, AEM reported an increase in its recirculation and use of reclaimed water for the SAG mill. AEM applied for an amendment to its Type A Water Licence (No. 2AM-MEA0815) with the NWB in April 2013 in order to allow for an increase in the amount of freshwater drawdown and use from the Third Portage Lake from the originally permitted amount to 1,870,000 m^3/year in 2013; and, to 1,150,000 m^3/year for each year after to 2018.

d) Cyanide levels in water quality results

In 2011, Environment Canada (EC) noted that cyanide (CN) values reported by AEM were above the Canadian Council of Ministers of the Environment (CCME) guidelines for water samples collected in 2010 and suggested that AEM review the source of the high CN values. In its 2011 Annual Report, AEM indicated that CN was detected in old empty sampling bottles that had been stored for an extended period of time (> 8 months) and that further testing was ongoing and the results and interpretation would be provided in the 2012 Annual Report. In 2012, the Board requested that AEM provide a plan of action to ensure future contamination of sampling bottles did not occur. The recommendation included updating site procedures to require the replacement of sampling bottles more frequently in order to avoid CN contamination, and working with the laboratory contracted to determine the source of CN at the mine site.

In its response, AEM indicated that it had updated its procedures and now replaces sample bottles on a monthly basis to ensure that shelf life at the site is minimal. Further, AEM indicated that they had no additional instances of increased levels of CN in its effluent to Third Portage Lake during the 2012 reporting period.

e) Proposed pilot remediation program

In 2012, the Board requested that AEM keep the NIRB informed as to the development of the contaminated soil storage/pilot remediation site and that copies of the revised landfarm management plan or any other related plans be provided to the NIRB. AEM provided a revised Landfarm Design and Management Plan as part of its response which included a discussion on the pilot remediation site.

f) Groundwater monitoring wells – Condition 8

   8. "…At the time samples are taken Cumberland shall also assess the condition of existing groundwater monitoring wells and replace any defective wells. Cumberland shall continue to undertake semi-annual groundwater samples and re-evaluate the groundwater quality after each sample collection…"

The Board recommended in 2012 that AEM provide a plan including an estimated date by which the defective wells would be replaced or re-established in order to establish a robust groundwater quality data monitoring program. The NIRB also requested an updated map showing where the wells would be installed. In its response, AEM indicated that actions would be taken in 2013 to remove the blockage at groundwater well MW11-02 (Second Portage Arm) or to replace the well. No discussion was provided on how or whether other defective wells at Goose and Portage open pits would be repaired or replaced. AEM did indicate that though not all wells continue to be functional, the monitoring conducted to date had been achieving the purpose of the NIRB Condition, which is to evaluate the consequence of pit water quality on the effectiveness of water management and treatment plans.

The Board also recommended that AEM keep the NIRB informed of the status of the re-evaluation of the groundwater well monitoring program in order to monitor ongoing compliance with Condition 8. In its response, AEM provided several methodologies that were being considered to more effectively achieve the purpose of NIRB Condition 8; a target date for the submission of a Groundwater Plan was to be August/September 2013. For 2013, AEM committed to recover operable wells that had previously been blocked (monitoring wells MW11-02 and MW08-03).

In its 2011 Annual Report, AEM indicated that the groundwater chemistry at one of the wells sampled (MW11-01) had higher values of several parameters compared to samples taken from wells in previous years from the same area. In 2012 the Board recommended that AEM conduct further studies to accurately determine the source of contamination in the well, with a focus on determining whether the increased values were related to the movement of groundwater through the formation within the Goose Island Pit. In its response, AEM indicated that the apparent contamination at the well would not be investigated further. AEM suggested that the contamination at this well occurred during installation partly from the well grout (causing the elevated pH) and by brine addition during drilling (causing the high salinity). AEM also indicated that the Goose pit was not yet in operation during the groundwater monitoring program in September 2011 and therefore, the observed contamination of groundwater at this well in 2011 was not likely related to the activities of the mine or groundwater flow from the tailings storage facility. AEM noted that follow-up monitoring could not be conducted as this well was damaged during 2012 site operations and had been subsequently decommissioned.

The Board also recommended that AEM provide a more detailed discussion regarding the mitigation measures to be put into place in order to address the observed higher values recorded at well MW11-01. AEM indicated in its response that monthly monitoring results of the sump water quality at Goose pit, initiated in June 2012, were low and representative of a mixture of formation water and lake water and not highly saline as compared to water quality observed at MW11-01. AEM indicated that no mitigation measures would be put in place to address the elevated calcium chloride (CaCl) observed at well MW11-01 as it was not anticipated to cause a noticeable increase in salinity concentrations of pit sump waters. Monitoring of sump water quality at Goose pit was proposed to be continued as a substitution for the damaged monitoring well MW11-01.

g) <u>Quality assurance/quality control (QAQC) – Condition 23</u>
   23. "For the purposes of monitoring quality assurance and quality control ("QA/QC"), Cumberland shall ensure that water quality monitoring performed at locations within receiving waters that allow for an assimilative capacity assessment of concern to regulators, be carried out by an independent contractor and submitted to an independent accredited lab for analysis,…"

The Board requested that AEM provide a discussion of the exceedances observed for the duplicate samples during the analyses of the 2011 results, as well as an indication as to whether further studies were planned in order to address the results observed for the QA/QC monitoring. In its response to the Board's 2012 recommendation, AEM indicated that given the high number of samples collected in 2011, it was common to have a few relative percent difference (RPD) exceedances as a result of the discrete differences in the original and field duplicate samples. Further, AEM stated that given the variability of these exceedances (occurring with different parameters, on different dates for different sampling programs) and the high number of successful samples, it was apparent that field QA/QC standards were maintained during the sampling in 2011. AEM indicated that its technicians would continue to follow the standard QA/QC procedures submitted in January 2009 and that AEM would also review and update the QA/QC plan in consideration of the NIRB's recommendations.

h) <u>Wildlife Deterrents – Condition 25</u>
   25. "Cumberland shall manage and control waste in a manner that reduces or eliminates the attraction to carnivores and/or raptors. Cumberland shall employ legal deterrents to carnivores and/or raptors at all landfill and waste storage areas…"

In 2012, the Board requested that AEM provide information on the type of deterrents it plans to use in the future to deter falcons and ravens at the Meadowbank site and at the Baker Lake bulk fuel storage facility, and to provide discussion as to the effectiveness of such deterrents at these sites and any alternatives that may be considered. In its response, AEM indicated that peregrine falcon activity and nesting had increased along the AWPAR due to the construction of ideal perch and protected nesting sites in the region. For quarry sites not in operation, AEM stated that no deterrent methods would be used. For any peregrine falcon activity or nesting near the mine operations, AEM has developed a Peregrine Falcon Management and Protection Plan and would also consult with a raptor expert to provide site specific protective measures and if needed, deterrence recommendations to ensure falcon protection.

Decoys had been installed at the Baker Lake bulk fuel storage facility to deter ravens from continuing to nest, and AEM indicated that it would continue to monitor these sites to discourage nesting. If a nest is observed, AEM has indicated that they would immediately contact the Government of Nunavut, Department of Environment (GN DoE).

i) Spills and clean-up – Condition 26

26. "Cumberland shall ensure that spills, if any, are cleaned up immediately and that the site is kept clean of debris, including wind-blown debris."

The Board requested that AEM provide a monitoring plan for the spill at km 22, requesting specifically, that AEM provide information on what conditions must be met to discontinue monitoring of this area in 2 years. In its response, AEM re-iterated that several plans had been put into place to prevent future spill occurrences along the access road with the main focus being on controlling the speed of all vehicles. The speed limit along the AWPAR was reposted and drivers have been given warnings if speeding along the road. Another of AEM's focuses has been to increase road maintenance and safety procedures, and to provide onsite training of staff of the use of the road. AEM also indicated that there were no spills along the AWPAR during 2012. The NIRB notes from AEM's 2012 Annual Report that a total of 4 environmental spills occurred along the access road in 2012 however all spills were below the threshold which requires their being reported to the Government of Nunavut (GN) spill hotline.

For the spill near km 22/23, AEM indicated that clean-up of the spill residues had been completed in the fall of 2012. Approximately 550,000 litres of water was treated at the site in 2012. AEM also indicated that the maritime barriers would remain in the watercourse throughout the 2013 freshet as a precaution, and that monitoring would be conducted in 2013 and 2014. Remedial measures would also be undertaken by AEM if hydrocarbon levels are detected in the water samples taken. No discussion was provided by AEM on what conditions must be met to discontinue monitoring of this area.

In 2012, the Board also requested that AEM develop and put into place an action plan designed to prevent wind-blown debris from the waste piles and/or to establish additional on-site waste management practices. The Board also requested that AEM report on the effectiveness of this waste management action plan in its annual reporting to the NIRB. AEM indicated that its staff are expected to use their best efforts to prevent windblown debris by ensuring that any bulk waste not going to the incinerator is bagged and that all organic waste is stored in closed top bins. Annual clean-up of the site is conducted after freshet and field crews pick up wind-blown materials when encountered.

j) All weather private access road – Condition 32(items e through g)

32(e) "Prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.

32(f) Place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of road limited to *authorized, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.*

32(g) Record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one (1) year after the road is opened and annually thereafter; and

32(h) Report all accidents or other safety incidents on the road, to the GN, KivIA, and the Hamlet immediately, and to NIRB annually."

In 2012, the Board noted that AEM's 2011 Annual Report did not include information regarding Condition 32(e), 32(f) or 32(g) and that it appeared that the report provided results based on the *original* Condition 32 issued December 2006 by the NIRB. The Board reminded AEM that its annual reports were expected to speak to the *amended* Condition 32 that was issued by the NIRB on November 20, 2009. Further, the Board recommended that AEM provide information on the compliance status to Condition 32(e) and 32(f) for the 2011 year and that it provide records of consultation with the community of Baker Lake in 2011 as to the private nature of the access road and the non-mine access that is allowed for traditional Inuit activities. In its response to the Board's 2012 recommendations, AEM indicated that they conduct quarterly meetings with the Baker Lake Community Liaison Committee and that an annual meeting was held with the community of Baker Lake in October 2011. Meeting minutes were provided in the response.

Furthermore, the Board recommended that AEM provide information on the authorized non-mine use of the road as required under Condition 32(g). The Board requested that AEM provide an assessment of the environmental and socio-economic impacts of the access road as spoken to in Condition 33 *[…2. to facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required,...]*. In its response, AEM indicated that they had implemented the use of electronic records to prevent future loss of hardcopy records (most of the 2011 records were lost in a fire). In addition, AEM noted that there were no accidents up to that date involving mine related truck traffic and locals using ATV's. AEM also provided information and a comparison of the usage of the road as related to harvesting activities. It was noted that although increases in the number of caribou harvested within 5 km of the AWPAR have been recorded each consecutive year since the AWPAR construction, the total harvests per participant within the 5 km of the AWPAR have increased only marginally. AEM also noted that the road appeared to be important to hunters in the winter season.

k) <u>Monitoring of country foods – Condition 67</u>

67. "Cumberland shall develop and implement a program to monitor contaminant levels in country foods in consultation with HC…"

In 2012, the Board recommended that AEM notify the NIRB of any plans for follow-up studies that may be conducted as a result of the preliminary quantitative risk assessment (PQRA) report recommendations, specifically for chromium exposure to caribou and chromium concentration in lichen at both reference and mine site locations. In its response, AEM indicated that it would complete another wildlife screening level risk assessment (WSLRA) in 2014 and during this re-evaluation and analysis, the chromium levels at reference and mine-site stations would be re-assessed and if necessary, additional samples may be collected to evaluate chromium speciation.

l) Dust and air monitoring – Condition 71

71. "Cumberland shall, in consultation with EC, install and fund an atmospheric monitoring station to focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported annually to NIRB."

The Board recommended that air monitoring stations be kept in place until more data is collected. However, if more suitable locations for dust monitoring were identified, the Board requested that AEM provide a description of the new location for the atmospheric monitoring station, including an updated map. Further, the Board requested that AEM provide a discussion and rationale as to why two out of the four stations monitored exceeded the maximum allowable concentrations of total fixed dust fall during the months of November/December at a time when the mine roads would usually be expected to be covered with snow.

In its response, AEM indicated that the location of the stations were determined in consultation with EC in July 2011. However, Station #4 was installed prior to the construction of the Vault road which, after realignment, placed the station within approximately 10 feet of the road. The station was re-positioned by AEM to 100 metres east of the road to be indicative of the original intended location (approximately 100 metres from the road). The other stations were not changed from the initial location as agreed upon with EC. In regards to the two stations exceeding the maximum allowable concentrations, AEM indicated that during the November and December months, construction of the Vault road was ongoing and that was the explanation for these stations having been affected.

m) On-site incinerators – Condition 72

72. On-site incinerators shall comply with Canadian Council of Ministers of Environment and Canada-Wide Standards for dioxins and furan emissions, and Canada-wide Standards for mercury emissions, and Cumberland shall conduct annual stack testing to demonstrate that the on-site incinerators are operating in compliance with these standards. The results of stack testing shall be contained in an annual monitoring report submitted to GN, EC and NIRB's Monitoring Officer.

In 2012, the Board requested that AEM provide the information requested by EC regarding incinerator combustion operations, and that any corrective measures employed be identified and described in future annual reports. AEM, in its response, indicated that there were some initial operational problems during the use of the incinerator in the first 1.5 years of incinerator operation. AEM also indicated that since that time they had committed to proper personnel training and operations of the unit. Furthermore, AEM indicated that results from 2012 stack testing showed that emissions were below EC's criteria for dioxins, furans and mercury, illustrating that the unit temperatures were maintained to ensure complete combustion of wastes. The NIRB notes however, that in reviewing the available 2012 Incinerator Daily Report Logbook, the incinerator temperature in the secondary chamber were below the recommended 1000 ºC temperature on several occasions (see Section 2.2.2.4 for further discussion).

n) Suppression of surface dust – Condition 74

74. "Cumberland shall employ environmentally protective techniques to suppress any surface dust."

This condition has been included as a recommendation by the Board in each of its annually issued recommendations to the Proponent since 2008. In 2013, it was noted by the Monitoring Officer during the site visit that no dust suppressant techniques were being applied to the access road from Baker Lake (gatehouse) to the Meadowbank site but that AEM did use CaCl and water as a dust suppressant at the mine site itself. The same issue was noted during the 2011 and 2012 site visits. In the Board's 2012 recommendations to the Proponent, it was requested that dust control for the access road be addressed by the Proponent. Further, the Board recommended that AEM provide a plan which details the future dust monitoring studies that would be conducted along the access road including a discussion of potential adaptive management strategies that may result from these studies.

In its response to the Board's recommendations, AEM indicated that it had implemented a road dust control program at the mine site that focuses on road safety by controlling dust and protecting the environment and public health. The focus of dust control was at the mine site and the road between the mine site and the Meadowbank exploration camp as these have the highest volume of road traffic. AEM indicated that it also provided CaCl to the hamlet of Baker Lake to be applied to the section of road between AEM's barge landing area and the Baker Lake Gatehouse in response to the increased traffic during the sealift period. However, AEM has indicated that to treat the full length of the Meadowbank AWPAR it would require an approximate amount of 2.8 million litres of CaCl. Given the large volume of material required, AEM expressed concern that it could cause adverse environmental impacts and noted that there is no guarantee that the two applications would be adequate. AEM had indicated that it was not willing to introduce this amount of CaCl into the local environment until it better understands the potential environmental effects of using CaCl and until it can confirm that the dust currently generated along the AWPAR is causing harm. AEM also indicated that monitoring studies to date have not identified dust deposition as a potential concern to the terrestrial or aquatic environments.

AEM indicated that it would continue to monitor air quality around the site and has proposed a study to evaluate dustfall at selected locations along Vault Pit road, along the road to the exploration camp and along additional sections of the AWPAR. A study design was also presented by AEM.

It was noted during discussions held as part of the 2013 site visit that dust control trial studies were conducted in the summer of 2013 (see Appendix I for further details) and that AEM is awaiting the results from the studies to determine the best options to deal with the dust created at the mine site and along the access road.

2.2.2.3. Authorizing Agency Responses to the Board's 2012 Recommendations

a) Monitoring of country foods – Condition 67

67. "Cumberland shall develop and implement a program to monitor contaminant levels in country foods in consultation with HC…"

In 2012, the Board invited Health Canada to provide comments on the WSLRA and the PQRA reports prepared by AEM in order to meet the requirements of Condition 67; and to indicate whether or not further information may be required with respect to the monitoring program. In its response, Health Canada indicated that it was unable to provide comments on the WSLRA report as it did not possess the relevant expertise in the areas of modeling emissions and deposition, environmental transport, fate and/or contaminant uptake by plants or wildlife (country foods) and suggested that another department may have the expertise necessary to review the WSLRA. With respect to the PQRA report, Health Canada indicated that it would require additional information to provide comments on the human health assessment that was completed by AEM. The request for additional information was forwarded to AEM and in turn AEM responded and provided the information requested by Health Canada. At the writing of this report, Health Canada has not provided a response and/or comments in regards to the additional information provided by AEM.

2.2.2.4. Conditions Requiring Attention

The NIRB notes that AEM is not in full compliance with the following Terms and Conditions of the Meadowbank Project Certificate [No. 004]. These items are discussed further in the Memo and Recommendations provided under separate cover to the Board for its consideration.

a) Acid rock drainage/metal leaching – Condition 15

15 "Cumberland shall within two (2) years of commencing operations re-evaluate the characterization of mine waste materials, including the Vault area, for acid generating potential, metal leaching and non metal constituents to confirm FEIS predictions, and re-evaluate rock disposal practices by conducting systematic sampling of the waste rock and tailings in order to incorporate preventive and control measures into the Waste Management Plan to enhance tailing management during operations and closure. The results of the re-evaluations shall be provided to the NWB and NIRB's Monitoring Officer."

In the 2012 annual report AEM provided a description of how blast holes were sampled and analyzed for the percentages of sulphur and carbon. However, there was no discussion provided on how the numbers compare with predictions made in the FEIS. Further, no discussion was provided on the re-evaluation of rock disposal practices, the results from systemic sampling of the waste rock and tailings and how tailings management has been enhanced. It is noted that an updated mine waste rock and tailings management plan was submitted with the 2012 annual report.

b) On-site incinerators – Condition 72

72. On-site incinerators shall comply with Canadian Council of Ministers of Environment and Canada-Wide Standards for dioxins and furan emissions, and Canada-wide Standards for mercury emissions, and Cumberland shall conduct annual stack testing to demonstrate that the on-site incinerators are operating in compliance with these standards. The results of stack testing shall be contained in an annual monitoring report submitted to GN, EC and NIRB's Monitoring Officer.

AEM indicated that the Daily Report Logbook entries for the incinerator operation were only available for the months of March, May, June and December with the remaining daily logbook entries being misplaced for the other months. In the review of the available 2012 Incinerator Daily Report Logbook, the NIRB notes that the incinerator temperature in the secondary chamber was below the recommended 1000 ºC temperature on several occasions. It is noted that there were 17 burn cycles where the secondary chamber was less than 1000 ºC, 9 burn cycles where the secondary chamber was less than 900 ºC and 1 burn cycle where the secondary chamber was less than 600 ºC. It was previously noted by EC[1] that the incinerator temperatures in the secondary chamber should be above 1000 ºC to ensure complete combustion and to minimize the formation and release of contaminants.

Incinerator stack testing was completed in 2012 and the results indicate that AEM had been operating below the CCME Canada Wide Standards for Dioxins and Furans.

c) Suppression of surface dust – Condition 74

74. "Cumberland shall employ environmentally protective techniques to suppress any surface dust."

As noted previously and within the NIRB's 2013 Site Visit Report (Appendix I), to date, dust suppression techniques have not been applied to manage dust along the access road. However, AEM has indicated that it intends to determine the best options to deal with the dust created along the access road, should it be shown to cause an effect.

d) Spill at Baker Lake Marshalling Area – Condition 37 & 82 and Commitments 34, 35 & 38

Conditions:

37. Cumberland will contract only Transport Canada certified shippers to carry cargo for the Project, and will require shippers transporting cargo through Chesterfield Inlet to carry the most up-to-date emergency response/spill handling equipment as recommended and accepted by the Government of Canada with the crew trained to deploy the equipment, including practice drills deploying spill equipment in remote locations within the Inlet.

82. Cumberland shall monitor the ingress/egress of ship cargo at Baker Lake and report any accidents or spills immediately to the regulatory agencies as required by law and to NIRB's Monitoring Officer annually.

Commitments:

34. The shipping company will have spill equipment on board with crew trained to deploy the equipment.

35. The Coast Guard will be notified as soon as a spill has occurred and, if required, will provide further spill support.

[1] Environment Canada letter to Nunavut Impact Review Board, Re: *Comments related to Agnico-Eagle Mine Ltd's Meadowbank Gold Project 2010 Annual Report*, November 2, 2011.

38. *Cumberland will request that the shipping company contracted to carry fuel for the project carry out practice drills deploying their spill equipment in various locations within the inlet.*

On August 9, 2012 an accidental spill of approximately 200 litres of diesel fuel occurred in Baker Lake at AEM's marshalling facility. The fuel spill occurred during discharge operations by the barge vessel (MT Dorsch) at the Baker Lake mine site marine manifold. Based upon the 2012 annual report received from AEM, the marine hose had been scuffed or rubbed worn on a rock, causing a puncture in the hose which led to a fuel leak. The crew of the vessel immediately started the clean-up of the area with assistance from AEM employees. AEM used additional material from the Canadian Coast Guard sea-can located in Baker Lake in order to clean up the spill as the ship did not contain sufficient material to complete the clean-up. The spill was reported to authorities including AANDC, EC, Transport Canada (TC) and the GN Spill Line. The Monitoring Officer was informed of this spill by the GN-Department of Environment on August 9, 2012.

On August 11, 2012 AEM held a community meeting to discuss the spill, to discuss AEM's clean-up response and the next steps that would follow after the spill. AEM indicated that it would be working with the shipping company (Woodward) to determine what might be done to prevent future spills and that it would be setting up some additional spill response kits near the shore in order to prepare for any potential future spills. During the 2012 and 2013 site visits, the Monitoring Officer noted that there were two environmental emergency sea-cans at the Baker Lake laydown facility; one contained booms and absorbent pads while the other contained a boat and supplies for the boat.

On August 14, 2012 the NIRB contacted TC requesting information on the spill, including the legislation that would apply and the follow-up required by AEM or Woodward. In October 2012, TC's Marine Safety department confirmed that it was still investigating the incident for possible contraventions of the *Canada Shipping Act, 2001*. TC further indicated that both the vessel and the Oil Handling Facility (owned by AEM) were responsible for the clean-up of the spill. No further information has been provided by TC with regards to the investigation and/or outcome from the incident.

In AEM's 2012 Annual Report, it indicated that samples were collected by AEM staff at 3 locations within Baker Lake near the area of the spill as well as in the vicinity of the Baker Lake Water Supply intake. The results showed no exceedences of CCME drinking water criteria or traces of any substance associated with diesel fuel.

2.2.3. Compliance Monitoring by Authorizing Agencies

On April 30, 2013 the NIRB requested that authorizing agencies with a mandate or jurisdictional responsibility for the Meadowbank project provide comments and information with respect to compliance monitoring for the 2012 – 2013 reporting period as required in Part D of Appendix D of the Meadowbank Project Certificate (NIRB, 2011). Specifically, comments were requested regarding the following:

a) How the authorizing agency has incorporated the terms and conditions from the Project Certificate into their permits, certificates, licences or other government approvals, where applicable;
b) A summary of any inspections conducted during the 2012 reporting period, and the results of these inspections; and
c) A summary of AEM's compliance status with regard to authorizations that have been issued for the Project.

The following is a *summary* of the comments received from parties regarding compliance monitoring.

2.2.3.1. Aboriginal Affairs and Northern Development Canada (AANDC)

AANDC's Water Resource Officers conducted two inspections in 2012 for compliance with the Type A Water Licence as issued by the NWB (Licence No. 2AM-MEA0815). AANDC noted the following issues after the site inspections:

<u>*March 2012*</u>

- Exceedance of total allowable water usage limit of 700,000 m^3 per year as stipulated in the water licence.
- Use of quarry pits #5 and #22 for contaminated soil.

<u>*July 2012*</u>

- Use of quarry pit #22 for contaminated soil.

AANDC noted that conditions 8 to 30 and conditions 78 to 80 of the NIRB's project certificate had been incorporated into the Type A Water Licence. AANDC also noted that the Proponent had not clearly illustrated how the requirements of conditions 22 and 23 were met in its 2012 Annual Report and requested further clarification from AEM. Regarding Condition 80, AANDC noted that AEM committed to updating the mine closure plan using revised life of mine calculations, as well as liability estimates which give consideration to the updates of Portage waste rock facility reclamation work.

2.2.3.2. Fisheries and Oceans Canada (DFO)

A site visit was conducted by DFO in August 2012 with no compliance issues having been reported as observed by the DFO officer at the AEM site.

2.2.4. Compliance with Instruments

2.2.4.1. Nunavut Water Board Licence

As indicated earlier in this report, AEM applied for an amendment to its Type A Water Licence (No. 2AM-MEA0815) with the NWB to increase the amount of freshwater drawdown and use from the Third Portage Lake from the originally permitted amount to 1,870,000 m^3/year in 2013 and to 1,150,000 m^3/year for each year thereafter until 2018. The NIRB received correspondence from the NWB on July 15, 2013 acknowledging AEM's amendment application and requesting that the NIRB confirm whether any screening, reconsideration or review of the proposed amendment would be required. The NIRB released correspondence on

August 6, 2013 indicating that the NIRB would consider two avenues under the NLCA (Sections 12.4.3 and 12.8.2) to determine the impact assessment requirements applicable to AEM's amendment application. The NIRB invited interested parties and agencies with jurisdictional authority and/or licences and approvals associated with the Meadowbank Gold Project to provide their comments to the Board with respect to AEM's proposed Water Licence amendment application on or before August 20, 2013.

The NIRB received comments from EC and AANDC, and a request for clarification from DFO. Both AANDC and EC were of the opinion that the increase in water withdrawals from Third Portage Lake would not necessarily constitute a change in scope from the activity that was originally reviewed by the NIRB in 2006. Further, the increase in water usage would be adequately captured under Condition #47 of the Project Certificate [004] which requires the Proponent to take an adaptive approach to managing water flow in Third Portage Lake, including verification of the maintenance of water levels. Both AANDC and EC indicated that environmental consideration associated with the amendment request would be adequately addressed through the water licence amendment process.

On October 1, 2013 the NIRB issued correspondence indicating that the application to amend the NWB Type A Water Licence would not change the general scope of the Meadowbank Gold Project as previously reviewed by the Board, and that therefore, the amendment application was exempt from the requirement for screening pursuant to Section 12.4.3 of the NLCA and the amendment activities therein would remain subject to the terms and conditions of the NIRB Project Certificate [004].

2.2.4.2. *Fisheries Act* Authorization

As described earlier in this report, in July 2013 AEM applied to DFO for amendments to its existing *Fisheries Act* Authorizations No. NU-03-0190 – AWPAR and No. NU-03-0191.3. AEM requested an amendment to the monitoring frequency as required by its *Fisheries Act* Authorization No. NU-03-0190 and a reduction to the existing letters of credit held by the Government of Canada from the currently held $25.675 million to $8.6 million as required by its *Fisheries Act* Authorization No. NU-03-0191.3. The NIRB received additional clarification from AEM regarding the amendments requested on September 6, 2013.

The NIRB released correspondence on September 26, 2013 NIRB would consider two avenues under the NLCA (Sections 12.4.3 and 12.8.2) to determine the impact assessment requirements applicable to AEM's applications to amend its *Fisheries Act* authorizations. The NIRB invited interested parties and agencies with jurisdictional authority and/or licences and approvals associated with the Meadowbank Gold Project to provide their comments to the Board with respect to AEM's proposed amendments to its *Fisheries Act* Authorizations (No. NU-03-0190 – AWPAR and No. NU-03-0191.3) on or before October 10, 2013. The NIRB also requested that DFO provide comments with respect to the requested amendments.

2.2.4.3. Compliance with other licences and authorizations as described in the 2012 Annual Report

AEM noted that inspections were conducted by AANDC, KivIA, EC, DFO, NIRB and GN-DoE. Compliance issues were identified by both AANDC and EC during various inspections. AEM complied with directions issued by these agencies, however, it did not meet certain requirements of the NWB Water Licence (No. 2AM-MEA0815) while moving through the NWB's Water Licence amendment process. In 2010, 2011 and 2012, AEM reported that it had exceeded the total allowable annual water usage limit of 700,000 m^3 as stipulated in the water licence. As indicated in Section 2.2.4.1, AEM applied for an amendment to its water licence with NWB in April 2013. This application is currently under review by the NWB.

AEM noted within its 2012 Annual Report that samples taken in the secondary containment areas of the bulk fuel storage tanks at the Bake Lake marshalling facility contained elevated levels of total oil and grease which exceeded the water quality limit of 5 mg/L as stipulated in the NWB Type A Water Licence (No. 2AM-MEA0815). However, no discussion was provided within the 2012 Annual Report as to why this value exceeded the limit or the steps taken to ensure that this is corrected and that total oil and grease would remain below the limits set by the water licence for Tanks 5 and 6.

2.3. EFFECTS MONITORING

Effects monitoring can be described as an assessment of the measurable change to a particular environmental or socio-economic component, as compared to the potential effects that were predicted to result from a proposed development. In the case of Meadowbank, impact predictions and mitigation measures were outlined and developed throughout the environmental review of the Project, and were recorded and presented through the Proponent's Final Environmental Impact Statement (FEIS) and other related documents.

In addition to requesting comments on compliance monitoring on April 30, 2013 the NIRB requested that authorizing agencies provide comments and information with respect to effects monitoring as follows:

a) Whether the conclusions reached by AEM in the *2012 Annual Report* are valid;
b) Any areas of significance requiring further studies; and,
c) Changes to the monitoring program which may be required.

The following section provides the NIRB's review of the 2012 Annual Report and a *summary* of the comments received from parties.

2.3.1. NIRB's Review of AEM's 2012 Annual Report

Appendix D of the Project Certificate provides an outline of the requirements of what is expected within the Proponent's annual report for the Meadowbank Project. Particularly, the annual report should include a summary of the results from the post-environmental assessment monitoring program (PEAMP), including an analysis of the Project's impact upon the environment with reference to the predictions and environmental and socio-economic indicators referenced throughout the FEIS and the Final Hearing. AEM provided a summary of the monitoring that was completed in 2012 for the following requirements:

- Aquatic monitoring
- Noise monitoring
- Air quality monitoring
- Wildlife monitoring
- Country food
- Archaeology

As part of its post-environmental assessment program, AEM provided a summary on how the current environmental and socio-economic effects of the Meadowbank mine site compare to the impacts as predicted in the FEIS for the following:

- Aquatic environment
- Terrestrial and wildlife environment
- Noise quality
- Air quality
- Permafrost
- Socio-economics

The following is a summary of the NIRB's review of AEM's 2012 Annual Report:

2.3.1.1. Aquatic Environment

Water quality

AEM noted in its 2012 annual report that the original water quality predictions in the FEIS did not adequately predict actual water quality in the pits. AEM did not provide a discussion on the original predictions nor an analysis of whether these adequately predicted the actual water quality in the pits. Further discussion would be required to determine if the original predictions need to be updated.

Groundwater monitoring program

The groundwater monitoring program was conducted in July 2012 with samples successfully collected at only one monitoring well (MW08-02). AEM indicated that monitoring at the three other wells could not be completed due to several complications; i.e., ice bridge inside the well pipe, damage of a well, and blockage of well. The issue of defective wells at the Meadowbank mine site has been an ongoing issue since the commencement of the groundwater monitoring program in 2008. This may be due to the fragility of the wells and their operating within an arctic environment. During the NIRB's 2013 site visit, AEM indicated to the Monitoring Officer that several methodologies were being considered to address the groundwater monitoring program, including utilizing production wells to more effectively achieve the purpose of NIRB Condition 8. AEM, in its response to the Board's 2012 recommendations, indicated that it planned to submit a Groundwater Plan by August/September 2013 and that this would discuss the different methodologies being considered. To date, this document has not been received by the NIRB.

2.3.1.2. Noise Quality

Noise monitoring occurred at three of the five previously determined monitoring locations around the Meadowbank site. AEM indicated that this was due to both malfunctions and difficulties with software. From the NIRB's review of the 2012 Noise Monitoring Report (AEM, 2013b), it appears that noise levels were higher in 2012 at two stations (R1 and R5) for calculated daytime and night-time values as compared to previous monitoring years. Further, it is noted that three out of the five daytime results and three out of the five night-time results exceeded the calculated permissible sound level (PSL) of 55 A-weighted decibels (dBA) for the site (AEM, 2009). It was noted by AEM that if these sound levels are sustained for an unreasonable amount of time, additional mitigation measures may be recommended.

AEM indicated in its 2012 annual report that since noise level and terrestrial wildlife monitoring have been conducted in a manner that addresses the impacts predicted in the FEIS, these monitoring programs were judged to be effective and the effects of noise identified in the FEIS have not appeared to be occurring as predicted. However, in reading the results from the monitoring data from 2012, several values exceeded the calculated PSL of 55 dBA which may have a potential impact upon the environment, including terrestrial wildlife. This could require further analysis of the significance of noise monitoring data in order to substantiate claims that noise has not had an effect. There was no clear link made between the potential effects of noise on wildlife and how habitat effectiveness has or has not been affected by noise.

2.3.1.3. General

Condition 32: All weather private access road

Through the NIRB's review of AEM's 2012 Annual Report, it was noted that information had been provided with regards to Condition 32(f), 32(g) and 32(h). However, from the records provided, it appears that AEM did not hold a meeting in the hamlet of Baker Lake as per Condition 32(e) for the 2012 year. Further details required by the Board pursuant to Condition 32 are discussed in Section 2.2.2.2.

Condition 40: Gathering of Traditional Knowledge information

Condition 40 requires that AEM report on Traditional Knowledge (TK) gathered annually to both the KivIA and the NIRB. No information was provided in AEM's 2012 Annual Report regarding any additional TK collected from residents of Chesterfield Inlet on marine mammals, cabins, hunting and other local activities in the Inlet.

2.3.2. Effects Monitoring by Authorizing Agencies

2.3.2.1. Aboriginal Affairs and Northern Development Canada

AANDC noted that both its own and AEM's sampling results from the attenuation point were in compliance with applicable regulations. Further, AANDC pointed out that AEM's 2012 summary of results from the CREMP appeared to be consistent with the predictions made in the environmental assessment, notably that the project would have no significant impact to the freshwater environment.

However, AANDC pointed out that in 2012 the pit water quality model showed great differentiation from actual values. This resulted in AANDC having recommended that AEM improve its pit water quality model to better predict water quality.

Socio-economic effects monitoring
AANDC noted that it continues to work collaboratively in partnership with the Kivalliq Socio-Economic Monitoring Committee to monitor, evaluate and report on the socio-economic impacts of the Meadowbank mine in order to satisfy the NIRB's Project Certificate requirements.

2.3.2.2. Environment Canada

EC provided comments and recommendations on AEM's incineration process, air quality monitoring results and groundwater monitoring throughout the 2012-2013 monitoring period.

Incineration

As a result of its review of Appendix E2 within AEM's 2012 Annual Report, EC requested further clarification on the amount of waste that had been incinerated. Specifically, whether the waste had been weighed prior to being loaded into the incinerator, and also, the total mass of waste incinerated annually. EC also requested that AEM clarify how often the burner operation of the incinerator had been below-optimal levels. EC requested that AEM should provide the results of the second stack tests that were conducted to determine compliance with the CCME Canada Wide Standards for Dioxins and Furans. EC also requested clarification on the details of the waste stream used for the stack tests and for clarification as to when in the burn cycle these tests were conducted.

Air quality

EC pointed out within its submission that Appendix G7 of AEM's 2012 Annual Report indicated that particulate matter (PM_{10}) concentrations were consistently larger than total suspended particulates (TSP) concentrations at two monitoring sites. EC further noted that this is not possible in actuality as PM_{10} is a subset of TSP. EC requested that AEM confirm that the monitoring results for these two parameters might have accidently been switched, and also suggested that it follow other provincial standards for PM_{10} considering that the GN does not have a PM_{10} ambient air quality standard.

It was noted by AEM within its 2012 Annual Report that greenhouse gases measured on site had increased by 23% from 2011 to 2012 due to a 28% increase in mine throughput and production. In its submission to the Board, EC requested that AEM clarify whether any other measured emissions had also increased during this time period, and further, requested that AEM include estimates of annual emission rates of all pollutants plus the annual consumption rate of fuel used on site.

Groundwater monitoring

In its submission to the NIRB, EC recommended that AEM develop other approaches to sampling and analysis that would allow AEM to obtain groundwater chemistry and flow data in order to inform the operational water management and provide information for closure.

2.3.2.3. Fisheries and Oceans Canada (DFO)

DFO suggested that AEM continue to adhere to its Guidelines for the Use of Explosives in or Near Canadian Waters (1998) though it acknowledged that the paper by Faulkner *et al.* (2006) listed the following exceptions:

- Measurements could only be obtained for 25% of the blasts;
- All the Lake Trout eggs utilized in this study were either not viable, or contained embryos that were already past the developmental stage most sensitive to physical shock; and
- There is a large margin of error associated with physical handling of the eggs prior to/during placement in the various sites.

2.3.2.4. Agnico Eagle Mines Ltd.'s Response to Comments

AEM provided a response to the comments received from authorizing agencies on July 19, 2013. Of note, AEM confirmed that the values obtained for PM_{10} and TSP were not accidently switched as proposed by EC but was correctly reported. AEM further indicated that it has initiated a full review of the particulate sampling procedures to determine the source of the error.

2.3.3. Areas Requiring Further Study or Changes to the Monitoring Program

2.3.3.1. Appendix D and the Annual Report

The NIRB notes that AEM's 2012 Annual Report provided an evaluation and comparison of its results from 2012 monitoring programs to the impacts as predicted in the FEIS. The evaluation focused on the VECs that had been identified in the FEIS, including the aquatic environment, the terrestrial and wildlife environment, noise quality, air quality, permafrost and socio-economics. However, the discussion and analyses as presented does not provide a full discussion and summary on the PEAMP for the Project as required by Appendix D. Specifically, the NIRB would expect these analyses to include a reference to baseline data and monitoring results used to support impact predictions and the conclusions of effects analyses, with a discussion of the methodologies employed for both data collection and analysis. Further, the discussion was lacking a determination as to whether or not the project had any environmental and socio-economic impacts during the reporting year in comparison to baseline data, the previous years' monitoring data, and the predictions made in the FEIS. A comparison to predictions and effects conclusions from FEIS and discussion of any exceeded thresholds, adaptive mitigation strategies employed and their effectiveness and an evaluation of any mitigation measures undertaken as well as updates to predictions made also were not included. The NIRB notes that AEM's 2012 Annual Report did provide a detailed discussion on the usage of the access road and the potential impacts to wildlife (caribou harvested) given the increase access along the access road.

2.3.3.2. Harmful Alteration, Disruption or Destruction Crossings along the Access Road

AEM proposed in its 2012 Annual Report that, based on the water quality monitoring results collected during 2012 and in previous years along the harmful alteration, disruption or destruction (HADD) crossings, it would not conduct any surface water chemistry sampling in 2013 unless turbidity were observed at these crossings. The NIRB notes that any changes to monitoring programs related to authorizations would require approval from the relevant authorizing body and possible consideration by the Board.

2.3.3.3. Permafrost

In its 2012 Annual Report, AEM indicated that no monitoring of permafrost aggradation was completed in taliks for Second Portage Lake, Portage Pit and Bay Goose Pit during 2012 in order to verify the predictions made within the FEIS as no instruments were in place to collect data. The NIRB notes that ongoing monitoring of the aggradation of permafrost and stabilization of the active layer is important to determine whether the project is having an effect on permafrost and also, to determine whether a loss of permafrost has occurred.

2.4. Other Actionable Items

The amendment application to the NWB (see Section 2.2.4.1) included a reference to Phaser Lake within AEM's updated Water Management Plan 2012 (AEM, 2013c). Within this plan, AEM makes reference to the extension of Vault Pit into Phaser Lake; noting that this would require a fish out and then dewatering of Phaser Lake, in approximately 2016. Further information regarding the proposed dewatering of Phaser Lake as described within the plan was not provided.

2.5. Site Visit

As an integrated part of the NIRB's continuous monitoring program of the Project, the NIRB's Monitoring Officer visited the Meadowbank site on September 13, 2013. The site visit included the Meadowbank site facility (the waste rock facility, landfarm, landfill/pilot remediation site, tailings storage facility, Vault Pit, active mine areas including Portage pits and Bay-Goose basin, the waste and hazardous materials storage area, the incinerator, fuel storage area, air monitoring station and dust monitoring station), the access road and the Baker Lake fuel tank farm and marshalling facilities. The following outlines findings as they relate to the NIRB's 2013 site visit:

> Based on the observations made during this site visit, all facilities which were in operation and/or under construction appeared to be well managed and maintained with adequate environmental protection measures and procedures in place.
>
> As with years past, the Proponent appeared to be in compliance with a majority of the terms and conditions contained within the Meadowbank Project Certificate as applicable to the NIRB's 2013 Site Visit. However, there may be certain situations in which the Proponent

has not yet fully met the requirements of the Meadowbank Project Certificate and which require further consideration and attention.

The pilot remediation program undertaken during the 2012-2013 reporting period appeared to have worked well; the Monitoring Officer was informed that the rate of biodegradation of the contaminated soil containing nutrients (sewage sludge) was faster as compared to contaminated soils with no nutrients added. AEM noted that it would continue to use this method next year for treatment of all of its contaminated soils.

The Monitoring Officer also noted that the silt curtains put in place downstream of the diversion ditch flowing into Third Portage Lake did not appear to be functioning properly as sedimentation was evident around the shoreline and flowing into the lake.

Regarding Condition 8, only one groundwater well appeared to have been operational during the 2013 site visit. The Monitoring Officer acknowledged AEM's indication that further re-evaluation of the groundwater well monitoring program would be conducted and that consideration would be given to potential of using production wells instead of groundwater wells to assess the existing conditions at the mine site.

Condition 25 requires that the Proponent employ legal deterrents to deter carnivores and/or raptors from the Meadowbank site. AEM noted that wildlife had been observed at site including caribou, muskox and foxes, with a few fox dens having been noted in and around the site.

Condition 26 requires that spills be cleaned up immediately and that the site be kept clean of debris. The Monitoring Officer was informed during the 2013 site visit that the clean-up of the spill at kilometre 22 was complete, but that the site would continue to be monitored as part of AEM's ongoing aquatics effects monitoring program. Furthermore, some instances of wind-blown debris scattered around the site were noted.

Condition 27 requires that the Proponent use safe, environmentally protective methods for areas used to store fuel or hazardous materials. The Monitoring Officer noted that the fuel storage facilities appeared to be well contained and properly set up for the re-fuelling of vehicles.

During the site visit it appeared that the Proponent had not fully met the requirements of Condition 74, as dust suppression techniques had not been applied to the access road, though dust suppression techniques were being applied at the Meadowbank site. AEM indicated that it has plans in place to determine the effects of dust on vegetation along the access road from studies conducted in the summer of 2013 and to determine the best options to deal with dust created along the access road.

For a comprehensive review of the NIRB's 2013 site visit and observations, please refer to the NIRB's *2013 Meadowbank Site Visit Report* (Appendix I).

3.0 SUMMARY

The Meadowbank Gold mine began commercial production in March 2010 and is now in its fourth year of production. The Proponent appears to be in compliance with the majority of the terms and conditions contained within the Meadowbank Project Certificate [004], and is generally meeting the objectives of monitoring and mitigation plans and procedures put in place for the Project. However, certain outstanding issues will require the Proponent's attention as discussed throughout this report. These items are addressed in the Board's recommendations provided to the Proponent under separate cover.

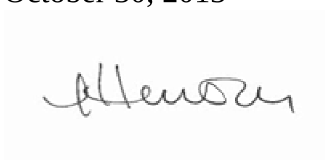
Pursuant to NLCA Sections 12.7.2 and 12.7.3, the NIRB will continue to work with AEM and other agencies in order to provide the required evaluation of monitoring efforts, results and compliance as outlined within the Board's project-specific monitoring program and in accordance with the requirements set out in the NIRB Project Certificate [No. 004].

Prepared by: Sophia Granchinho, M.Sc., EP
Title: Senior Technical Advisor/Monitoring Officer
Date: November 1, 2013

Signature: 

Reviewed by: Amanda Hanson
Title: Director, Technical Services

Date: October 30, 2013

Signature: 

REFERENCES

AEM (Agnico Eagle Mines Ltd). 2009. *Meadowbank Gold Project Noise Management and Abatement Plan*. Prepared by Agnico-Eagle Mines Limited – Meadowbank Division, Version 1, September 2009.

AEM (Agnico Eagle Mines Ltd). 2011. *Agnico-Eagle Mines Limited Detailed Mineral Reserves and Resources Data*. December 2011. Available at: http://agnico-eagle.com/English/Our-Business/Operating-Mines/Meadowbank/Reserves-and-Resources/default.aspx. Accessed November 14, 2012.

AEM (Agnico Eagle Mines Ltd). 2012. *Meadowbank Employee Bulletin*. Released February 16, 2012.

AEM (Agnico Eagle Mines Ltd). 2013a. *Meadowbank Gold Project 2012 Annual Report.* Prepared by Agnico-Eagle Mines Limited – Meadowbank Division. April 2013.

AEM (Agnico Eagle Mines Ltd). 2013b. *Meadowbank Gold Project 2012 Noise Monitoring Report.* Prepared by Agnico-Eagle Mines Limited – Meadowbank Division. March 2013.

AEM (Agnico Eagle Mines Ltd). 2013c. *Meadowbank Gold Project Water Management Plan 2012*. Prepared by Agnico-Eagle Mines Limited – Meadowbank Division. March 2013.

DFO (Fisheries and Oceans Canada). 1998. *Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters.* Available at http://www.dfo-mpo.gc.ca/habitat/role/141/1415/14155/explosives-explosifs/index-eng.asp. Accessed August 29, 2013.

Faulkner, S. G., Tonn, W., Welz, M., and Schmitt, D. 2006. *Effects of Explosives on Incubating Lake Trout Eggs in the Canadian Arctic*. North American Journal of Fisheries Management, 26:833-842.

NIRB (Nunavut Impact Review Board). 2006. *Final Hearing Report for the Meadowbank Gold Project*. Prepared by the Nunavut Impact Review Board for the Meadowbank Gold Mine Application, Cumberland Resources Inc. August 2006.

NIRB (Nunavut Impact Review Board). 2009. *In the matter of an Application by Agnico-Eagle Mines Limited for the Mine development of the Meadowbank Gold Mine Project Proposal in the Kivalliq Region of Nunavut, Project Certificate NIRB [No. 004]*. Prepared by the Nunavut Impact Review Board for the Meadowbank Gold Mine Project. Original issued December 2006. Amendment issued November 2009.

NIRB (Nunavut Impact Review Board). 2011. *Appendix D – Meadowbank Monitoring Program*. Prepared by the Nunavut Impact Review Board for the Meadowbank Gold Mine Project in accordance with the Project Certificate [004]. July 2011.

Appendix I:
The NIRB's 2013 Meadowbank Site Visit Report

2013 Site Visit Report

for the NIRB's Monitoring of
Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project

Nunavut Impact Review Board
File No. 03MN107
November 2013

Full Report Title:	2013 Site Visit Report for the Nunavut Impact Review Board's Monitoring of Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project (NIRB File No. 03MN107)
Project:	Meadowbank Gold Project
Project Location:	Kivalliq Region, Nunavut
Project Owner:	Agnico Eagle Mines Ltd. PO Box 540 Baker Lake, NU X0C 0A0
Proponent Contact:	Kevin Buck, Environment Superintendent
Telephone:	(819) 759-3555, ext. 6838
Visit conducted by:	Sophia Granchinho, M.Sc., EP Senior Technical Advisor/Monitoring Officer
Telephone:	(866) 233-3033
Site visit dates:	September 13, 2013
Last site visit:	September 12-13, 2012
Photos by:	Sophia Granchinho
Cover photos:	1) View of Meadowbank Mine Site 2) View of Baker Lake Docking Facility

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1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) was established through Articles 10 and 12 of the Nunavut Land Claims Agreement (NLCA) and is responsible for post environmental assessment monitoring of projects in accordance with Part 7 of Article 12 of the NLCA.

This report provides the findings that resulted from the NIRB's site visit of the Meadowbank Gold Project that took place on September 13, 2013 as part of the NIRB's monitoring program.

1.1 Objectives & Purpose of Site Visit

In December 2006, pursuant to Section 12.5.12 of the NLCA, the NIRB issued Project Certificate No. 004 for the Meadowbank Gold Project (the Project), allowing the Project to proceed in accordance with the Terms and Conditions issued therein. In November 2009, the NIRB formally amended the Project Certificate [No. 004] to include an amendment to Condition 32 pursuant to NLCA 12.8.2 and an approval to change the name of the holder of the Project Certificate [No. 004] from Cumberland Resources Ltd. to Agnico-Eagle Mines Ltd. (NIRB, 2009).

The Board is responsible for the monitoring of this Project as per Sections 12.7.1 and 12.7.2 of the NLCA. The objective of the NIRB's site visit was to determine whether, and to what extent, the land or resource use in question is being carried out within the predetermined terms and conditions of the NIRB's Meadowbank Gold Project Certificate [004] (Section 12.7.2(b) of the NLCA).

The observations resulting from this site visit shall, wherever possible, be incorporated into the measurement of the relevant effects of the project (Section 12.7.2(a), provide the information necessary for agencies to enforce terms and conditions of land or resource use approvals (Section 12.7.2(c)), and will further be used to assess the accuracy of the predictions contained in the project impact statements (Section 12.7.2(d)).

1.2 Meadowbank Project Description

The Project involves the construction and operation of an open pit gold mine located in the Kivalliq Region of Nunavut, approximately 70 kilometres (km) north of the hamlet of Baker Lake on Inuit-owned surface lands. The current Project owner, Agnico Eagle Mines Limited (AEM or Proponent), indicated in its December 2011 Reserves and Resources report that Meadowbank had at the time, proven and probable gold reserves of 2.2 million ounces; lower than the initial value predicted (AEM, 2011). In February 2012, AEM announced that its Meadowbank ore reserves had been reduced as a result of it being unable to economically mine the lower grade ore which subsequently, reduced the expected life of the mine by approximately 3 years (AEM, 2012). AEM provided a revised mine plan to the Kivalliq Inuit Association which predicted that its Meadowbank operations are now scheduled to be completed by 2017 instead of 2020 (AEM, 2012).

In addition to the mining infrastructure and activities, ancillary Project infrastructure is located approximately 2 km east of the hamlet of Baker Lake and consists of barge unloading facilities, a laydown storage and marshalling area, a 60 million litre (ML) fuel tank farm, associated interconnecting roads and a 110 km all-weather private access road (access road) from the hamlet of Baker Lake to the Meadowbank mine site. Supplies are shipped from locations within Canada via sealift to Baker Lake where they are offloaded at AEM's marshalling area and transported to the Meadowbank site via truck haul along the 110 km access road.

1.3 Preparations for the Site Visit

The Monitoring Officer reviewed the following items to prepare for the site visit: Meadowbank Project Certificate [No. 004], 2012 Site Visit Report, AEM's 2012 Annual Report and associated appendices, and follow-up correspondence from the NIRB's 2012 site visit.

2 SITE VISIT

The 2013 site visit was conducted by Sophia Granchinho, NIRB Monitoring Officer. On September 13, 2013 the Monitoring Officer was driven to the Meadowbank mine site from the AEM office in Baker Lake with other AEM staff. Once at the site, the Monitoring Officer was met by Kevin Buck, AEM's Environment Superintendent. Mr. Buck and the Monitoring Officer discussed issues which were related to the 2012 site visit. In the afternoon, Mr. Buck and Martin Therialut led a tour of the site, which included the waste rock facility, landfarm, landfill/pilot remediation site, tailings storage facility, Vault Pit, active mine areas including Portage pits and Bay-Goose basin, the waste and hazardous materials storage area, the incinerator, fuel storage area, air monitoring station and dust monitoring station. At the conclusion of the tour of the mine site, the Monitoring Officer met with Mr. Buck to discuss the site visit and further issues related to environmental compliance. Afterwards, Mr. Tom Thomson drove the Monitoring Officer along with a Golder consultant, Yves Boulianne, to the hamlet of Baker Lake via the access road. Prior to being dropped off at the AEM office, Mr. Tom Thomson and Mr. Yves Boulianne accompanied the Monitoring Officer to the following Baker Lake facilities: diversion channel at Third Portage Lake, quarry 22, quarry 5, bridge at kilometre 22/23, culvert at kilometre 1 and the Baker Lake bulk fuel storage facility/marshalling area.

The site visit provided the Monitoring Officer with a tour of all major project components and further, provided an opportunity for the Monitoring Officer and AEM staff to discuss relevant issues related to the project.

2.1 General Observations

The following are general observations made during the site visit and do not pertain specifically to any particular terms or conditions of the Project Certificate:

a. While travelling along the access road to and from the Meadowbank site and the hamlet of Baker Lake, the Monitoring Officer observed very little wildlife. The only observable wildlife included two caribou, Snow geese (and blue geese) and a Peregrine falcon along the access road. No wildlife was observed at site; however, it was noted by staff that a muskox had been lingering around the Vault Pit area.

b. Mr. Buck mentioned that the pilot remediation program undertaken this year at the Meadowbank site using on-site nutrients (sewage sludge) to initiate biodegradation of contaminated hydrocarbon soil worked very well and that AEM was planning on using the same technique next year for all hydrocarbon contaminated soils (see Photo 1). This method would be used instead of general landfarming techniques (see Landfarm Plan for further information [AEM, 2013]).

Photo 1: Contaminated soil storage/pilot remediation site

c. AEM indicated that additional grid samples would be taken at both Quarry 5 and Quarry 22 (both sites previously used for storage of contaminated hydrocarbon soil) and confirmed that if samples indicate that no hydrocarbons are present, remediation of both quarries would commence. Photo 2 through Photo 4 show the condition of Quarry 5 from the storage of contaminated soils in 2011 to clean-up in 2013, while Photo 5 and Photo 6 show the condition of Quarry 22 in 2012 and 2013.

Photo 2: Quarry 5 in 2011 containing contaminated soil from fuel spill at kilometre 22 along the access road

Photo 3: Quarry 5 in 2012

Photo 4: Quarry 5 in 2013

Photo 5: Quarry 22 in 2012, serving as a storage area for contaminated soil

Photo 6: Quarry 22 in 2013

d. The Monitoring Officer noted that the environmental emergency sea-cans containing booms, shovels, absorbent pads, and other miscellaneous spill response equipment were located at most bridge crossing (one was not observed at the km 22/23 bridge). Further, two additional environmental emergency sea-cans, one containing spill response equipment and another containing a boat with motor were located at the Baker Lake laydown facility.

e. Active blasting and drilling were ongoing at the North, Central and South Portage pits, with daily geotechnical inspections being undertaken to ensure the safety of all employees and contractors working in the active mine area (see Photo 7).

Photo 7: Portage Pit

f. Development of the Bay-Goose Dike and causeway was completed in 2010 with the instrumentation on the Bay-Goose Dike and the jet grouting program completed in 2011. Mining of the Bay-Goose basin started in May 2012 (Photo 8).

Photo 8: Bay-Goose basin

g. Construction of the Vault Road was completed by the end of 2012 and AEM commenced stripping, quarrying and related construction activities in 2013 (Photo 9). During the site visit, it was noted that dewatering of Vault Lake would commence in late September, once the fish-out program had been completed (see Photo 10). Mining of Vault Pit is planned for 2014.

Photo 9: Vault Lake Quarry site

Photo 10: Site of future Cell B, Vault Lake Pit

h. Inspection of the tailings storage facility did not reveal any apparent rips to the liners that were exposed within Saddle Dam #1 and Saddle Dam #2 (Photo 11).

Photo 11: Tailings storage facility

i. Mr. Buck indicated that the extension of the airstrip was completed in April 2013. This extension was previously screened and approved pursuant to NIRB File No. 10XN039.

j. The Monitoring Officer noted that the water within the diversion ditch constructed around the tailings facility and flowing into Third Portage Lake appeared to be turbid, likely due to the high volume of rainfall over the previous few days (see Photo 12). Further, the silt curtains installed in Third Portage Lake did not appear to be functioning properly as there was evidence of turbid water/sediment along the shoreline of Third Portage Lake and flowing into the lake. The diversion ditch was built to control freshet water from entering the tailings facility (see Photo 13).

Photo 12: Diversion ditch around tailings facility

Photo 13: Turbid water entering Third Portage Lake

k. While travelling along the access road from Meadowbank back to Baker Lake, the Monitoring Officer noted that the culvert crossing at kilometre 1 was damaged and that there was evidence of sediment deposit at the outflow of the culvert into Airport Lake. AEM indicated that it would assist the hamlet of Baker Lake in any work(s) required to upgrade/repair the culvert. AEM indicated that this particular section of the access road is owned by the hamlet and is not leased by AEM (see Photo 14).

Photo 14: Culvert crossing at kilometre 1

2.2 Observations based on NIRB's Project Certificate [004]

Sections 2.2.1 through 2.2.6 relate to those sections of the Meadowbank Project Certificate as indicated, with specific terms and conditions providing a basis for the noted observations.

2.2.1 Water Quality and Waste Management

Condition 8

> "…*At the time samples are taken Cumberland shall also assess the condition of existing groundwater monitoring wells and replace any defective wells. Cumberland shall continue to undertake semi-annual groundwater samples and re-evaluate the groundwater quality after each sample collection…*"

At the time of the site visit, only one groundwater monitoring well appeared to be operational. AEM noted that the last operational groundwater monitoring well of those installed in 2003 became damaged from frost action in 2010. Three of the four defective wells were replaced in 2006 but were again damage by frost action. Two of the wells were again replaced in 2008 with a more robust design. In 2011, two monitoring wells were installed, one on Goose Island to replace one of the 2003 wells and one at the tailings storage facility to replace one of the 2007 wells. Only one of the wells replaced in 2008 was sampled in 2011 as the second well showed blockage and no samples could be taken. Mr. Buck indicated that although groundwater sampling did occur at the operational wells for the 2013 sampling program, well number MW11-02 could not be sampled due to blockage from the previous year. AEM is planning on using production wells instead of groundwater wells to evaluate the groundwater quality but for the 2013 year, AEM staff indicated that as there was limited water flowing at the selected production wells, no sampling had been conducted for this year.

Condition 25

> *"Cumberland shall manage and control waste in a manner that reduces or eliminates the attraction to carnivores and/or raptors. Cumberland shall employ legal deterrents to carnivores and/or raptors at all landfill and waste storage areas…incorporated into the final Waste Management Plan."*

As per previous site visits, the Monitoring Officer noted in 2013 that AEM continued to segregate and store all domestic, hazardous, and combustible wastes in marked sea-cans prior to these materials being incinerated or shipped to appropriate and approved off-site disposal facilities (Photo 15). AEM indicated that sea-cans filled with waste are backhauled via truck haul to Baker Lake and are then moved via the annual sea lift to southern Canada (Photo 16). AEM has also initiated other recycling programs to reduce the amount of wastes going to the landfill; *e.g.*, puncturing aerosol cans which could then be recycled as metal (Photo 17 and Photo 18).

Photo 15: Sea-cans used for waste segregation and storage area


Photo 16: Sea-cans waiting to be backhauled


Photo 17: Landfill at Meadowbank mine site

Photo 18: Waste rock facility

The Meadowbank site dual chamber forced air incinerator remains in service for the combustion of all non-hazardous, combustible materials at the site (Photo 19). AEM staff noted that approximately 1.7 tonnes of domestic garbage is incinerated per day; however, Mr. Buck indicated AEM has plans in place to continually improve waste management by reducing the amount of domestic garbage produced at site. Some examples include completely replacing paper coffee cups with plastic coffee cups, using plastic lunch boxes and trays instead of paper bags, recycling wood products by finding second uses for these at site or by backhauling it to Baker Lake where it may be claimed and used by community members.

Photo 19: Dual chamber forced air incinerator at the Meadowbank site

Mr. Buck indicated that there have not been any issues with wildlife around site and that staff are encouraged to leave wildlife alone. Mr. Buck indicated that caribou and muskox have been around the Vault Lake site and that a few fox dens with pups have also been observed around site. In addition, Mr. Buck indicated that active falcon nests had also been observed within various quarry sites along the access road with most adult pairs having fledged at least one chick successfully.

Condition 26

> *"Cumberland shall ensure that spills, if any, are cleaned up immediately and that the site is kept clean of debris, including wind-blown debris."*

During the 2012 visit to the Meadowbank site, the Monitoring Officer noted that all areas were kept in an impressively clean state, with no obvious spills. There were a few instances of wind-blown material observed around the Meadowbank site.

Mr. Buck indicated that clean-up of the spill that occurred near kilometre 22 of the access road in October 2010 was complete and the booms previously deployed in the watercourse had been removed in July 2013 (Photo 20). Mr. Buck confirmed that the site would continue to be monitored as part of AEM's aquatic effects monitoring program.

Photo 20: Bridge near kilometre 22

Condition 27

> *"Cumberland shall ensure that the areas used to store fuel or hazardous materials are contained using safe, environmentally protective methods based on practical, best engineering practices."*

During the 2013 site visit, the Monitoring Officer observed that all of AEM's fuel and hazardous materials associated with the Meadowbank project appeared to be stored in a safe and environmentally protective manner (i.e. secondary containment at fuel storage areas and secure containment of hazardous materials; see Photo 21 and Photo 22).

Photo 21: Meadowbank on-site fuel tank farm

Photo 22: Baker Lake bulk fuel storage facility

The fuel transfer stations on site (Photo 23) and at the Baker Lake bulk fuel storage facility (Photo 24) appeared to be well contained and properly set up for the re-fuelling of vehicles. No hydrocarbon odours were noted at either the Meadowbank fuel tank farm or the Baker Lake bulk fuel storage facility. No sheen was observed on the water within the Meadowbank fuel tank farm or the Baker Lake bulk fuel storage facility.

The Monitoring Officer noted that a Jet-A pad had been installed near the Baker Lake bulk fuel storage facility and that it had 20 fuel tanks in place (Photo 25).

Photo 23: Meadowbank on-site fuel transfer station


Photo 24: Baker Lake fuel transfer station (taken in 2012)

Photo 25: Jet-A pad at Baker Lake storage facility

2.2.2 All-Weather Private Access Road (AWPAR)

Amended **Condition 32**

"AEM shall operate the all-weather road as a private access road, and implement all such measures necessary to limit non-mine use of the road to authorized, safe and controlled use by all-terrain vehicles for the purpose of carrying out traditional Inuit activities. The measures AEM shall undertake include, but are not limited to:

a. Maintaining a gate and manned gatehouse at kilometre 5 of the Private Access Road;
b. In consultation with the Hamlet of Baker Lake, the local HTO, and the KivIA, update the All-Weather Private Access Road Management Plan to set out the criteria and processes to authorize and ensure safe and controlled non-mine use of the road by all-terrain vehicles for the purpose of carrying out traditional Inuit activities, and measure to limit all other non-mine use of the road. The updated Plan is to be submitted to the GN, INAC, and KivIA for approval no later than one (1) month after the approval of revised Condition 32;
c. The posting of signs in English and Inuktitut at the gate, each major bridge crossing, and each 10 kilometres of road, stating that unauthorized public use of the road is prohibited;
d. The posting of signs in English and Inuktitut along the road route to identify when entering or leaving crown land;
e. Prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain vehicle for the purpose of carrying out traditional Inuit activities;
f. Place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of the road limited to authorized, safe and controlled use by all-terrain vehicles for the purpose of carrying out traditional Inuit activities;

g. *Record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one (1) year after the road is opened and annually thereafter; and*
h. *Report all accidents or other safety incidents on the road, to the GN, KivIA, and the Hamlet immediately and to NIRB annually."*

AEM maintains one gatehouse at kilometre 5 of the access road, and another gatehouse close to the entrance to the mine site and camp at Meadowbank. Both gatehouses are manned by guards who monitor the safety and security of all personnel using the road. All traffic is required to check in (via radio or in person) with the employee at the gatehouse prior to proceeding past either gatehouse along the road (see Photo 26). The AEM employee manning the kilometre 5 gatehouse maintains a daily logbook of all persons travelling the access road for non-mine use. Members of the public travelling along the road are required to sign-off an indication of having read AEM's *All Weather Private Access Road Safety Rules & Procedures for Road Access* policy prior to being granted access to the road.

Photo 26: Gatehouse at kilometre 5, near Baker Lake

As per Condition 32(b), AEM submitted a copy of its updated Transportation Management Plan to the NIRB on May 13, 2010. One of the features of the access road as described within the plan is the placement of refuge stations every 10 kilometres. The Monitoring Officer noted that these refuge stations (emergency sea-cans) were not located on the road and was informed by Mr. Buck in 2012 that the sea-cans were removed because items within the stations were being stolen and that the refuge stations were not serving the original and intended purpose. The signs as required per Condition 32(c) were posted in both English and Inuktitut at the gatehouse (Photo 27), at each major bridge crossing (on the side of the environmental emergency sea-cans) and at every at 10 kilometre intervals along the road.

Photo 27: Signs posted at gatehouse at kilometre 5

2.2.3 Wildlife and Terrestrial

Condition 56

"Cumberland shall plan, construct, and operate the mine in such a way that caribou migration paths through the Project, including the narrows west of Helicopter Island are protected. Maps of caribou migration corridors shall be developed in consultation with Elders and local HTOs, including Chesterfield Inlet and placed in site offices and upgraded as new information on corridors becomes available. Information on caribou migration corridors shall be reported to the GN, KivIA and NIRB's Monitoring Officer annually."

Condition 59

"Cumberland shall, in consultation with Elders and the HTOs, design and implement means of deterring caribou from the tailing ponds, such as temporary ribbon placement or Inukshuks, with such designs not to include the use of fencing."

The Monitoring Officer noted that the updated maps 2012 which outline caribou migration corridors were posted in high traffic areas such as the bulletin board outside the check-in office. AEM indicated that all employees must report to the check-in office upon arrival to site at the commencement of their two-week shift and again upon departure from site and would be able to review the updated caribou migration corridor maps.

As indicated earlier in the report, no wildlife were observed around site during the 2013 site visit except along the access road to the mine site.

2.2.4 Noise

Condition 62

"Cumberland shall develop and implement a noise abatement plan…will be developed in consultation with Elders, GN, HC, and EC and include:

a. *The use of sound meters to monitor sound levels in and around the mine site, including workers' on-site living/sleeping quarters and any summer camps adjacent to the site, and in the local study area, with the locations and design of the sound meters selected in consultation with HC and EC. Sound meters are to be set up immediately upon issuance of the Project Certificate for the purpose of obtaining baseline data, and monitoring during and after operations;*
b. *…*
c. *Restrictions on blasting and drilling when migrating caribou, or sensitive local carnivores or birds may be affected;*
d. *…*
e. *…"*

AEM staff indicated that five locations were monitored for noise during the 2013 summer period. AEM staff noted that monitoring indicated that the dominant mine noise sources included activities such as helicopter and other air traffic, the use of construction and operation heavy equipment and blasting. Monitoring stations were removed prior to the site visit due to windy conditions.

2.2.5 Air Quality

Condition 71

"Cumberland shall, in consultation with EC, install and fund an atmospheric monitoring station to focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported annually to NIRB."

The air monitoring stations were installed by the end of October 2011 and monitoring started in November 2011 (see Photo 28). The partisol sampling stations required heated shelter and electricity in order to operate properly, and these were installed in 2012. During the 2013 site visit, Mr. Buck noted that an air monitoring station installed in 2012 near the Vault Lake road had been relocated. The road alignment to Vault Lake was modified from the original design plan which in turn required that the air monitoring station be moved to a location further away from the road.

Photo 28: Air monitoring station

Condition 74

> *"Cumberland shall employ environmentally protective techniques to suppress any surface dust."*

AEM staff indicated that calcium chloride and water are administered on the roads to suppress dust around the Meadowbank site and from the Baker Lake dock facility to the gatehouse. AEM staff also noted that it would be using calcium chloride flakes for 2014 as it is lighter to transport and easier to use. AEM noted that it is currently waiting for the results of studies conducted along the access road in 2013 to determine whether or not the dust from the access road is impacting the vegetation around the area. During the site visit, AEM confirmed that no dust suppressants are currently in use along the access road.

2.2.6 Other

Condition 81

> *"Beginning with mobilization, and for the life of the Project, Cumberland shall provide full 24 hour security, including surveillance cameras and a security office at the Baker Lake storage facility/marshalling area, and take all necessary steps to ensure the safe and secure storage of any hazardous or explosive components within the Hamlet of Baker Lake boundaries."*

During the visit to the Baker Lake bulk fuel storage facility/marshalling area, the Monitoring Officer noted that a security office was located at the shore with AEM employees on site. The Monitoring Officer did note that these areas were kept impressively clean with sea-cans well organized during the 2013 site visit (see Photo 29).

Photo 29: Bake Lake dock and laydown facility

3 FINDINGS AND SUMMARY

Based on the observations made during this site visit, all facilities which are in operation and all sites currently under construction appear to be well managed and maintained with adequate environmental protection measures and procedures in place.

As with years past, the Proponent appears to be in compliance with a majority of the terms and conditions contained within the Meadowbank Project Certificate as applicable to the NIRB's 2013 Site Visit. However, there may be certain situations in which the Proponent has not yet fully met the requirements of the Meadowbank Project Certificate and which require further consideration and attention.

The Monitoring Officer notes that the pilot remediation program undertaken this year at the Meadowbank mine site appeared to have worked well. The Monitoring Officer was informed that the rate of biodegradation of the contaminated soil containing nutrients (sewage sludge) was faster compared to contaminated soils with no nutrients added. AEM indicated that it plans to use this method again next year for the treatment of all of its contaminated soils.

The Monitoring Officer also noted that the silt curtains put in place downstream of the diversion ditch flowing into Third Portage Lake did not appear to be functioning properly as sedimentation was evident around the shoreline and flowing into the lake.

Regarding Condition 8, only one groundwater well appeared to have been operational during the 2013 site visit. AEM indicated that further re-evaluation of the groundwater well monitoring program would be conducted, including an evaluation of the potential use of production wells instead of groundwater wells to assess the existing groundwater conditions.

Condition 25 requires that the Proponent employ legal deterrents to deter carnivores and/or raptors from the Meadowbank site. AEM noted that wildlife had been observed at the site including caribou, muskox and foxes, with a few fox dens around the site as well. .

Condition 26 requires that spills be cleaned up immediately and that the site be kept clean of debris. The Monitoring Officer was informed during the 2013 site visit that the clean-up of the spill at kilometre 22 was complete, but that the site would continue to be monitored as part of AEM's ongoing aquatics effects monitoring program. Some instances of wind-blown debris scattered around the site were noted during the 2013 site visit.

Condition 27 requires that the Proponent use safe, environmentally protective methods at areas used to store fuel or hazardous materials. The Monitoring Officer noted that the fuel storage facilities appeared to be well contained and properly set up for the re-fuelling of vehicles.

The Proponent did not appear to have fully met the requirements of Condition 74, as dust suppression techniques had been applied at the Meadowbank site but were not in use along the access road from Baker Lake to site. AEM did indicate that plans were in place to determine the effects of dust on vegetation along the access road and to determine the best options to deal with the dust created.

Prepared by: Sophia Granchinho
Title: Senior Technical Advisor/Monitoring Officer
Date: November 1, 2013

Signature: Granchinho

Reviewed by: Amanda Hanson
Title: Director, Technical Services
Date: October 29, 2013

Signature:

REFERENCES

AEM (Agnico Eagle Mines Ltd). 2011. *Agnico-Eagle Mines Limited Detailed Mineral Reserves and Resources Data*. December 2011. Available at: http://agnico-eagle.com/English/Our-Business/Operating-Mines/Meadowbank/Reserves-and-Resources/default.aspx. Accessed November 14, 2012.

AEM (Agnico Eagle Mines Ltd).. 2012. *Meadowbank Employee Bulletin*. Released February 16, 2012.

AEM (Agnico Eagle Mines Ltd).. 2013. *Meadowbank Gold Project Landfarm Design and Management Plan.* In Accordance with Water Licence 2AM-MEA0815. Prepared by Agnico Eagle Mines Limited – Meadowbank Division, Version 3. February 2013.

NIRB (Nunavut Impact Review Board). 2009. *In the matter of an Application by Agnico-Eagle Mines Limited for the Mine development of the Meadowbank Gold Mine Project Proposal in the Kivalliq Region of Nunavut, Project Certificate NIRB [No. 004]*. Prepared by the Nunavut Impact Review Board for the Meadowbank Gold Mine Project. Original issued December 2006. Amendment issued November 2009.

AGNICO EAGLE

January 7th, 2014

Ms. Sophia Granchinho
Monitoring Officer
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, Nunavut X0B 0C0
(867) 983-4615

Dear Ms. Granchinho,

Re: File 03MN107 - AEM Response to The Nunavut Impact Review Board's 2012 – 2013 Annual Monitoring Report for the Meadowbank Gold Project and Board Recommendations

As requested, the following information and comments are intended to address the recommendations outlined in response to the NIRB report dated November 27th, 2013 title *'The Nunavut Impact Review Board's 2012 – 2013 Annual Monitoring Report for the Meadowbank Gold Project and Board Recommendations'* made in accordance with the conditions of Project Certificate No.004.

Meadowbank Airstrip Expansion Screening Decision Report (File No. 10XN039)

NIRB Recommendation 1: The Board requests that AEM provide a summary of discussions held with the Baker Lake community members regarding its airstrip expansion as was required by the NIRB's Screening Decision Report for Screening File No. 10XN039. It is requested that this summary be provided within 30 days' receipt of the Board's recommendations.

AEM Response

On May 16th, 2011 AEM began consultations with the Baker Lake community members to discuss the proposed airstrip extension. Specifically, AEM consulted with HTO board members in the afternoon and hosted a community meeting in the evening at the Baker Lake community center. During these presentations AEM presented annual wildlife and fisheries monitoring information and responded to questions regarding the Meadowbank fire and the proposed airstrip extension. At this time the airstrip was planned to extend much further into Third Portage Lake and AEM presented conceptual fish habitat compensation plans; the HTO noted that "they generally agree that extension is good and that it was originally set up" when the project was proposed.

Due to geotechnical issues and associated construction costs, the proposed airstrip extension was halted and a shorter extension was considered. On February 23rd, 2012, AEM hosted a visit with the HTO board members to review the fisheries and wildlife annual monitoring results and discussed the changes to the proposed airstrip extension. The final details of the design were submitted to the NWB application in January 2013, and through the NWB process, and the intervention of the NIRB, the public was consulted on the final design that was not expected to impact the receiving water as there was a significantly reduced encroachment into Third Portage Lake (only approximately 18 meters). Through due process, the airstrip extension proposal design was accepted and the construction was completed as planned by the end of March 2013. The construction monitoring report and as-built drawings were sent to NWB on June 21st, 2013 as per the Type A Water license Part D item 26 and Schedule D Item 1 requirements.

<u>Project Certificate [No. 004] Appendix D and the Annual Report</u>

NIRB Recommendation 2: The Board requires that AEM provide a full discussion and summary on the PEAMP for the Project in accordance with commitments made within the FEIS, during the Final Hearing, and as required throughout Project Certificate [No. 004] Appendix D. This must include a discussion that references the baseline and previous years' monitoring data and indicates whether any trends have been observed at the mine site. It is requested that this be provided within 60 days' receipt of the Board's recommendations.

<u>AEM Response</u>

NIRB noted in their letter that "the discussion and analyses presented did not provide a full discussion and summary on the PEAMP… this must include a discussion that references the baseline and previous year's monitoring date and indicates whether any trends have been observed at the mine site." AEM is of the opinion that the PEAMP documentation in the 2012 annual report meets the requirements of Appendix D (specifically Appendix D 1) a to e and 2) b). Appendix D does not require a "trends" analysis as stated in the recommendations letter, rather it requires "an analysis of the project's impacts to the environment… with reference to baseline and monitoring data used to support impact predictions and effects conclusions, with a discussion of data collection and analysis methodologies employed (Appendix 2 b)." A discussion of this information was provided in Section 12 of the annual report and adequately refers to other monitoring reports that have been provided to the NIRB in the annual report that describe trends over time (i.e. wildlife monitoring report, Core Receiving Environmental Monitoring Plan report, etc.). AEM is open to discussing with the NIRB on how best to present the information in the PEAMP (in advance of our 2013 annual report submission), however AEM believes the intention of the PEAMP is to serve as a high level review of annual monitoring results as compared to the final environmental impact predictions and should not require AEM to duplicate information that is found elsewhere in the annual report.

Compliance with licenses and authorizations

NIRB Recommendation 3: The Board requested that AEM provide a discussion and explanation for the total oil and grease values having exceeded the water quality allowable limits and a discussion of any steps taken to ensure levels remain within limits in future years. It is requested that this be provided within 30 days' receipt of the Board's recommendations.

AEM Response

Total Oil and Grease was detected at 7 mg/l from a sample taken in the fall of 2012 at the Baker Lake Fuel Storage Facility. This water was not pumped out of the containment at that time. It should be noted that in 2011, there were no levels above 1 mg/L. As well, in 2013 no levels were above 1 mg/L (this will be in 2013 annual Report).

The Table 8.22 in the 2012 Annual report depicts the QA/QC results which show a discrepancy in the Oil and Grease levels. In addition, the Field Blank which was taken at the same time, also has an Oil and Grease level of 7 mg/L. This would indicate that this elevated result was some type of sampling error – either from the lab or sampler. The fact that 2013 levels were very low (< 1.0 mg/l) would indicate that that was the case as no water was pumped out in the fall of 2012 when we reviewed the result indicating an exceedance of water license criteria (5.0 mg/l). As a result sampling protocols were reinforced with the Environment Department staff.

Table 8.22: 2012 Bulk Fuel Storage Facility QAQC

Duplicate / Field Blank Analytical Certificate ID	Units	27-Sep-12 Original ID BL TF NEW	Duplicate ID BL TK NEW DUP	RPD	Field Blank BL TF NEW FB
Total Suspended Solids	mg/L	6	6	0	< 1
Ammonia Nitrogen	mg N/L	0.08	0.11	-32	3.70
Arsenic	mg/L	< 0.0005	< 0.0005	0	< 0.0005
Nickel	mg/L	0.0009	0.0006	40	< 0.0005
Lead	mg/L	< 0.0003	0.0009	**-100**	< 0.0003
Zinc	mg/L	< 0.001	< 0.001	0	0.003
Total Cyanide	mg/L	< 0.005	< 0.005	0	< 0.005
Benzene	µg/L	< 0.3	< 0.3	0	< 0.3
Toluene	µg/L	< 0.3	< 0.3	0	0.4
Ethylbenzene	µg/L	< 0.3	< 0.3	0	< 0.3
Xylene	µg/L	< 0.3	< 0.3	0	< 0.3
Oil & Grease	mg/L	7	4	**55**	7
Aluminium (Al)	mg/L	0.694	0.654	6	< 0.006
Antimony (Sb)	mg/L	< 0.0001	< 0.0001	0	0.0001
Barium (Ba)	mg/L	0.0326	0.0307	6	< 0.0005
Berryllium (Be)	mg/L	< 0.0005	< 0.0005	0	< 0.0005
Cadmium (Cd)	mg/L	< 0.00002	< 0.00002	0	< 0.00002
Chrome (Cr)	mg/L	< 0.0006	< 0.0006	0	< 0.0006
Cobalt (Co)	mg/L	< 0.0005	< 0.0005	0	< 0.0005
Copper (Cu)	mg/L	0.004	0.0033	19	0.0035
Tin (Sn)	mg/L	< 0.001	< 0.001	0	< 0.0010
Iron (Fe)	mg/L	0.52	0.5500	-6	< 0.0100
Lithium (Li)	mg/L	< 0.005	< 0.005	0	< 0.0050
Manganese (Mn)	mg/L	0.0086	0.0091	-6	< 0.0005
Molybdenum (Mo)	mg/L	0.0036	0.0033	9	< 0.0005
Selenium (Se)	mg/L	0.001	0.0010	0	< 0.0010
Strontium (Sr)	mg/L	0.11	0.1080	2	< 0.0050
Thallium (Tl)	mg/L	< 0.005	< 0.005	0	< 0.0050
Titanium (Ti)	mg/L	0.03	0.0300	0	< 0.0100
Uranium (U)	mg/L	0.007	0.0070	0	< 0.0010
Vanadium (V)	mg/L	< 0.0005	< 0.0005	0	< 0.0005
Hydrocarbons C10-C50	mg/L	< 0.1	< 0.1	0	0.2000

Footnotes:
RPD = Relative Percent Difference

Water quality

NIRB Recommendation 4: The Board requests that AEM provide further discussion on predictions made in the FEIS for the water quality in the pits and whether or not these predictions will be updated as required by the PEAMP. It is requested that a discussion be provided within 60 days' receipt of the Board's recommendations.

AEM Response

AEM did not provide a thorough discussion in the annual report of the comparisons of the FEIS water quality predictions of the pit water rather focused the discussion in the PEAMP was at a high level and evaluated the general site water quality and receiving environment trends. The differences in the FEIS predicted water quality results versus actual water quality (presented in the 2012 annual report in Table 4.2) is unclear, as the operational methods and the geology have not significantly changed as was predicted in the original FEIS model. The best explanation is that the natural and geochemical variability was not captured in the original model (i.e. a model is only as good as the input data). Regardless of the natural variability, AEM continues to meet license limits prior to discharging, which are set to be protective of the aquatic environment and is the primary reason for developing a water quality model in the FEIS and the NWB Type A water license process.

Despite pit water exceeding the FEIS predicted values, data to date for South Portage Pit (ST-19) has shown a general decline in TDS, Sulfate, Ammonia and Iron (key parameters) since 2010. Goose Pit (ST-20) has been relatively consistent since the start of operation in 2012. As we approach pit reflooding, AEM will be updating our water quality model annually. As was recently discussed with the NWB in preparation for our Type A water license renewal, this will assist us in ensuring we meet CCME limits to protect aquatic biota prior to breaching the dikes. Beginning this year, AEM has committed to updating our pit water quality predictions and provide an updated site wide water balance in our annual report. This will assist the NWB, NIRB and AEM in understanding annual changes between annual water quality and model predictions.

Groundwater monitoring wells – Condition 8

NIRB Recommendation 5: It is recommended that AEM consider developing alternative approaches to sampling and analysis to obtain groundwater chemistry and flow data which would inform operational water management and provide information for closure. AEM's Groundwater Plan should include consideration of alternative approaches as outlined; it is requested that this Plan be submitted to the Board for review within 60 days' receipt of the Board's recommendations.

AEM Response

AEM will submit to the NIRB within 60 days a revised groundwater monitoring plan. This plan will reflect changes that were presented in the 2012 annual groundwater monitoring report based on recommendations provided by Golder Associates in the 2012 Groundwater Monitoring Report (December 11, 2012). Alternative approaches for obtaining groundwater samples were tested in 2013 as planned; these included attempted sampling of production drill holes and sampling of pit wall seeps. AEM would like to request a meeting with NIRB's Monitoring Officer as soon as convenient to further discuss conditions of the Project Certificate pertaining to groundwater monitoring (Condition 8).

Noise quality monitoring

NIRB Recommendation 6: The Board requires AEM to discuss the linkages between the potential effects of noise on wildlife and habitat effectiveness and to provide further discussion of its conclusion that noise values currently detected above the calculated PSL value at the site are not affecting wildlife (both terrestrial and birds). Further, it is requested that AEM provide a discussion regarding the potential impacts of noise to human health at site. It is requested that this information be submitted to the Board within 60 days' receipt of the Board's recommendations.

AEM Response

The Meadowbank noise monitoring program is summarized and the linkages to monitored noise levels, for each receptor of concern at the mine site are discussed below.

Offsite Human Receptors -

The permissible sound level (PSL) of 55 dBA derived for Meadowbank is based on noise levels that could potentially cause disturbance to offsite human receptors at a nearby temporary dwelling (e.g. a recreational or trapper cabin). If such a cabin were to be built, the PSL would be applicable at a distance of 15 m from the dwelling. To date, no cabins have been built, and no noise-related complaints have been received from residents of the area. Therefore, no impacts of PSL exceedance on offsite human receptors are anticipated at this time. Furthermore, all monitoring stations with PSL exceedances are located within 500 m of Meadowbank facilities (specifically, the emulsion plant and exploration camp). Since it is unlikely that a cabin would be built in this proximity, anticipated mine-related noise levels for future offsite receptors could reasonably be expected to be lower than measured at these stations. However, AEM continues to conduct annual monitoring at stations located at various distances from the mine footprint in order to proactively identify opportunities for abatement wherever feasible.

Onsite Workers -

The impact of noise on the health of onsite workers (i.e. occupational exposure) is a component of Health and Safety planning, and should not be specifically addressed under the environmental monitoring program. The noise monitoring stations target general sound levels around the mine site, and are not necessarily located in common workplaces. In addition, occupational exposure durations and limits are different from those used in the derivation of the PSL of 55 dBA presented in the Plan. For example, Nunavut's maximum permitted occupational exposure level for 8 h is 85 dBA. None of the sound levels recorded in 2012 approach that value. AEM's Health and Safety Department has conducted noise assessments and determined when appropriate PPE is required for workers. The appropriate PPE/hearing protection is provided to all AEM workers who require it.

Wildlife -
With respect to wildlife disturbance, quantitative noise limits (such as a PSL) which may potentially cause disturbance are not readily available, and research regarding effects of noise on wildlife is scarce and often inconclusive (Noise EIS, 2005). Terrestrial wildlife (including ungulates, predators and birds) activities are monitored as part of the Terrestrial Ecosystem Management Plan (Cumberland, 2006), per Condition 54 of the NIRB Project Certificate. Acceptable levels for various types of impacts were established in the FEIS. Since monitoring is occurring as planned, and no thresholds of predicted impacts to wildlife have been exceeded (e.g. Table 12.7; 2012 Annual Report), it follows that noise is not causing excess unpredicted impacts to wildlife.

Regardless of the receptor type however, the Noise Monitoring and Abatement Plan indicates that exceedances of the PSL will occasionally occur, and that monitoring will be used to identify the source and implement appropriate mitigation, wherever possible. In 2012 at R1, the source of PSL exceedances was mainly identified as construction of the North Cell diversion ditch, which was a temporary activity. In addition, while this site was at least 400 m from mine activity in previous years, a spur road and storage area now exists within 100 m. Loading activities are clearly audible in audio files for this site, and may have contributed to the increase in measured noise levels in 2012 compared to previous years. The R1 station now falls within the smallest zone of influence considered for roads in the FEIS, where all habitat is conservatively assumed to be lost due to sensory disturbance. Therefore, exceedances of the PSL as observed in 2012 are anticipated in this area, and no additional abatement is suggested. AEM aims to move this location in 2014 to maintain the originally intended location relative to site activity (details to be submitted with the revised Noise Monitoring and Abatement Plan).

While exceedances at R5 were not attributed to a specific activity, sound files were again reviewed, and it was noted that helicopter activity and wind appear to cause most of the PSL exceedances. This site is situated within 450 m of the exploration camp, where helicopter use is a common occurrence during the summer season. While helicopter noises are not filtered from the datasets, fixed and rotary wing aircraft were excluded from the site noise model in the FEIS because they were considered to be irregular and of short duration. Wind noises alone also regularly resulted in sound levels above the PSL at this location. Wind speeds during these times often approached the limit of 4.17 m/s, but were not high enough to warrant exclusion of the data. Since helicopter sounds are likely attributable to the exploration camp, and it is clear that wind sounds would not impact animal behaviour, further abatement of sound levels at this station do not appear to be feasible or warranted.

Since the activities contributing to excess sound levels in 2012 were generally temporary, monitoring in 2013 was increased (at all sites) to four days in order to obtain more representative data. Changes to the plan will be noted in Meadowbank's Noise Monitoring and Abatement Plan which is being updated prior to submission of the 2013 Annual Report to NIRB.

All weather private access road – Condition 32(e)

NIRB Recommendation 7: As annual consultation with the community of Baker Lake to discuss the private nature of the access road is a requirement of Meadowbank Project Certificate [No. 004] term and condition 32(e), by not conducting these consultations AEM is not in compliance with the condition. The Board requests that AEM hold public meetings as set out in Condition 32, and that it report on this information within its 2013 Annual Report.

AEM response

In 2013 a public meeting was held with the community of Baker Lake. This meeting took place on May 30, 2013. The meetings minutes and presentation from this meeting will be included in the 2013 Annual Report.

Condition 40: Gathering of Traditional Knowledge information.

NIRB Recommendation 8: As Condition 40 of the Meadowbank Project Certificate [No. 004] requires that AEM collect and report annually to both the KivIA and the NIRB on the Traditional Knowledge gathered from the residents of Chesterfield Inlet, AEM is not in compliance with the condition. The Board requests that AEM report on further Traditional Knowledge gathered in its future annual reporting as submitted to the NIRB.

AEM response

AEM held an Inuit Qaujimajatunqagit (IQ) workshop in Chesterfield Inlet for two days on January 26 and 27, 2010. This workshop was focused on gathering information on traditional use and traditional environmental knowledge of Chesterfiled Inlet residents, as well as project-specific effects and mitigation recommendations including search and rescue operations and safety. The second part of the condition 40 is to report to KivIA and NIRB's Monitoring Officer annually on the Traditional Knowledge gathered including any operational changes that resulted from concerns shared at the workshop. Following meetings with Chesterfield residents in 2012, no change in the TK gathered was report to AEM and no operational changes were necessary. AEM believes this complies with the condition 40.

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Monitoring of country foods – Condition 67

NIRB Recommendation 9: The Board invites Health Canada to provide comments on the additional information provided by AEM with respect to the PQRA report and to indicate whether or not further information may be required with respect to the monitoring program as outlined in Condition 67. The Board respectfully requests that Health Canada provide any comments within 60 days' receipt of these recommendations.

AEM Response

AEM acknowledges NIRBs request to Health Canada and will await their response.

On-site incinerators – Condition 72

NIRB Recommendation 10: The Board requests that AEM provide an explanation for the incinerator having not achieved recommended temperatures in the secondary chamber on various occasions in 2012. Further, it is recommended that AEM describe any corrective measures employed at the incinerator. It is requested that this information be provided within 30 days' receipt of the Board's recommendations.

AEM Response

AEM's incinerator runs at a high capacity, to keep the wildlife attractant waste to a bare minimum. The days in question, in which the secondary chamber did not reach the recommended temperatures, are generally due to mechanical issues with burners not working properly. When these burners do not work properly, maintenance is performed as needed on the incinerator and site services department fix the problem as soon as the incinerator has completed its cycle and cools down to allow personnel to safely work on the system. Although efforts are made to ensure occurrences such as these are minimal, emission testing by offsite Consultant Exova, indicated that we met Environment Canada Guidelines (See Appendix E3 in 2012 Annual Report). Further emission testing is planned in 2014.

Suppression of surface dust – Condition 74

NIRB Recommendation 11: The Board requests that AEM provide a discussion of its plans to address dust control for the access road and to provide the Board with a summary of the outcome of any related studies that have been completed to date. Potential adaptive management strategies that may result from the results of these studies should also be included. It is requested that this information be provided within 30 days' receipt of the Board's recommendations.

AEM Response

In accordance with NIRB Project Certificate No.004, AEM has conducted annual dustfall and air quality monitoring around the Meadowbank site since 2011. The monitoring results are presented in the annual reports. In 2012, an additional, preliminary study of dustfall was conducted along the AWAR, which included sampling of two replicate transects along the road, and two clusters on the minesite. The results of the 2012 preliminary study are presented in the 2012 annual report and were discussed with NIRB during site visits. Overall, maximum observed dustfall rates at AWAR locations without dust suppressant were more than four times lower than those observed on Ekati Diamond Mine haul roads after application of dust suppressants (Male and Nol, 2005[1]). Despite much higher levels of dust deposition at Ekati, Male and Nol (2005) did not find a measurable effect of roads on the birds studied (Lapland longspurs). Based on these results, AEM does not plan to apply dust suppressants along the AWAR from Baker Lake to the Meadowbank exploration camp, as it is AEM's opinion that impacts due to dust along the AWAR are less than FEIS predicted impacts.

Notwithstanding, in 2013, AEM engaged in a more robust dustfall study along the AWAR to thoroughly evaluate the impacts within the zone of influence predicted in the FEIS. Unfortunately, study results were compromised due to field data collection problems (many of the dustfall canisters were knocked over, likely by wind, during the sampling process). The available dustfall data are currently being analyzed and will be reported in our 2013 annual report. As a result of these difficulties, AEM is still evaluating dust levels and will compare them to the zone of influence predicted in the FEIS. In 2014, AEM will improve on the 2013 study and complete an analysis of the impacts of road dust using an ecological screening level risk assessment approach.

Nevertheless, AEM has an active dust suppression program for all mine site surface roads and will continue to apply dust suppressants in highest traffic zones (i.e. along haul roads around the mine site, and between the exploration camp and Meadowbank, etc.). As convenient at a future meeting, AEM would like to discuss the requirements of Condition 74 of the Project Certificate with NIRB's Monitoring Officer.

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1 Male, S. and E. Nol. 2005. Impacts of roads associated with the Ekati Diamond Mine, Northwest Territories, Canada, on reproductive success and breeding habitat of Lapland longspurs. Canadian Journal of Zoology 83:1286-1296.

Spill at Baker Lake Marshalling Area – Condition 37 & 82 and Commitments 34, 35 & 38

NIRB Recommendation 12: The Board requests that Transport Canada provide information on the conclusions of the investigation related to the fuel spill into Baker Lake in August 2012 and any outcomes that might have resulted from the investigation of the incident. The Board respectfully requests that this information be provided within 60 days' receipt of the Board's recommendations.

AEM Response

AEM acknowledges NIRBs request to Transport Canada and will await their response.

Harmful Alteration, Disruption or Destruction Crossings along the Access Road

NIRB Recommendation 13: The Board requests that AEM work with the appropriate authorizing agencies to ensure that any changes to its monitoring programs, specifically the HADD monitoring programs, meet the approval of the authorizing bodies, and that any changes be communicated to the NIRB. It is requested that a report summarizing any discussions to this end be provided to the NIRB within 90 days' receipt of the Board's recommendations.

AEM Response

AEM has worked extensively with the DFO (the authorizing agency) and the Baker Lake HTO since March 2011 in revising the DFO authorizations and developing associated monitoring programs. Table 1 below, taken from the revised No Net Loss Plan (AEM, 2012), summarizes the consultation for the development of the No Net Loss Plan, consultation for the revision of the authorizations and subsequent discussions that led to a revision of the Habitat Compensation Monitoring Plan (AEM, 2013). Conditions of the new authorizations stipulated that AEM was required to revise the Habitat Compensation Monitoring Plan. As part of this process, AEM had numerous telephone conversations with DFO leading up to a meeting with DFO representatives Elizabeth Patreau and Derek Moggy, in Ottawa on February 19th, where we reviewed a draft version of "Table 3 – Summary of monitoring methods, analytical parameters, sampling frequency and number of samples for dike faces and finger dikes". Subsequently, AEM followed up with the submission to the DFO of a draft plan on April 28th, for their review and comments. AEM finalized the plan by incorporating DFO's comments and submitted a Final Habitat Compensation Plan on July 23rd, 2013.

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Table 1: Summary of No Net Loss Planning Consultation taken from AEM, 2012 Appendix C.

Date	Description	Attendees	Document Attached?
7-Mar-11	AEM No Net Loss Contingency Plan Terms of Reference	Sent to DFO by AEM	✖
28-Apr-11	DFO Approves Terms of Reference	Accepted by DFO	
30-May-11	Invitation to attend July 13th Workshop	sent to: KIA, NWB, NIRB, HTO, DFO	✖
13-Jun-11	Meadowbank Site visit with HTO- inpart discussed NNL Planning	HTO and AEM	
13-Jul-11	No Net Loss Planning Workshop	HTO, KIA, DFO, AEM, Consultants	✖
8-Aug-11	Email to DFO outlining DFO Authorization discrepancies	Sent to DFO by AEM	✖
12-Aug-11	Helicopter Tour with Workshop Attendees	HTO, KIA and AEM	
15-Aug-11	DFO Site Visit to Meadowbank and Meliadine	AEM and DFO	
11-Nov-11	Agenda sent for November 17th meeting in Ottawa	AEM and DFO	✖
17-Nov-11	November 17th and 18th meetings in Ottawa	AEM and DFO	✖
13-Dec-11	Follow-up teleconference	AEM, DFO and Consultants	
31-Jan-12	Technical Memorandum detailing a HEP method comparison	AEM, DFO and Consultants	✖
12-Feb-12	Exploratory Meeting with DFO Science to discuss research opportunities	AEM, U of G researchers, DFO Habitat and DFO Science	✖
23-Feb-12	Site visit and presentation on NNL Planning, Wildlife and Fisheries monitoring	AEM and HTO board members	
30-Mar-12	Email from DFO detailing expectations for a new Meadowbank NNLP	Sent by DFO to AEM	✖
7-Jun-12	Technical Memorandum detailing a adjusted HEP with example	Sent to DFO by AEM	
15-Jun-12	Submission of Draft NNL Plan	Sent to DFO by AEM	
16-Jul-12	Telephone conversation to discuss NNL Plan- Ryan V and Bobby Bedingfield	DFO and AEM	
19-Jul-12	Email- Comments and feedback from DFO on Draft NNL Plan; Email Entitled- Meadowbank Authorization Amendment and NNLP Contingency Plan	DFO response to AEM	✖
13-15 Aug-2012	Meadowbank site visit- discussions included the review of DFO comments and feedback on NNL Plan and monitoring programs	DFO and AEM	
28-Aug-12	DFO and AEM Meeting- Summary and Action Items	DFO and AEM	
12-Sep-12	AEM reponse to DFO July 19 email	AEM response to DFO	✖
26-Sep-12	DFO Response to AEM Email dated Sept 12	DFO response to AEM	✖

Permafrost

NIRB Recommendation 14: The Board requests that AEM provide a plan of action and a discussion on its permafrost monitoring program that would include Second Portage Lake, Portage Pit and Bay Goose Pit as outlined in the FEIS. It is requested that this information be provided within 60 days' receipt of the Board's recommendations.

AEM Response

The action plan and permafrost monitoring program for Second Portage Lake, Portage Pit and Goose Pits are as follow:

Second Portage Lake

To monitor the permafrost aggradation and talik beneath Second Portage Lake, AEM has installed, in 2012, a thermistor (T90-2) in the North Cell tailings and a single deep thermistor (T147-1) at the downstream toe of Stormwater Dike. Thermistor (T90-2) was installed within the former lakebed inside the North Cell of the TSF. In 2012, temperatures below 0 degrees Celsius are recorded below El.140 m which appears to indicate that the tailings are continually frozen at this location. In 2012, thermistor (T147-1) shows the existence of a frozen crust of material from El. 120 m to El. 115 m that stayed frozen during the summer of 2012. Below El.

115 m the temperature varied between 0.5°C and 0.1°C from the beginning of March 2012 to the end of August 2012 indicating the beginning of freeze back of the talik. In 2013, new thermistors were installed between the Central Dike and the Portage Pit. These thermistors will provide information on the permafrost aggradation of Second Portage Lake. All thermistors are monitored on a regular basis and the 2013 data will be provided with the 2013 Annual Report.

Portage Pit

No thermistors were installed in Portage Pit because of the mining activities. However, the permafrost aggradation can be monitored with the thermistor installed in the East Dike, Central Dike and the new thermistors installed between Central Dike and Portage Pit in 2013. A discussion about the 2013 data will be providing in the Annual Report.

Goose Pit

The permafrost in Goose pit can be monitored by the thermistor SD-09-A which is located on South Camp Dike approximately 20 m further upstream within Third Portage Lake. This thermistor showed in 2012 that the soils located beneath the dike foundation and liners appear to have remained frozen (permafrost) below elevation 130 m. Also, thirty-three thermistors (from T1 to T30 and T3' to T5') are installed on Bay-Goose Dike and new thermistors were installed between Bay Goose Dike and Bay Goose Pit. These thermistors are monitored regularly and the data provide more information about aggradation of permafrost. This information will be included in the 2013 Annual Report.

NWB Water License Amendment

NIRB Recommendation 15: The Board requests that AEM provide information regarding the potential dewatering of Phaser Lake including detailed consideration of potential effects of the proposed expansion and dewatering to wildlife, water quality, and closure methods.

It is further requested that AEM provide any additional plans as needed related to the potential future dewatering Phaser Lake, including an indication of authorizations required, plans to engage the NIRB's assessment process, and a timeline for these submissions. It is requested that this information be provided within 60 days' receipt of the Board's recommendations.

AEM Response

In accordance with the NIRB Project Certificate and based on the most current life of mine plans, AEM does not intend to mine Phaser Pit and do not have plans to dewater Phaser Lake. At present, these are conceptual plans, however if these plans change, AEM will inform the NIRB, develop management plans accordingly, and will engage NIRB in the assessment process.