AGNICO EAGLE

MEADOWBANK GOLD PROJECT

2017 Annual Report

Prepared for:
Nunavut Water Board
Nunavut Impact Review Board
Fisheries and Oceans Canada
Indigenous and Northern Affairs Canada
Kivalliq Inuit Association

Prepared by:
Agnico Eagle Mines Limited – Meadowbank Division

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ABBREVIATION

ABA	Acid base accounting
AEMP	Aquatic Ecosystem Monitoring Program
ARD	Acid Rock Drainage
AWAR	All Weather Access Road
CCME	Canadian Council of Ministers of the Environment
CREMP	Core Receiving Environmental Monitoring Program
CSM	Conceptual Site Model
CWS	Canada-Wide Standard
DFO	Department of Fisheries and Oceans Canada
ECCC	Environment and Climate Changes Canada
EEM	Environmental Effect Monitoring
El.	Elevation
ERT	Emergency Response Team
FEIS	Final Environmental Impact Statement
F/T	Freeze/Thaw
GN	Government of Nunavut
HCMP	Habitat Compensation Monitoring Plan
HHRA	Human Risk Assessment
HHS	Hunter Harvest Study
HTO	Hunter Trapping Organization
INAC	Indigenous and Northern Affairs Canada
INUG	Innuguguayalik Lake
KIA	Kivalliq Inuit Association
LSA	Local Study Area
LSM	Learning Management System
LOM	Life of Mine
Masl.	Meters above sea level
MDL	Method Detection Limit
MDRB	Meadowbank Dike Review Board
MPA	Maximum Potential Acidity
MMER	Metal Mining Effluent Regulations
NC	North Cell
NIRB	Nunavut Impact Review Board
NF	Near-Field
NNLP	No Net Loss Plan
NP	Neutralization Potential
NPAG	Non-Potentially Acid Generating
NPR	Net Potential Ratio
NWB	Nunavut Water Board
OMS	Operation, Maintenance and Surveillance
PAG	Potentially Acid Generating
PAHs	Polycyclic Aromatic Hydrocarbons
PEAMP	Post-Environmental Assessment Monitoring Program

PDL	Pipe Dream Lake
PHC	Petroleum Hydrocarbon
PRSF	Portage Waste Rock Storage Facility
QAQC	Quality Assurance Quality Control
RDP	Relative Percent Difference
RIME	Research Institute in Mine and Environment
RSA	Regional Study Area
RSF	Rock Storage Facility
TDS	Total Dissolved Solids
TMS	Training Management System
TPL, TPN, TPE	Third Portage Lake
TS	Total Sulphur
TSF	Tailings Storage Facility
TSS	Total Suspended Solids
RIME	Research Institute of Mine and Environment
RSF	Rock Storage Facility
S	Total Sulphur
SC	South Cell
SMP	Stormwater Management Pond
SPL, SP	Second Portage Lake
SPLE	Second Portage Lake Exposure
Sta.	Station
STP	Sewage Treatment Plan
VECs	Valued Ecosystem Components
VRWF	Vault Rock Storage Facility
WAL	Wally Lake
WEP	Waste Extension Pool
WLE	Wally Lake Exposure
WSLRA	Wildlife Screening Level Risk Assessment
WTP	Water Treatment Plan
W/D	Wet/Dry

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Comment
1	2018/05/04	All	All	This has been reviewed by Environmental Staff and will be incorporated into training for all mine staff on behalf of the Mine Manager and Senior Management

Prepared By: Meadowbank Environment Department

Approved By:

Nancy Duquet Harvey
Environmental Superintendent

SECTION 1. INTRODUCTION

The Meadowbank Gold Project operated by Agnico Eagle Mines Limited - Meadowbank Division is located approximately 70 km north of the Hamlet of Baker Lake, Nunavut. The project components include marshalling facilities in Baker Lake, the 110 km All Weather Access Road (AWAR) between Baker Lake and Meadowbank, the Vault mine site and the Meadowbank mine site.

These various components and activities associated with the project require a number of different authorizations, leases and permits from regulatory agencies including the Nunavut Water Board (NWB), the Environment and Climate Changes Canada (ECCC) Metal Mining Effluent Regulations (MMER); the Department of Fisheries and Oceans Canada (DFO), Indigenous and Northern Affairs Canada (INAC); the Kivalliq Inuit Association (KIA) and the Nunavut Impact Review Board (NIRB).

This report is written to address all of the 2017 annual reporting requirements of the project under these authorizations:

NWB Type A Water License 2AM-MEA1525;
NIRB Project Certificate No. 4;
DFO HADD Authorization NU-03-190 AWAR;
DFO HADD Authorization NU-03-191 Mine Site;
DFO Authorization NU-14-1046 Phaser Lake;
INAC Land Leases 66A/8-71-2 (AWAR) and 66A/8-72-2 (AWAR Quarries); and
KIA Right of Way KVRW06F04.

Reporting requirements for the MMER have been submitted directly to Environment and Climate Changes Canada; results are presented herein to comply with the NWB Type A Water License.

Table 1.1 outlines each requirement by authorization and report section. Table 1.2 presents the status of each of the sampling stations stipulated in Part I, Schedule 1 of Water License 2AM-MEA1525.

SECTION 2. SUMMARY OF ACTIVITIES

2.1 2017 ACTIVITIES

The primary business objective of Agnico Eagle is to build a high-quality business focused on solid execution that drives growth in cash flow per share. This strategy has been consistent for many years — to minimize financial and political risk while using Agnico's broad range of technical skills and experience to build long-life, manageable operations in recognized mining regions. This strategy has worked well for Agnico and its shareholders over the 60 years the company has been in business.

In 2017, for the sixth consecutive year, Agnico Eagle has reported annual gold production in excess of annual guidance. The Company's payable production for the full year 2017 was 1,713,533 ounces of gold, compared to most recent guidance of 1,680,000 ounces.

The 2017 highlights for Meadowbank include:

- During 2017, payable gold production at Meadowbank totaled 352,256 ounces at a production cost per ounce of $701 and a total cash cost per ounce of $614 on a by-product basis. The mine also produced 276,853 ounces of silver in the year.
- The mine is expected to produce 220,000ounces of gold in 2018, and 60,000 ounces silver in 2018.
- During 2016, the mill processed 3,915,000 tonnes of ore (10,697 tonnes/day), with production costs per tonne of C$73 and mine-site costs at C$74 per tonne.
- Meadowbank's retention rates and training of Inuit are continuing to show encouraging outcomes.

Given the favourable project economics and expected potential for extensions to the currently forecasted mine plans, the Amaruq satellite deposit which will feed the existing Meadowbank mill has been approved by the Company's Board of Directors. Both Amaruq and Meliadine are now expected to start up in the third quarter of 2019; as such, production at Meliadine is now forecasted to begin approximately one year earlier than previously anticipated.

At Meadowbank, guidance for 2018 has increased over previous guidance and production has been extended in 2019, which bridges the gap between the cessation of mining activities at Meadowbank and the expected start of operations at Amaruq in the third quarter in 2019. The additional production comes from an extension of the mine plan at the Vault and Phaser Pits in 2018 and the Portage pit in 2018 and 2019. In addition, production will be supplemented from stockpiles in 2018 and 2019.

Quarterly progress reports, providing further details of activities throughout the 2017 year, were prepared for the Kivalliq Inuit Association as required by Production Lease KVPL08D280.

Agnico infrastructure locations can also be found in Figure 1, 2, 3, and 4.

Figure 1. 2017 Meadowbank Site Sampling Locations

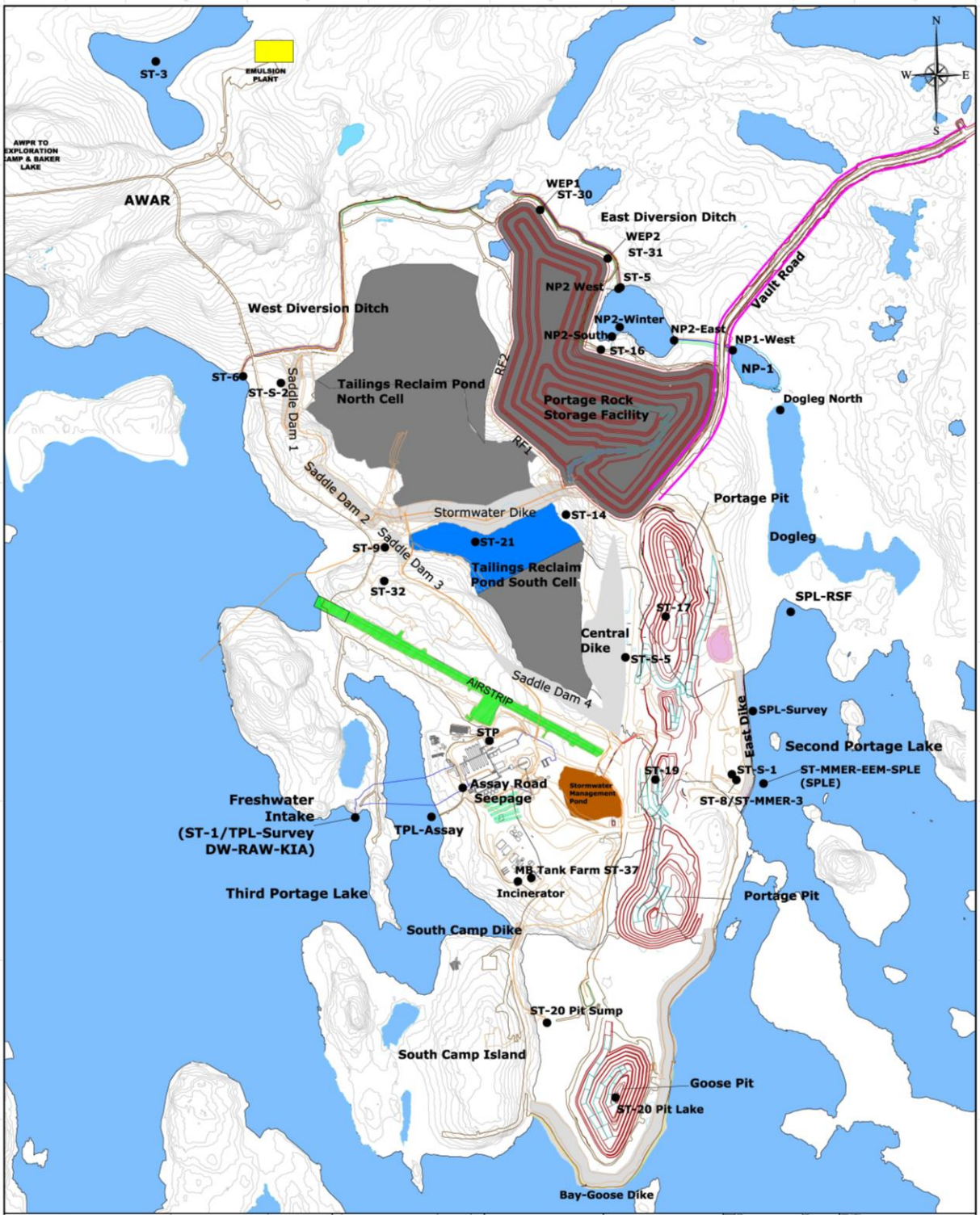


Figure 2. EEM Receiving Environment Sampling Locations

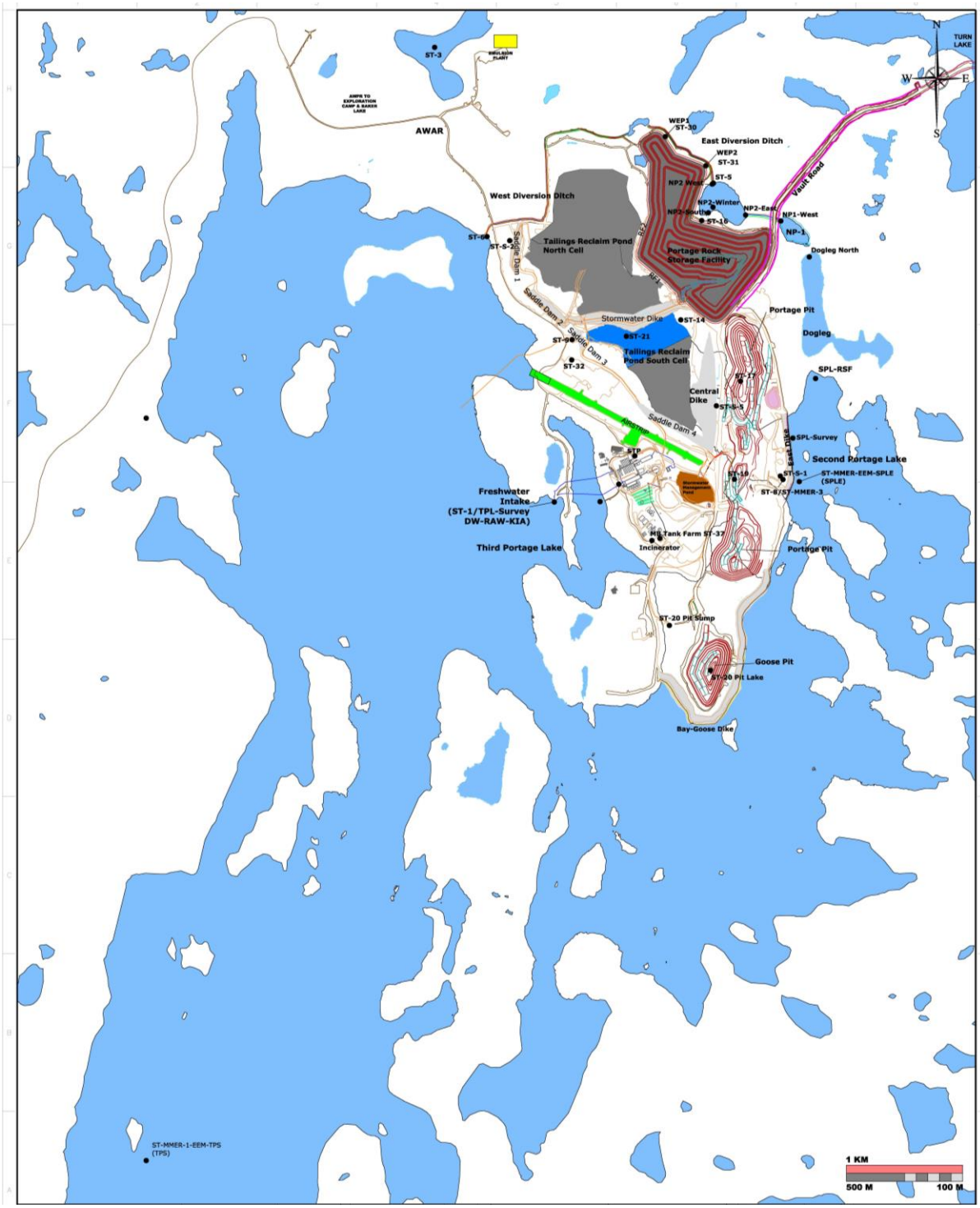


Figure 3. Vault Area Sampling Locations

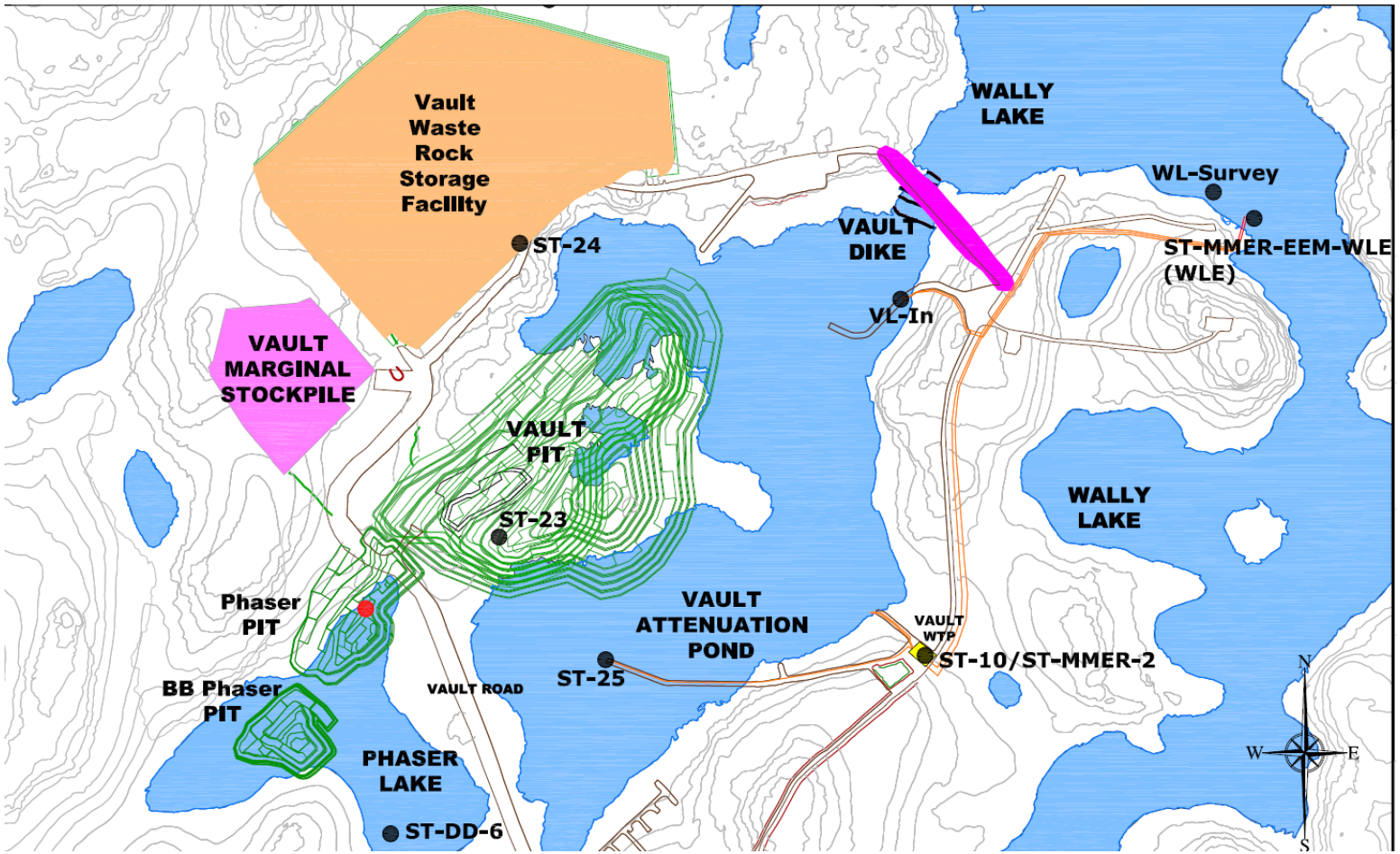
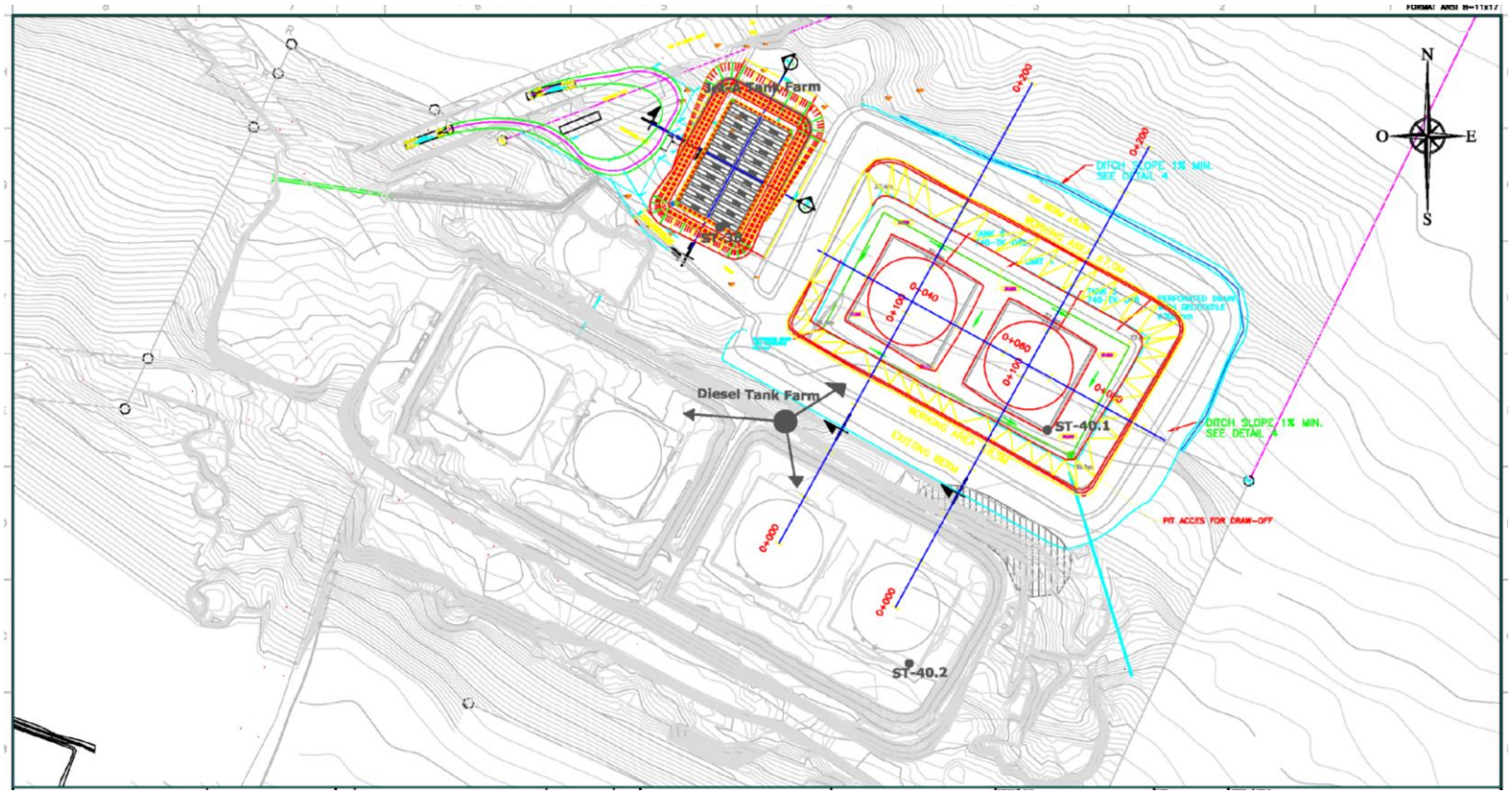


Figure 4. Baker Lake Marshalling Area Sampling Locations



2.2 2018 MINE PLAN

The "*2018 Mine Plan*" for the Meadowbank Gold Project, prepared for the Kivalliq Inuit Association as required by Production Lease KVPL08D280, is attached in Appendix A1. This report was submitted to the KIA onJanuary 15th, 2017, and outlines the activities planned for the project throughout the 2018 year.

The Meadowbank gold mine began the operation phase of the project in February 2010, and thus, is entering its nine year of operations. In addition to routine activities throughout the 2018 season, a number of secondary construction/modification projects will be undertaken near the main mine site area and Vault area. Construction of the Central Dike Phase 7, planned North Cell internal Structure (depending on regulatory approval) and Saddle Dam 3 Phase 4 will be completed in 2018. In addition, evaluation of future tailings deposition options will be considered in 2018.

Environmental monitoring (wildlife, aquatic effects, groundwater, noise and air) will continue through 2018 in support of all operational undertakings at the Meadowbank site as required by the NWB Type A Water License 2AM-MEA1525, NIRB Project Certificate No.004, DFO authorizations, and MMER regulations.

In 2018, Agnico mining plan is to operate Portage and Vault pits at the Meadowbank mine site. A total of 12.5 Mt of rock will be hauled from these two pits during the year. The mine plan consists of moving 10.1 Mt of waste rock and 2.4 Mt of ore from the open pits and 1.0 Mt of ore from the stockpiles

The Waste Management Plan for 2018 is to maximize waste storage facility (WSF) utilization and minimize haulage cycle times which will, in turn, minimize the greenhouse gas emissions and impact on the environment.

2.3 AMARUQ EXPLORATION ACCESS ROAD

As requested by the NIRB in the screening decision NIRB File No.11EN010, Agnico included within this annual report (Appendix A2), a comprehensive annual report of the activities associated with that project. A complete report including annual reporting requirement from NWB, KIA and INAC will also be submitted under a separate cover by May 4th, 2018.

SECTION 3. CONSTRUCTION / EARTHWORKS

The following section discusses reporting requirements related to site construction and earthworks activities associated with dikes, dams and quarries.

3.1 DIKES AND DAMS

3.1.1 Performance Evaluation

As required by water license 2AM-MEA1525, Schedule B, Item 1:

a. An overview of methods and frequency used to monitor deformations, seepage and geothermal responses;

The surveillance program consists of several types of inspection and monitoring:

- Daily inspection – carried out daily by a designated qualified engineer or technician;
- Thermistor and piezometer monitoring – carried out generally weekly or bi-weekly by a designated qualified engineer or technician;
- Detailed inspection - carried out, generally monthly or bi-monthly, by a designated qualified engineer or technician; and
- Engineering annual inspection – carried out annually by qualified engineer (consultant), during open water period, if possible, to verify that the facilities are functioning as intended.

Table 3.1 describes the routine geotechnical monitoring program. Refer also to the TSF OMS Manual and the Dewatering Dike OMS Manual available in Appendix I1, and the 2017 Annual Geotechnical Inspection, in Appendix B1.

Table 3.1. 2017 Routine Geotechnical Monitoring Program

Instrumentation	Frequency during operations
Piezometer	Daily/every 3 hours
Slope Inclinometer Casings	Quarterly in winter, Monthly for the rest of the year
Thermistors	Automatically: Daily/every 3 hours Manually: Every 3 days in summer and weekly in winter
Surface Monuments and Surface Prisms	Bi-weekly
Seismographs	During blasting at the Portage Pit / Goose Pit adjacent to the dike

b. A comparison of measured versus predicted performance;

For the dewatering dikes, i.e. East Dike, Bay Goose Dike, South Camp Dike and Vault Dike; from the analyses of the available geotechnical instrumentation data and as observed by visual inspection, the structures are performing as expected. No major concerns were identified in2017 . Regular monitoring will continue in 2018 to assess the performance of the structures.

For the Tailing Storage Facilities structures in operation; i.e. Saddle Dam 1, Saddle Dam 2, Saddle Dam 3, Saddle Dam 4, Saddle Dam 5; from the analyses of the geotechnical instrumentation data available and as observed by visual inspection; the structures are performing as expected. No major concerns were identified for these structures in 2017. Regular monitoring will continue in 2018 to assess the performance of the structures.

For the dewatering dikes and the tailing facilities structures, further comparison of the measured performance to the predicted performance will continue in 2018, as additional data becomes available for analysis.

For the Central Dike; from the analyses of the geotechnical instrumentation data available and as observed by visual inspection, the structure is performing as expected structurally. No unexpected settlement, erosion, bulging or sloughing is observed on the structure. From the analyses of the geotechnical instrumentation data available and as observed by visual inspections of the Central Dike, seepage was observed at the downstream toe of the dike during the fall of 2014 (reported in 2014 Annual report). The seepage continued in 2017. Mitigation actions were taken in 2015, 2016 and 2017 in order to control the Central Dike seepage. Refer to Section 3.1.1 c below for details on investigation and mitigation actions to control the seepage. Section 8.3.7.2 of this report also discuss of the Central Dike seepage.

This information is also available in the 2017 Annual Geotechnical Inspection available in Appendix B1 and in the 2017 Water Management Report and Plan (Appendix C2).

The monitoring and inspection of the Central Dike will continue in 2018 and throughout the operating life of the dike.

At the end of August 2016, during a routine inspection, tension cracks and signs of settlements were noticed on the crest of Stormwater Dike between Sta. 10+500 to 10+750 approximately. The crack system that suddenly developed in this area had a lateral and vertical component according to the monitoring equipment. To mitigate against a possible foundation failure, a rockfill buttress support was constructed in 2016 at the downstream toe of Stormwater Dike in the South Cell.

In July 2017, during a routine inspection, Agnico noticed new tension cracks and signs of settlements on the crest of Stormwater Dike around Sta. 10+425, between Sta. 10+550 and Sta. 10+650, between Sta. 10+800 and Sta. 10+950, and around Sta 11+050 approximately. Settling of about 300 mm was observed between Sta. 10+800 and Sta. 10+950, approximately. Agnico indicated that this depression was pre-existing but increased in depth and lateral extent in 2017. Cracks appear to be oblique tension fractures, extending over the entire width of the dike crest. Some cracks were up to 5 cm wide and most of them did not progress after they were first observed. The area affected by these cracks is consistent with the limits of the South Cell water ponding against Stormwater Dike, which probably thawed the frozen soft soil

foundation. During the annual inspection, the downstream toe of the dike was not visible as it had been covered by the South Cell pond since July 2016.

Refer to Section 3.1.1 c below for additional details on Stormwater Dike observations and also to the 2017 Annual Geotechnical Inspection available in Appendix B1.

c. A discussion of any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk;

East Dike

The installation of a seepage collection system downstream of East Dike to capture and pump the seepage water started in September 2011 and was completed in 2012. This was reported in previous annual reports and is noted to be an inflow from Second Portage Lake. After the system installation, 3 zones of seepage were identified near the downstream toe. The zones at about Sta. 60+247 and Sta. 60+498 each had a collection sump with pump connected to a year round pumping and piping system.

In 2011, the downstream seepage at Sta. 60+498 was stable at a rate of about 864 m^3/day (10L/s), with no visual signs of turbidity. This was consistent with rates recorded during previous years. In 2011, the seepage downstream at Sta.60+247 appeared stable at around 345.6 m^3/day (4L/s) with no visual signs of turbidity noted, which was consistent with previous rates. Since the pumping installation, all unanticipated seepage has been mitigated through the use of the collection system, all seepage is being captured within the sumps and no sign of additional seepage on the ground surface or downstream in the Portage Pit has been observed. The implementation of this system has reduced risks to the mining activities in Portage Pit and to the dike integrity. Flow meters were installed in 2013 at the discharge of each pump.

In 2013, Agnico applied for a modification to the previous Type A water license (No. 2AM-MEA0815) Part F, Item 4 to discharge East dike seepage water as non-contact water effluent. Agnico proposed to discharge seepage water from East Dike collection system through a separate sump collection system and diffuser, back to Second Portage Lake (SPL) prior to contact with mining activity (thus minimizing site contact water and further mitigating the risks to the environment). In April 2013, NWB approved Agnico's application to modify the previous Type A water license. The discharge, from the East Dike sump back to SPL, began in January 2014 and is ongoing. This discharge is subject to MMER requirements and monitoring results to date indicate the parameters are within criteria. If water quality shows increased TSS during freshet period and large precipitation events in summer, the seepage water from East Dike is pumped to the mined out areas of the Portage Pit. Once mining of Portage Pit area is completed, the East Dike seepage will remain in the Portage Pit as part of the pit flooding.

Seepage flow is measured by the flow meters installed in the two seepage collection sumps downstream of East Dike. The average flow measured during the year 2017 was around 550 m3/day with peak activity averaging approximately 850 m3/day in June 2017. The measured flow is slightly decreasing compared to values from the past years. During the year, the water quality in the sump was monitored by the environment department, and every week during freshet. According to the procedure in place, the water was pumped in Portage Pit instead of being sent to Second Portage Lake when the TSS criterion is exceeded. This was the case starting from May 9th 2017 to October 29th 2017. After this period, the

seepage water was pumped back to Second Portage Lake. See Section 8.3.7.5 for more information on the East Dike Seepage.

Bay Goose Dike

Mining activity in the Goose Pit stopped in April, 2015. There is currently no downstream seepage collection and monitoring system as the amount of seepage through the dike is not significant. The area will continue to be monitored to determine increases/decreases of the seepage in these areas, even if mining activities are terminated in Goose Pit. Seepage of the dike will continue to contribute to natural re-flooding of the Goose Pit. From the visual inspection and based on the instrumentation data, the performance of Bay-Goose Dike is satisfactory.

As mentioned in the 2017 Annual Geotechnical Inspection, from the visual inspection and based on the instrumentation data, the performance of Bay-Goose Dike is satisfactory, as:

- No visual signs of slope instability or erosion were observed on the upstream and downstream rockfill slopes;
- The settlement and sloughing observed in the thermal cap and in the upstream side of the crest are stable and are no longer active;
- Freeboard is adequate;
- Instrumentation data: piezometric, thermal, seepage, and inclinometer data do not show deteriorating conditions.

Refer to the Section 2.3 of the 2017 Annual Geotechnical Inspection (Appendix B1) for detailed field observations regarding this dike.

No additional seepage collection has been implemented as the seepage is not affecting the mine operation nor the integrity of the dike. The condition of the dike will continually be monitored and if the condition of the dike is judged to be deteriorating then management actions and remediation will be assessed. Flow from these channels has historically been monitored by various monitoring stations when flow of water is present. These stations consist of a plastic pipe installed in the various channels. The flow rate through the plastic pipe is manually calculated by measuring the amount of time required to fill a graduated bucket. As the flow in these channels is low or intermittent, these reading are taken once a week when the channels start flowing.

Agnico will continue to perform the inspection of the dike as described in Section 3.1.1 a) above and any increase of seepage observed during these inspections will be monitored.

Central Dike

Once tailings deposition started in the South Cell (SC), in November, 2014, daily inspections of the downstream toe of Central Dike were undertaken as part of the geotechnical inspection program. A small volume of water located against the downstream toe of Central Dike was noticed at that time. This water was contained between the West road and the Central Dike downstream toe. Agnico utilized piezometers, thermistors and a ground water well to monitor the dike integrity, the foundation temperatures and the

piezometric levels within the structures and its foundation. The seepage was contained at the downstream toe of the Central Dike and did not reach the environment since 2014. A permanent and winterized pumping system is in place to manage and track the water volumes.

On April 14th 2015, Agnico started pumping at the D/S toe of the dike to lower the water level. The water is pumped back to the South Cell TSF. Water quality is closely monitored to foresee any changes from initial conditions in terms of turbidity and clarity.. Daily inspections are conducted by Engineering Department staff.

Monthly samples are collected as per the Water License and include analysis for metals, cyanide and major anions. The concentration of some parameters, namely copper, cyanide, sulfates, to name a few, confirms a link between the water ponding at the D/S and the SC water. Agnico engaged SNC and Golder to assist with the assessment, mitigation and water quality in 2015, 2016 and 2017. A study has been completed in 2017 to update the seepage modelling with a seepage flow through the bedrock, and allowed for updating of the Emergency Preparedness Plan. A first transfer of 50,000 m^3 of the seepage water to Goose Pit was done in September 2015 to evaluate the ratio by monitoring the drawdown in the South Cell during the transfer. A second transfer of seepage water to Goose Pit was completed in 2017 for a total of 332,177 m^3 from August 29th to September 19th and from October 3rd to October 8th.

As recommended by INAC in the review of the 2016 Meadowbank Annual Report, the recommendations from the Annual Geotechnical Inspection and the Meadowbank Dikes Review Board Report along with the accompanying Agnico responses related to the Central Dike seepage are included directly in this section of annual report. Below is a summary the recommendations and Agnico responses. The complete Annual Geotechnical Inspection and the Meadowbank Dikes Review Board Report are available respectively in Appendix B1 and B2.

Recommendation from the 2017 Annual Geotechnical Inspection: *It is recommended to decrease the hydraulic head by lowering the water elevation with the TSF South cell, deposit tailing over the entire basin floor, and direct the ponds maximum head of water to an area providing better control above the bedrock surface, where the maximum anticipated lakebed sediment and till thickness are present.*

Agnico Eagle action plan to the 2017 Annual Geotechnical Inspection Recommendation: *will build the deposition plan that will conjugate the above recommendations along with the standard requirement of protecting the geomembrane with a tailings beach and maintaining a minimal pond volume for reclaiming water.*

Recommendation and Agnico Action Plan from the Meadowbank Dikes Review Board Report #20 ;
Significant seepage emanates from the toe of Central Dike with flow rates that increased in proportion to the head difference between the South Cell pond elevation and the downstream toe until such time as the deposition of tailings resulted in a blanketing effect. However, the seepage rates have not declined to the extent predicted by the numerical models.

In report No. 19, the Board expressed its concern over the situation despite the fact that the pumping equipment mobilized was able to evacuate the inflow to the seepage collection pond. The location of seepage pathways and the potential for erosion of foundation materials or joint fillings are the major unknowns.

AEM and GAL have been responsive to these concerns. Geotechnical investigations and the installation of additional instruments have been carried since the meeting in September 2016.

The Board is favourably impressed by the exercise that has been carried out to evaluate the measured hydraulic conductivities along with the rock cores and optical/acoustic televiewer images for joint and crack delimitation. An excellent presentation of this analysis was given to the Board. The work permits an appreciation of the role that the fractured rock plays in the transmissivity of the different rock formations.

The geotechnical drilling revealed an apparent void in borehole 700-P1 at the interface of the embankment fill and the foundation. This merits further investigation to confirm the presence of a void and its extent. The borehole location is along a line parallel to the second portage fault and passing through the area where overburden was left in the base of the cut-off trench. The potential for erosion cannot be discounted for the moment, despite the fact that no adverse reaction has been observed in the piezometer measurements. The high conductivities, including the void detected in the foundation, highlight the vulnerability of the situation.

Note that visual observation of the toe of the Central Dike cannot be made due to the presence of the pond as shown in Photo #6. Maintaining the pond at el. 115 m provides useful back pressure to control seepage and the Board concurs with this approach.

The Board suggests that geophysical specialists be consulted to ascertain whether Ground Penetrating Radar (GPR) and/or resistivity surveys could be expected to give useful results in the conditions (rockfill) at the location of hole 700-P1. Subsequent drilling would focus on any anomalies revealed by such surveys.

The Board had been previously advised (Teleconference Meeting No. 20) of the appearance of chemical/bacteriological deposits in the seepage collection pond at the Central Dike toe (Photos #4 and #6). The comprehensive monitoring, both visual and by instrumentation, is ongoing.

The situation seems to be basically stable given the boundary conditions of south cell pond rise and continued tailings deposition.

There are still some anomalous instrument readings, particularly the unexplained high suction values. The Board requests that piezometer readings taken at the time of installation be re-examined to attempt to gain an understanding of the low-pressure values. Apparently, the piezometer filters are of the sintered metal variety (not ceramic). Unless the piezometers were installed in an inverted position, it is possible that de-saturation occurred during installation and/or during the curing of the cement grout which surrounds the instruments. Piezometric values that clearly do not represent field conditions could be removed from the instrument plots, though readings should continue to be taken in case the saturation is re-established.

The plausible instrument readings, including the recent installations, indicate a basically stable situation.

Chemical analysis of seepage water continues. The turbidity values in the downstream pond have varied up to a maximum value of 38NTU. Total suspended solids (TSS) are usually in the 0-10 mg/L range with an average of about 5 mg/L which is inferior to the south cell pond water value of about 15 mg/L. Metal concentrations are also lower than in the South Cell.

A depression in the sub-aqueous tailings surface was observed in July, from aerial reconnaissance, adjacent to SD-4. As the bedrock in this area is suspected to provide one of the avenues for the seepage flows, the tailings deposition points were managed in such a way as to encourage blanketing by tailings. Despite rising pond levels, a gradual decrease in seepage flows is noted.

The temperature measurements still indicate a talik beneath the West Road in the vicinity of instruments 875-P3 and 975-P3. The potential for seepage flow to the Portage Pit exists but flow captured by the in-pit pumping is apparently inferior to the quantity pumped from the seepage collection pond at the dike toe.

AEM has set out an action plan that is commensurate with the orange alert level which is maintained for the moment. This plan is outlined on pages 115 to 120 of the presentation P6- Central Dike Update submitted to the Board. The Board concurs with the action plan but questions the need to carry out additional 2D and 3D numerical analysis. Plotting of piezometric values along the presumed potential seepage pathways, including the oblique second Portage Fault alignment, may be more revealing than seepage modelling.

For additional detailed information about the Central dike seepage, refer to Section 8.3.7.2 of this report. Information is also available in the 2017 Annual Geotechnical Inspection available in Appendix B1 and in the 2017 Water Management Report and Plan (Appendix C2).

Stormwater Dike

During the summer 2016, cracks were observed on the top platform of Stormwater dike approximately in between station 10+500 and 10+750 during a routine inspection of the structure. Immediately following the discovery, instrumentation to measure the movement of the dike has been implemented. The designer of the structure, Golder, was informed shortly following the observation.

The implementation of a buttress type like structure directly at the downstream toe of the dike has been put in place in 2016 following recommendation of the designer Golder.

In July 2017, during a routine inspection, Agnico noticed new tension cracks and signs of settlements on the crest of Stormwater Dike around Sta. 10+425, between Sta. 10+550 and Sta. 10+650, between Sta. 10+800 and Sta. 10+950, and around Sta 11+050 approximately. Settling of about 300 mm was observed between Sta. 10+800 and Sta. 10+950, approximately. Agnico indicated that this depression was pre-existing but increased in depth and lateral extent in 2017. Cracks appear to be oblique tension fractures, extending over the entire width of the dike crest. Some cracks were up to 5 cm wide and most of them did not progress after they were first observed. The area affected by these cracks is consistent with the limits of the South Cell water ponding against Stormwater Dike, which probably thawed the frozen soft soil foundation. During the annual inspection, the downstream toe of the dike was not visible as it had been covered by the South Cell pond since July 2016.

In 2016 and 2017 following these observations, movement monitoring instruments were installed on the crest of the dike (total of 4 extensometers and 19 prisms). No movement was observed by any one the 4 extensometers in 2017. Additional thermistors and piezometers have also been installed to replace broken instrumentation.

As reported in the 2017 Annual Geotechnical Inspection available in Appendix B1, the current interpretation of the situation is that the soft sediment foundation was frozen in the winter of 2010 while additional rockfill material continued to be placed over it until July 2010. The foundation freezing explains why no adverse settlement or soil failure was observed until the South Cell water level started reaching the toe of the structure in July 2016, which probably thawed the frozen soft soil foundation. The mechanism that caused the observed movement could be due to a foundation soil failure, the thawing of ice lenses or a combination of both.

d. As-built drawings of all mitigation works undertaken;

No mitigation work performed at Stormwater dike or on any dike in 2017.

e. Any changes in the design and/or as-built condition and respective consequences of any changes to safety, water balance and water quality;

The 2017 dike construction season at Meadowbank was conducted from June 2017 to October 2017. It consisted of the construction of Stage 6 for Central Dike, and the construction of Stage 2 for Saddle Dams 3, 4, and 5. Construction was completed in accordance with the requirements of the Design and Technical Specifications developed by Golder for each structure.

Work carried out during construction of Central Dike and Saddle Dams 3, 4, and 5 included foundation excavations, fill placement and liner placement. The design and technical specifications of Central Dike and Saddle Dams 3, 4, and 5 was developed by Golder Associates (Golder) and reviewed by Agnico and by the Meadowbank Dike Review Board. Central Dike was built to El. 143 m during the 2016 construction season (Stage 5), and its north abutment was raised to El. 145 m during the 2017 construction season (Sta. 0+090 to 0+174 m). Central Dike is designed to be able to be raised to El. 150 m and the final crest elevation is subject to review by Agnico. At the end of the 2017 construction season, the decision was made by Agnico to leave the extremity of the north abutment unfinished. This decision was made to make it easier to raise the rest of the structure to El. 145 m next year by connecting to the existing layer. The completed crest length is approximately 900 m.

Stage 3 of Saddle Dam 3, 4 and 5 were constructed to El. 145 m in 2017. These structures are designed to be able to be raised to El. 150 m and the final crest elevation of these structures is subject to review by Agnico. At the end of Stage 3, the decision was made by Agnico to close the abutments of these structures, as no further raise was planned at the moment. If these structures are to be raised higher, it will be necessary to re-open the abutments. The completed crest length is approximately 245 m for Saddle Dam 3, 367 m for Saddle Dam 4, and 255 m for Saddle Dam 5.

None of the changes in the design and/or as-built conditions stated above have consequence on safety, water balance and water quality (refer to the 2017 Annual Geotechnical Inspection in Appendix B1). Continuous monitoring will be done to ensure that the conditions remain stable. As-built reports of the construction completed in 2017 can be found in Appendix B5.

f. Data collected from instrumentation used to monitor earthworks and an interpretation of that data;

Section 4.0 of the 2017 Annual Geotechnical Inspection by Golder, provided in Appendix B1, presents the instrumentation data collected in 2017 .

The report, Annual Review of Portage and Goose Pit Slope Performance (2017), which presents the pit wall geotechnical inspection results, is also provided in Appendix B3, for informational purposes.

g. A summary of maintenance work undertaken as a result of settlement or deformation of dikes and dams; and

No major maintenance work on the dewatering or TSF structures was undertaken in 2017. Refer to Section c) of this section for additional details.

h. The monthly and annual quantities of seepage from dikes and dams in cubic metres.

See Sections 3.1.1 c and 8.3.7below for a discussion of seepage from East Dike, Bay Goose and Central Dike. Refer also to the 2017 Water Management Report and Plan (Appendix C2).

3.1.2 Meadowbank Dike Review Board

As required by water license 2AM-MEA1525 Part I, Item 12: ***The Licensee shall submit to the Board as part of the Annual Report required under Part B Item 2, all reports and performance evaluations prepared by the Independent Geotechnical Expert Review Panel.***

Two reports was prepared by the Meadowbank Dike Review Board in 2017 for Meadowbank site. The report, along with Agnico's response to the recommendations are included in Appendix B2.

3.2 QUARRIES

The annual reporting requirements listed in the following sections apply only to quarries located along the All Weather Access Road (AWAR).

As required by INAC Land Lease 66A/8 72-2, Condition 8: ***The lessee shall file a report, annually, with the Minister in the manner and format stipulated by the Minister. The report shall include:***
i. Quantity of material removed and location of removal, for the immediately preceding calendar year; and
ii. Such other data as are reasonably required by the Minister from time to time.

And

As required by INAC Land Lease 66A/8 72-2, Condition 25: ***The lessee shall file, annually, a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.***

And

As required by KIA Right of Way Authorization KVRW06F04, Schedule E, Condition 8: ***The lessee shall file annually a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.***

In 2017, Agnico Eagle blasted 30,000 tons of NPAG material from Quarry 8 (Parcel D)along the Meadowbank All Weather Access Road situated on INAC leased land. The 2017 Annual quarry report

was sent to INAC on February 28, 2018. The material removed was use on the AWAR maintenance. No material was blasted in other quarries situated on INAC and KIA leased land.

Regarding the Quarry 22 remedial activities, sampling was planned for the summer of 2017, but the presence of falcon and safety concerns prevented the campaign from being completed.

This quarry was historically used as a temporary storage area for contaminated materials generated as a result of petroleum hydrocarbon (PHC) spill clean-up activities. The contaminated material from these quarries continue to be excavated and removed in 2016 as it was the case in previous year since 2013. The contaminated material was transported to the Meadowbank Landfarm. The Quarry 22 report can be found in Appendix B4 — Quarry 22 2017 Report.

Results from the September 2014 fall confirmatory sampling indicated some remnants of contamination when compared to the CCME remediation Criteria for Industrial Use of Coarse Material. Most of the contamination remaining was associated with Fraction 3 hydrocarbons. Therefore, Agnico proposed to scarify the remaining contaminated areas in Q22 during the summer of 2015 and 2016 and resample (see Q22 2015 report – 2015 Annual report) in 2016.

Taking into consideration the results from 2014 and the 2015 work plan, Agnico Eagle continued in 2016 to scarify the surface of Quarry 22, as in previous years, with the back-end of a grader, allowing ground surface to be aerated thus increasing degradation of PHC. In 2016, the scarification work started mid-July and extended throughout warmer months, depending on equipment availability.

In 2016, a sampling campaign was completed in September to track the degradation of PHC with time. As previously done in 2014, a grid was used to divide the quarry in portions representing areas where contaminated material had been stored. Results from the 2016 fall sampling indicate some remnants of contamination when compared to the CCME remediation Criteria for Industrial use of Coarse material. The vast majority of contamination remaining is associated with Fraction 3 for which the CCME criteria is 1,700 mg/Kg.

Based on the degradation history of PHC's in the Meadowbank Landfarm and upon analyzing results from the 2014 and 2016 Q22 soil sampling, Agnico Eagle is confident that the natural degradation of Petroleum Hydrocarbon related products is an effective remediation method for Q22.

Agnico proposes to continue scarifying the surface areas in Q22 during the summer of 2018 and conduct another round of sampling in the late fall before freeze up. Results will be compared to collected data since 2014 to monitor the level of degradation.

Results will be collated and analyzed further to follow the degradation rates of the quarry surface. If needed, further course of action could include removal of additional material. Nonetheless, Agnico considers the actual methodology to be a satisfactory solution to the remediation of the quarry.

Agnico will then assess any future actions based on the next soil sampling campaign.

Regular inspections of the quarries were also performed during the year to ensure that runoff, if any, would be free of any visible sheen and would not impact the environment. No issues with runoff water inside the quarries were noted in 2017.

SECTION 4. WATER MANAGEMENT ACTIVITIES

The following section addresses reporting requirements related to water management activities.

4.1 FRESH WATER OBTAINED FROM THIRD PORTAGE LAKE

As required by Water License 2AM-MEA1525 Schedule B, Item 2: ***Monthly and annual volume of fresh Water obtained from Third Portage Lake*****.**

As per Type A Water License 2AM-MEA1525 Part E Item 4: "*the total volume of freshwater for all uses and from all sources shall not exceed 2,350,000 m^3 per year from the licence approval date to December 31, 2017, followed by a maximum of nine million one hundred and twenty thousand (9,120,000) cubic meters per year in 2018 through to the Expiry of the Licence."*

The total volume of freshwater pumped from the surrounding lakes and used for the Meadowbank Gold Project is listed in Table 4.1. A total volume of 528,171 m^3 of freshwater was used for the project in 2017 which was in compliance with the Water License Freshwater usage amount of 2,350,000 m^3.

The volume of reclaim water used in the mill in 2017 was 2,971,093 m^3. The volume of freshwater that is contained in the ore to the mill in 2017 was 30,528 m^3.

Flow meter calibrations datasheets for freshwater are presented in Appendix C1. The flowmeter will be recalibrated in 2018 and calibration sheet provide with the 2018 Annual Report.

Table 4.1. 2017 Freshwater usage

Water Location	Source Lake	Jan	Feb	March	April	May	June	July
Camp	Third Portage Lake	3,623	3,144	3,444	3,490	3,692	3,697	3,818
Mill (freshwater tank)	Third Portage Lake	45,068	41,345	33,328	53,001	53,152	39,661	43,494
Emulsion plant	No-name Lake	86	97	97	96	101	100	129
Total Freshwater Usage (m^3)		**48,777**	**44,586**	**36,869**	**56,587**	**56,944**	**43,459**	**47,441**
Ore Water (m^3)	Ore	2,520	2,492	2,579	1,583	3,310	2,886	2,040
Reclaim Water Usage (m^3)	Tailings Pond	252,232	232,324	247,396	227,667	246,007	247,131	251,549

Water Location	Source Lake	Aug	Sept	Oct	Nov	Dec	Total
Camp	Third Portage Lake	3,433	3,389	3,522	3248.00	3,605	**42,105**
Mill (freshwater tank)	Third Portage Lake	38,174	34,107	30,883	35270	37,365	**484,848**
Emulsion plant	No-name Lake	123	98	97.6	92.4	104	**1,219**
Total Freshwater Usage (m^3)		**41,730**	**37,594**	**34,503**	**38,610**	**41,074**	**528,171**
Ore Water (m^3)	Ore	1,699	1,592	3,205	3,519	3,103	**30,528**
Reclaim Water Usage (m^3)	Tailings Pond	257,421	241,498	250,866	254,845	262,157	**2,971,093**

4.2 FRESH WATER OBTAINED FROM WALLY LAKE

As required by Water License 2AM-MEA1525 Schedule B, Item 3: ***Monthly and annual volume of fresh Water obtained from Wally Lake*****.**

There was no freshwater obtained from Wally Lake for re-flooding activities in 2017.

4.3 LAKE LEVEL MONITORING

As required by Water License 2AM-MEA1525 Schedule B, Item 4: ***Results of lake level monitoring conducted under the protocol developed as per Part D Item 5 (Water Quality Monitoring and Management Plan for Dike Construction and Dewatering)*****.**

As of November 19, 2014 when tailings deposition began in the South Cell, the Portage Attenuation Pond ceased operation and became the South Cell TSF. There is no discharge from the Portage Attenuation Pond into Third Portage Lake since July 5, 2014. The elevation, in metres above sea level (masl), of Third Portage Lake continued to be monitored in 2016 and 2017 for information purposes only. Surveying activities were conducted on a weekly basis, during open water season and, weather permitting. The location of the lake level survey monitoring is identified as TPL-survey on Figure 1. The lake level monitoring results are presented in Table 4.2; the lake level remained within the range of naturally occurring levels.

Water from the East Dike Seepage was discharged into Second Portage Lake all year. The elevation, in metres above sea level, of Second Portage Lake was monitored on a weekly basis, during open water season and, weather permitting. The location of the lake level survey monitoring is identified as SPL-survey on Figure 1. The lake level monitoring results are presented in Table 4.2; the lake level remained within the range of naturally occurring levels.

Water from the Vault Attenuation Pond (contact water) was discharged from July 17, 2016 to October 11, 2017. This water was discharged into Wally Lake through the diffuser as effluent. No treatment of the water was required to date prior to discharge as the total suspended solids (TSS) were below the required limit. The Vault discharge is also subject to the MMER and all monitoring results met the appropriate criteria.

The elevation measurement, in metres above sea level, of Wally Lake was conducted on a weekly basis, during open water season and, weather permitting. The location of the lake level survey monitoring station is identified as WL-survey on Figure 3. The lake level monitoring results are presented in Table 4.2; the lake level remained within the range of naturally occurring levels.

Water levels of the Vault Attenuation Pond were also monitored. Table 4.2 presents the elevation monitoring results; the monitoring location is identified as VL-IN on Figure 3. This information is provided for informational purposes only

NIRB recommendation regarding the 2014 Annual Report states: "*AEM should present the range of naturally occurring water levels for each season in the annual report to validate its claim that variations in*

water level within the receiving environment have not been impacted by discharge volume. This is especially important given the planned dewatering of the Phaser Pit in 2016". "*AEM states these measurements were within the range of naturally occurring levels but does not present supporting data to inform this claim*."

In 2017, Agnico have the same conclusion as presented in 2015 and 2016; lake level for Third Portage, Second Portage and Wally lakes remained within the range of naturally occurring levels. Please refer to PEAMP Section 12.1.1.1 and Table 12.2 for a complete discussion of the impacts of discharge on water level in the receiving environment. Overall, modeling predicted the natural range of water levels in Third Portage Lake to be 133.82 – 134.19 masl., and the impact assessment indicated that this range would not be exceeded (Physical Environment Impact Assessment Report, 2005). Although these values accounted for 1-in-100 year precipitation or drought events, prior to operation, water levels were already below this range when monitoring began (prior to any significant freshwater consumption) in 2009 and continue to be as of now. Although rates of dewatering (i.e. pumping rates) were underestimated during the FEIS, water levels have not significantly changed at monitoring stations since monitoring began. The average water level for TPL in 2017 is 133.59 masl which is between the natural variation of the lake.. Similarly, discharge volumes from the Vault Attenuation Pond to Wally Lake were underestimated in the FEIS (mainly due to changes in site designs since that time) but impacts to water levels in Wally Lake have not been observed, as anticipated. For Second Portage Lake, the baseline level is 133.1 masl. The average for 2017 is 132.9 masl which is considered as a minor impact on lake level. Following this analysis, Agnico Eagle concluded the water level in Third Portage, Second Portage and Wally Lakes were still remain within the range of naturally occurring levels. Agnico will continue to monitor water level and will see if the minor impact on SPL reoccurred in 2018. Agnico Eagle does not see the advantage of comparing the water level to the natural seasonal variation as water levels are only taken in ice free period.

Table 4.2. 2017 Lake Water level monitoring

Date	Wally Lake (masl)	Second Portage Lake (masl)	Third Portage Lake (masl)	Vault Attenuation Pond B (masl)	Vault Attenuation Pond C (masl)	Vault Attenuation Pond D (masl)
5/28/2017				135.37		132.48
5/30/2017			133.550			
6/4/2017	139.732	133.062	133.637	135.258	135.222	132.945
6/8/2017					136.074	133.095
6/10/2017					136.331	132.061
6/13/2017					136.437	132.788
6/16/2017	139.66			136.51		133.71
6/17/2017				136.522		133.668
6/18/2017	139.6			136.556		
6/19/2017	139.647					133.623
6/20/2017		133.085	133.670	136.452		133.45
6/21/2017				136.39		133.45
6/22/2017				136.3		133.45
6/23/2017				136.3		133.24
6/24/2017				136.3		132.86
6/25/2017				136.3		132.12
6/26/2017			133.720	136.3		131.78
6/28/2017				136.07	136.095	132.986
6/29/2017				135.983		133.027
6/30/2017				135.923		133.018
7/1/2017				135.727		132.908
7/3/2017				135.697		132.897
7/7/2017			133.660			
7/8/2017		132.980				
7/9/2017	139.524			135.24	135.256	134.177
7/10/2017				135.108	135.13	132.966
7/11/2017				135.04	135.049	132.852
7/12/2017				134.958	134.947	132.849
7/13/2017				134.9	134.891	131.978
7/15/2017				134.674	134.688	131.684
7/16/2017				134.566	134.549	131.403
7/18/2017				134.392	134.385	131.838
7/21/2017				134.56		132.03
7/21/2017	139.446			134.336	134.328	131.683
7/23/2017		132.900	133.670			131.76
7/24/2017				134.174	134.206	131.758

7/27/2017				134.21	134.21	132.48
7/29/2017				134.246	134.205	132.46
7/31/2017				134.24	134.24	132.03
8/1/2017				134.18		131.92
8/6/2017				134.127		132.422
8/8/2017	139.396			134.11	134.11	132.701
8/13/2017				134.03		132.4
8/14/2017				134.09		132.53
8/15/2017					134.1	132.647
8/20/2017	139.303	132.700	133.496	133.398	134.154	132.012
8/22/2017				133.395	133.947	131.157
8/24/2017				133.367		131.996
8/26/2017				133.411	133.209	131.985
8/30/2017				133.416	132.671	131.73
9/3/2017	139.62	132.789	133.540	132.65	132.757	131.32
9/6/2017				133.443	132.747	130.843
9/7/2017				133.5	132.79	131.09
9/9/2017					132.78	130.62
9/11/2017			133.490			
9/18/2017						130.93
9/20/2017						131.75
9/21/2017					132.03	131.84
9/23/2017				133.575	132.021	131.814
9/24/2017			133.410			
9/24/2017	139.25					
10/1/2017						130.017
10/30/2017				134.43	134.69	

4.4 WATER BALANCE WATER QUALITY MODEL REPORTING SUMMARY

As required by Water License 2AM-MEA1525 Schedule B, Item 5: ***Summary of reporting results for the Water Balance Water Quality model and any calibrations as required in Part E Items 7-9.***

A water balance and water management report and plan update for 2017 was completed. The technical report, entitled “Meadowbank Gold Mine Water Management Report and Plan 2017”, is included in Appendix C2.

As in previous years, the 2017 water management plan for the Meadowbank mine site update consists of:

- The validation and update of the site hydrology, including the revision of drainage areas and the update of meteorological conditions when required.

- The update of the short-term and long-term water management plan, taking into account changes to the following elements:
    - Mining schedule;
    - Mill operation rate;
    - Mine pits layout;
    - Rock storage facility extent; and
    - Tailings management facilities filling.

- The development of a water balance model for the entire site and for the complete duration of the mining activities until final site closure.

- A comparison of the predicted and recently remodeled pit water quality (Meadowbank Water Quality Forecasting Update – Based on the 2017 Water Management Plan, SNC,2018) forecast to assist in water treatment options development for closure planning.

The life-of-mine (LOM) considered for the water balance reflects the mining plan summarized in the 2017 Water Management Plan, as it pertains to the activities within the current approved license for the Meadowbank mine.

In 2017, in addition to the changes in the LOM, revisions/modifications were made to the Water Balance for optimization purposes including:

- Fresh water consumption revision;

- Total daily mill water requirements;

- Updated tailings deposition plan affecting the North Cell and South Cell deposition calendar;

- Pit water inflow revision based on observed flowmeter data as well as a revision of the pits and TSF run off inflows related to their underlying watersheds (performed by SNC, 2013);

- Flooding sequence and volumes update to take into account the updated run off inflows as well as to optimize flooding activities to reduce the impact on wall stability as well as 2017 transfers from the South Cell downstream seepage to Goose Pit ;

- Updating the seepage section;

- Changes in tailings dry density as observed through latest bathymetric analysis.

Details of the revisions and their effects on the overall water management strategy are discussed in detail in the 2017 Water Management Report and Plan (Appendix C2).

As detailed in the 2017 Water Management Report and Plan the principal additions or changes to this update are:

- The optimization of the flooding activities which are now aimed to reduce the impact on wall stability and are planned according to the more refined design of the reflooding infrastructure;

- The tailings deposition parameters used for the model following the results of the 2017 bathymetries analysis;
- The Central Dike seepage status update;
- The review of the water quality forecast model.

The below summarizes water management activities as presented in the 2017 Water Management Report and Plan:

- Freshwater pumped from Third Portage Lake was mainly used at the mill (average of 37,401m^3/month in 2017) and the camp (average of 3,508m^3/month in 2017);
- Once in the TSF, the total water volume is generally comprised of 40-70% (depending of time in the season due to presence of ice) free reclaim water (recycled back to the mill as process water), 30% entrapped water within the capillary void space of the tailings and 40% is entrapped within the TSF as ice. Agnico considers a lower conservative 46% total entrapment in tailings during winter months;
- The total expected fresh water utilization planned for the operating months of 2018 varies between 60-185 m^3/hr during mill operation, and drops gradually during closure to 4m^3/hr once the mill has closed (represents water used by the camp only and does not include pit flooding). The variation seen in the fresh water consumption during the mill operation is optimized to prevent a water deficit in the TSF and allows for adequate reclaim volumes while minimizing the reclaim water transfers from the TSF to the pits at closure. The higher freshwater consumption flows are planned for winter 2018 to reduce ice entrapment by promoting sub-aqueous deposition and ensure sufficient free water for reclaim. Although this is the case for proper operation, the overall strategy aims to minimize total pond volume in the South Cell despite this fresh water increase. Water volume is still kept to a minimum on the operation level to comply with the strategy;
- Re-flooding volumes and sequence presented. Active re-flooding will potentially commence in 2018 with Goose Pit and for Portage Pit and 2019 for Vault Pit.The first phase of the flooding sequence is planned to be completed by the end of summer 2025. Contingent that the water quality meets CCME Guidelines for the Protection of Aquatic Life or site specific concentrations, dike breaching will occur in approximately 2029 and will reconnect the Portage and Goose areas to Third Portage Lake and Vault area to Wally Lake.
- The Water Quality Forecast 2017 (SNC, 2018) provides water quality modelling with updated parameters (including dissolved) to determine the need for potential treatment at closure. The updated water quality forecast model applies to the North and South Cell TSF Reclaim Ponds, the Portage, Goose, Vault and Phaser Pits. A review of the available water quality data measured in 2017 was undertaken. Treatment may be required for copper, selenium, fluoride, chromium, total aluminium, total arsenic, cadmium, iron and nickel, as the pit water quality may exceed CCME limits if the water is not treated, based on the completely mixed assumption. Silver is no longer problematic compared to the previous exercises due to a lower silver loading sampled from the 2016 mill effluent. For the Vault pit, no treatment is expected when re-flooding the pit, with CCME used as a reference base only.

The following recommendations are presented in the 2017 Water Management Report and Plan in order to improve on the current water management strategies and water balance:

- Continue to monitor and include any new flow monitoring locations/devices for any additional or new inflows observed in 2017.
- Continue to update the deposition plans of the North and South Cell as needed to maximize water use and availability as well as increasing the accuracy of the models including but not limited to bathymetric readings.
- Validate new tailings parameters with 2018 North and South Cells bathymetries.
- Conduct the water quality modelling analysis on a yearly basis based on updated water quality results and water balance through the life of mine.
- Continue development of the sediment flux model to evaluate erosion of geotechnical structures on site for the closure, primarily for TSS control: diversion ditches, rock storage facilities, capping of the tailings storage facilities, dikes and dams.
- Evaluate opportunities to reduce contaminants concentration in the reclaim pond prior to closure.
- Evaluate active TSF's ice thickness to optimize operations and potentially diminish closure transfers to the pits
- Continue follow up of the Central Dike seepage flow and adjust pumping station capacity in function of the decreasing flow.
- Implement 2017 Meadowbank Water Quality Forecasting (SNC, 2018) recommendations.

4.5 BATHYMETRIC SURVEYS

As required by Water License 2AM-MEA1525 Schedule B, Item 6: ***The bathymetric survey(s) conducted prior to each year of shipping at the Baker Lake Marshalling Facility.***

The bathymetric survey in Baker Lake was completed on July 22, 2017and is included in Appendix C3. The survey was done before the shipping season.

4.6 PREDICTED VS MEASURED WATER QUALITY

As required by Water License 2AM-MEA1525 Part E, Item 9: ***The Licensee shall, on an annual basis during Operations, compare the predicted water quantity and quality within the pits, to the measured water quantity and quality. Should the difference between the predicted and measured values be 20% or greater, then the cause(s) of the difference(s) shall be identified and the implications of the difference shall be assessed and reported to the Board. The comparison of predicted water quality in reflooded pits also addresses Water License 2AM-MEA1525 Part E, Item 7.***

As per NIRB Comments to 2014 Annual Report "(…) provides comparisons between originally predicted and measured water quantity and quality in 2014. This comparison only uses the current year, but a year

over year comparison would help identify trends." In the 2015 and 2016 Annual Report, the predicted water quantity and quality within the pits was compared to the measured water quantity and quality. This comparison used a year over year comparison. For the 2017 Annual Report, the predicted water quantity and quality within the pits will be compared to the measured water quantity and quality values that were sampled in 2017.

The comparison between the predicted water quantity and quality within the pits will be compared to the measured water quantity and quality done for 2012 to 2017. Because the Portage Pit was not deep enough to collect sufficient data from the sumps in 2011, this comparison used 2012 as a start point.

Appendix C4 provides a comparison between predicted (originally predicted in support of the NWB license) and measured water quantity within Portage, Goose and Vault Pit. The appendix includes the measured data for 2017, and also from 2012 to 2016.

Percent difference between the predicted and measured values for water quantity and quality was calculated using the following formula:

*% difference = ((A-B) / B)*100;*
where: A = measured value and B = predicted

Water Quantity

For Portage Pit, as presented in Appendix C4, the % difference between water volume predicted in Golder (2007) and water volume measured were less than predicted by more the 20% from 2013 to 2017. For 2012, the volume was slightly higher than predicted (+10%). This indicates that the seepage and groundwater sources and volumes predicted that collectively make up the water in the pits in 2013 to 2017, are less than what was originally predicted for operations. More specifically for 2017, Portage Pit was -52% less than the predicted value. Before 2014, seepage water from East Dike was pumped to the Portage Pit sump. However, as of January 2014, water from the East Dike Seepage has been pumped back to Second Portage Lake which contributes to significantly decrease the water quantity in Portage Pit between 2014 and 2017.

For Goose Pit, the % difference between water volume predicted in Golder (2007) and water volume measured in Goose Pit were less than predicted by more the 20% from 2012 to 2017. More specifically for 2017, Goose Pit was -27% less than the predicted value. This indicates that since 2012, the seepage and groundwater sources and volumes predicted that collectively make up the water in the Goose pit are less than what was originally predicted for operations. As the mining activity ceased in 2015 in Goose Pit, runoff, groundwater and seepage will now contribute to the natural reflooding of the pit.

For Vault Pit, the % difference were higher by 120% in 2014 (commencement of mining operations) and 142% in 2015 between water volume predicted in Golder (2007) and water volume measured. This can be explained by the fact that there was more precipitation including larger freshet and rainfalls in 2015. In 2016, there was no significant difference between the predicted and measured volume (i.e. -1%). In 2017 however, the % difference was higher by 363% when comparing the predicted and measured volume, which could be caused by a larger freshet and rainfall flowing to Vault and Phaser Pits.

Water Quality

According to the original NWB application documents (Golder, 2007- Water Quality Predictions), a Probable scenario and a Possible Poor End scenario for predicted water quality results were evaluated. These models were developed to anticipate a representative range of water quality that would be used for management and mitigative decisions. The Probable scenario used input values that simulate predicted observed field conditions and added realistic scaling factors related to explosives management and pit operations. The Possible Poor End scenario input values simulated probable variance on observed field characteristics and selected input parameters to capture possible, conservative variance. The predicted values in the Probable scenario and the Possible Poor End scenario represented the summer averages.

The measured values for 2012 to 2017 are summarized in Appendix C4. The yearly mean and lower 25th percentile of all the data available throughout the year at Portage Pit (ST-17 and ST-19), Goose Pit (ST-20) and Vault Pit (ST-23) were compared to the predicted values where data were available. The lower 25th percentile values were calculated and compared to the predicted values when 3 or more samples were taken during the year.

Furthermore, the measured data was also compared to the Water License discharge criteria to Third Portage Lake and Wally Lake, the Metal Mining Effluent Regulations (MMER) and the CCME water quality guidelines for the protection of aquatic life. It is understood that the Water Licence, MMER and CCME criteria apply to mining effluents discharged to the environment and are as such not applicable to the pit water since it is managed within the site and undergoes a treatment step if required prior to discharge to the environment. These criteria are used as a guide to identify potential parameters of concern.

In 2012:

- For the Third Portage Pit sump:
    - Except for ammonia nitrogen (0%), dissolved barium (14%) and Sulphate (-6%) under Possible Poor End scenario, all the parameters exceeded +/-20% of difference between the predicted and mean measured values. All parameters exceeded for the Probable Scenario. For the lower 25th percentile, all parameters measured exceeded the predicted in the Probable scenario, except dissolved arsenic (4%), dissolved nickel (-14%) and nitrate (14%). All parameters exceeded +/-20% difference for the Possible Poor End scenario.
    - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, copper, fluoride, lead, cadmium, mercury, selenium, thallium and nitrate. Only cadmium exceeded the Water License criteria. No parameters exceeded the MMER criteria.
- For Goose Pit:
    - All the parameters exceeded +/-20% of difference between the predicted (Probable and Possible Poor End scenarios) and mean measured values except for dissolved manganese (14%). For the lower 25th percentile, all parameters measured exceeded the predicted (Probable and Possible Poor End scenarios), except dissolved barium (13% for both scenarios) and dissolved manganese (-15% for both scenarios).

- The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, arsenic, copper, fluoride, lead, cadmium, mercury, selenium, thallium and nitrate. Cadmium and mercury exceeded the Water License criteria. No parameters exceeded the MMER criteria.

In 2013:

- For the Third Portage Pit sump:
  - Except for ammonia nitrogen (+2%) and dissolved mercury (-7%) under Possible Poor End scenario, all the parameters exceeded +/-20% of difference between the predicted and mean measured values. All parameters exceed for the Probable Scenario, except pH (19%). For the lower 25th percentile, limited data are available, but available parameters measured exceeded the predicted in the Probable scenario and Possible Poor End scenario, except for pH (14% and 18% respectively).
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, arsenic, copper, fluoride, lead, mercury and thallium. No parameters exceeded the MMER and Water License criteria.
- For Goose Pit:
  - All the parameters exceeded +/-20% of difference between the predicted (Probable and Possible Poor End scenarios) and mean measured values except hardness (2% for both scenarios) and dissolved cadmium (-12% for both scenarios). For the lower 25th percentile, all parameters measured exceeded the predicted (Probable and Possible Poor End scenarios).
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, copper, fluoride, nickel, cadmium, mercury, selenium, thallium and nitrate. Nitrate exceeded the Water License criteria. No parameters exceeded the MMER criteria.

In 2014:

- For Vault Pit:
  - Exceedances of greater than +/-20% percent difference between predicted (Probable and Possible Poor scenarios) versus the mean of measured values in Vault Pit were found for all of the parameters except for pH (-11% for both scenarios).
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, arsenic, copper, fluoride, nickel, cadmium, mercury, molybdenum, selenium, thallium and nitrate. No parameters exceeded the MMER and Water Licence criteria.
- For Goose Pit:
  - The mean water quality concentrations measured in the Goose Pit sump exceeded 20% predicted concentrations for all the parameters except for dissolved barium (4% for both scenarios) and dissolved copper (5% for both scenarios). For the lower 25th percentile, all

available parameters measured exceeded the predicted (Probable and Possible Poor End scenarios).

- The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, fluoride, mercury, thallium and nitrate. No parameters exceeded the MMER and Water Licence criteria.

- It should be noted that in 2014 no water from South Portage Pit sump was sampled because the access to the sump presented health and safety issues for the technicians and water was pumped only for 3 months (August to October). All sump water was pumped to the South Cell TSF for use as reclaim water in the mill.

In 2015:

- For Vault Pit:
  - Exceedances of greater than +/-20% percent difference between predicted (Probable and Possible Poor End scenarios) versus the mean of measured values in Vault Pit were found for all of the parameters except for pH (-11% for both scenarios) and nitrate (-8%, Probable scenario).
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, fluoride, iron, molybdenum, selenium, thallium and nitrate. Ammonia nitrogen exceeded the Water License criteria. No parameters exceeded the MMER criteria.
- For Goose Pit:
  - The mean water quality concentrations measured in the Goose Pit sump exceeded +/-20% predicted concentrations for Probable and Possible Poor End scenarios for all the parameters except for dissolved molybdenum (16%). For the lower 25^{th} percentile, all available parameters measured exceeded the predicted (Probable and Possible Poor End scenarios), except for pH (16% for both scenarios) and dissolved molybdenum (3% for both scenarios).
  - The following measured parameters were found to be higher than the CCME guidelines: fluoride, nickel, selenium, thallium and nitrate. No parameters exceeded the MMER and Water Licence criteria.
- For Third Portage Pit:
  - The mean water quality concentrations measured in the Third Portage Pit sump exceeded 20% predicted concentrations for Probable and Possible Poor End scenarios for all the parameters except for pH (6% and 9% respectively) and the fluoride (10% for Possible Poor End). For the lower 25^{th} percentile, all available parameters measured exceeded the predicted values for both scenarios, except for pH (1% and 4% respectively).
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, arsenic, fluoride, selenium, thallium and nitrate. No parameters exceeded the MMER and Water License criteria.
- For North Portage pit:

- The mean water quality concentrations measured in the North Portage Pit sump exceeded +/-20% predicted concentrations for Probable and Possible Poor End scenario for all the parameters except for nitrate (-8% and 19% respectively). For the lower 25th percentile, all available parameters measured exceeded the predicted value except for pH (18% for Probable scenario) and sulphate (-3%, for Possible Poor End scenario).
- The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, arsenic, fluoride, nickel, thallium and nitrate. No parameters exceeded the MMER and Water License criteria.

In 2016:

- For Vault Pit:
  - Exceedances of greater than +/-20% percent difference between predicted (Probable and Possible Poor End scenarios) versus the mean of measured values in Vault Pit were found for all of the parameters except for pH (-3% for both scenarios) and dissolved barium and molybdenum (9% and -10% respectively for Possible Poor End scenario). For the lower 25th percentile, all parameters measured exceeded the predicted (Probable and Possible Poor End scenarios), except for pH.
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, copper, fluoride, cadmium, selenium and nitrate. No parameters exceeded the MMER and Water License criteria.
- For Goose Pit:
  - The mean water quality concentrations measured in the Goose Pit sump exceeded +/-20% predicted concentrations for Probable and Possible Poor End scenarios for all the parameters except for dissolved copper (-7%) and nitrate (-7%). For the lower 25th percentile, all available parameters measured exceeded the predicted (Probable and Possible Poor End scenarios), except for nitrate (-11% for both scenarios).
  - The following measured parameters were found to be higher than the CCME guidelines: fluoride, nickel and nitrate. No parameters exceeded the MMER and Water Licence criteria.
- For Third Portage Pit:
  - The mean water quality concentrations measured in the Third Portage Pit sump exceeded 20% predicted concentrations for Probable and Possible Poor End scenarios for all the parameters except for hardness (-9% and -12% respectively), dissolved cadmium, mercury and magnesium (-11%, -7%, -11% respectively for Possible Poor End) and nitrate (9% for Possible Poor End). For the lower 25th percentile, all available parameters measured exceeded the predicted values for both scenarios.
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, fluoride, cadmium, mercury, molybdenum, selenium and nitrate. No parameters exceeded the MMER and Water License criteria.
- For North Portage Pit:
  - The mean water quality concentrations measured in the North Portage Pit sump exceeded +/-20% predicted concentrations for Probable and Possible Poor End scenario

for all the parameters except for nitrate (-2% for Probable scenario). For the lower 25th percentile, all available parameters measured exceeded the predicted value except for dissolved barium (15% for Possible Poor End scenario) and nitrate (-3% for Probable scenario).

- The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, arsenic, fluoride, nickel, cadmium, molybdenum, selenium and nitrate. No parameters exceeded the MMER and Water License criteria.

In 2017:

- For Vault Pit:
  - Exceedances of greater than +/-20% percent difference between predicted (Probable and Possible Poor End scenarios) versus the mean of measured values in Vault Pit were found for all of the parameters except for pH (-4% for both scenarios) and dissolved barium (-3% for Possible Poor End scenario). For the lower 25th percentile, all parameters measured exceeded the predicted (Probable and Possible Poor End scenarios), except for pH and selenium.
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, fluoride, iron, selenium and nitrate. No parameters exceeded the MMER and Water License criteria.
- For Goose Pit:
  - The mean water quality concentrations measured in the Goose Pit sump exceeded +/-20% predicted concentrations for Probable and Possible Poor End scenarios for all the parameters except for dissolved copper (-9%), hardness (+8%) and molybdenum (-19%). For the lower 25th percentile, all available parameters measured exceeded the predicted (Probable and Possible Poor End scenarios), except for hardness (-1% for both scenarios).
  - The following measured parameters were found to be higher than the CCME guidelines: unionized ammonia (mean value of 0.018 vs CCME guideline of 0.016), fluoride, nickel, selenium and nitrate. No parameters exceeded the MMER and Water Licence criteria.
- For Third Portage Pit:
  - The mean water quality concentrations measured in the Third Portage Pit sump were equal or exceeded 20% predicted concentrations for Probable and Possible Poor End scenarios for all the parameters. For the lower 25th percentile, all available parameters measured exceeded the predicted values for both scenarios, except for ammonia nitrogen and selenium.
  - The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, fluoride, mercury, selenium and nitrate. No parameters exceeded the MMER and Water License criteria.
- For North Portage Pit:
  - The mean water quality concentrations measured in the North Portage Pit sump were equal or exceeded +/-20% predicted concentrations for Probable and Possible Poor End scenario for all the parameters except for nitrate (-12% for Possible Poor End scenario).

For the lower 25th percentile, all available parameters measured exceeded the predicted value except for dissolved barium (0% for Possible Poor End scenario) and nitrate (-14% for Possible Poor End scenario).

- The following measured parameters were found to be higher than the CCME guidelines: un-ionized ammonia, ammonia nitrogen, arsenic, fluoride, nickel, cadmium and nitrate. No parameters exceeded the MMER and Water License criteria.

Based on this analysis, many of the predicted values for the Probable and Probable Poor End scenarios have differences greater than +/- 20% when compared to the measured values. There are several potential causes that could contribute to these differences:

- For Portage and Goose Pits, the predicted water volumes were significantly less than what was originally predicted, specifically from 2012 to 2017. This reflects the fact that seepage, ground water and local runoff volumes were being managed and less water than what was originally predicted was reporting to the pit sumps. Consequently, there is less volume of water to attenuate any contaminant loads that may accumulate in the pit sump water body.
- The higher contaminant loads measured in the pit water can also be contributed to a higher observed load in the seepages flowing into the pits.
- Some accredited laboratory water quality measurements have detection limits that are higher than the predicted values. This is particularly true for dissolved metal analysis, such as cadmium, iron, lead, nickel, molybdenum, selenium, thallium and zinc.
- Un-ionized ammonia concentration in water is greatly influence by the pH. The higher the pH, the higher the fraction of un-ionized ammonia in the water. The predicted pH of the Portage and Goose pit water is between 6.1 and 6.3, while the measured values are generally between 7.0 and 8.3.

Furthermore, there are many parameters in the pit water that are slightly higher or higher than the CCME water quality guidelines for the protection of aquatic life. Some parameters, such as ammonia and nitrate, are present in the pit water from the use of explosive during the pit development. Other parameters found in the pit water could originate from the natural groundwater seepage into the pit or from contact of runoff water and seepage water with potentially acid generating (PAG) rock surfaces of the pit wall

However, it is important to note that the water from the all pits is monitored extensively and are not discharged directly into the environment:

- For Portage and Goose Pit sump water, no water was discharged to the environment from these pits. Rather, up until November 2014, the pit water is transferred to the former Attenuation Pond. The water accumulated in the Attenuation Pond was sent to the Tailings Storage Facility or treated by the Water Treatment Plant (WTP) before discharge to Third Portage Lake. No discharge limits were exceeded in 2012, 2013 and 2014 as all the results are below the maximum value required by NWB (Water License 2AM-MEA1525) and Environment and Climate Changes Canada (MMER). It should also be noted that since the South Cell Tailings Storage Facility was put into operation (November, 2014), no additional water from the former Portage Attenuation Pond has been discharged into the receiving environment during mining operations.

Since mining activities are completed in Goose, all water inflows will remain in Goose Pit and form part of the natural re-flooding volume (since July 2015).

- For Vault Pit sump water, the pit water reports to the Vault Attenuation Pond. The water accumulated in the Vault Attenuation Pond can be treated by the WTP for Total Suspended Solids (TSS) removal before discharge into the receiving environment (Wally Lake). The results of the Vault discharge can be found in Section 8.3.3.4 under sampling ST-10 (discharge). No discharge limits were exceeded in 2014, 2015, 2016 and 2017, as all the results are below the maximum average concentration value required by NWB (Water License 2AM-MEA1525) and Environment and Climate Changes Canada (MMER).

The sample results from Portage, Goose and Vault will continue to be monitored in the future and the results will be considered in the water quality modelling, revised yearly, to assist in informing management of water quality in the pits during closure. All factors including the proportional volume of pit water and reclaim water in the TSF, as well as possible implementation of mitigative measures during operation and closure, will be considered when deciding if water treatment will be required at closure. All of this information including the applicable parameters are integrated into the water quality model and is discussed in the subsequent section.

Water Quality Forecast model - Pit Water Quality

The Water Quality Forecast model is completed yearly with the updated, measured data from site, as well as the water balance used on site. Review of the water quality predictions for pit reflooding is completed in this forecast. Table 4.1 of the *2017 Meadowbank Water Quality Forecasting Update* found in Appendix C of the *2017 Water Management Report and Plan* (Appendix C2) summarizes the forecasted concentrations of applicable parameters in Portage and Goose Pits (based on measured water quality from the TSF) predicted in the pits after reflooding and compares them to originally predicted concentrations for Goose and Portage.

Based on the results of the water quality mass balance presented in Section 4.2 of the *2017 Meadowbank Water Quality Forecasting Update*, treatment may be required for aluminium, arsenic, cadmium, chromium, copper, iron, selenium and fluoride as the forecasted pit water quality may exceed CCME guidelines or other site specific criteria developed during the closure process prior to dike breaching, if the water is not treated. Total nitrogen forecasted concentration at closure is also higher than the threshold concentration adopted for Oligotrophic Lake in terms of nutrient concentration.

For the Vault pit, no treatment would likely be required after the pit has been re-flooded prior to dike breaching. This is largely due to the fact that there is no interaction of contact water with a tailings disposal facility at the Vault site and all parameters are expected to meet the CCME guidelines or other site specific criteria developed during the closure process. Table 5.1 of the *2017 Water Quality Forecast Update* report presents the average concentrations of water quality from samples taken in the Vault area in 2017.

With respect to the potential elevated levels of metals and total nitrogen mentioned above, treatment could be undertaken at the South Cell Reclaim Pond or in the Portage Pit if the trends shown in the model continue to be noted. A potential treatment option for the removal of the metals prior to discharge in Portage Pit is caustic or lime precipitation, while aeration is recommended for total nitrogen reduction via

ammonia volatilization. A coagulation-clarification process could be a potential treatment solution for removal of arsenic and fluoride.

Forecasted selenium concentration also exceeds the CCME guidelines in Portage and Goose Pits. Consequently, treatment may be required. This parameter still requires close monitoring.

For the Vault area, ammonia and nitrate are the parameters of concern identified by Environment Canada, but no actual or forecasted concentration exceeds the Type A Water License discharge requirements for this area.

It is important to note that the water quality in the pits will be subject to CCME guidelines or site specific criteria at closure once the water level in the Goose and Portage Pits are equal to the water level in Third Portage Lake. The dikes will only be breached once the water quality in the pits meets CCME guidelines or site specific criteria developed during the closure plan approval process. This applies also for the Vault area.

4.7 ADDITIONAL INFORMATION

As required by Water License 2AM-MEA1525 Schedule B, Item 25: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

No additional information was requested in 2017.

SECTION 5. WASTE ROCK MANAGEMENT ACTIVITIES

5.1 GEOCHEMICAL MONITORING

As required by NIRB Project Certificate No.004 Condition 15: ***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; results of the re-evaluations shall be provided to the NWB and NIRB's Monitoring Officer.***

And

In accordance with Water License 2AM-MEA1525 Schedule B, Item 7: ***Geochemical monitoring results including:***

a. Operational acid/base accounting and paste pH test work used for waste rock designation (PAG and NPAG rock);

In 2017, Agnico sampled approximately 25% of blast holes and analyzed the percentages of sulphur and carbon. The results from these analyses are used to differentiate Non-Potentially Acid Generating (NPAG) from Potentially Acid Generating (PAG) materials. The Total Sulphur (S) analysis is converted into a Maximum Potential Acidity (MPA) value by multiplying the Total S weight % by 31.25 which yields an MPA value in Kg $CaCO_3$ equivalent. The Total Inorganic Carbon analysis is similarly converted into a Carbonate Neutralization Potential (NP) by multiplying the Total weight % Inorganic Carbon (reported as $\%CO_2$) by 22.7 which yields an NP value in Kg $CaCO_3$ equivalent. The Net Potential Ratio (NPR) for the blast hole drill cutting sample is then calculated as follows: NPR = NP/MPA. See Table 5.1 for a summary of Acid Rock Drainage (ARD) Guidelines used to classify Meadowbank waste rock. The operational acid/base accounting used for waste rock designation (PAG and NPAG rock) is described as well as the frequency of sampling in the Operational ARD/ML Testing and Sampling Plan (Agnico Eagle, Version 2, 2013). Once characterized by the geology team, the waste rock material is segregated and placed in appropriate location.

As per KIA recommendation to the 2015 Annual Report: "*Agnico should provide a summary in the Annual Report of the proportion of PAG, NPAG and uncertain waste rock found in the sampling of 25% of blast holes*." In 2017, Agnico analyzed 21,021 samples from blast hole at Vault at his on-site laboratory. Of this sample, 8.8 % are PAG, 15.3 % are uncertain and 75.9 % are NPAG. For Portage, Agnico analyzed 7,975 samples from blast hole at his on-site laboratory. Of these samples, 17.7% are PAG, 5.7 % are uncertain and 76.6 % are NPAG.

Table 5.1. Summary of ARD Guidelines used to classify Meadowbank Waste

Initial Screening Criteria	ARD Potential
NPR< 1	Likely Acid Generating (PAG)
1 < NPR < 2	Uncertain
2 < NPR	Acid Consuming Non Potentially Acid Generating (NPAG)

The mine geology staff uses the derived NPR to characterize the rock in the blast pattern. Mine surveyors use this information to delineate the dig limits within the blasted rock to guide the shovel and loader operators in directing where the rock is to be taken. See Section 5.2 and Table 5.3 for a discussion of the use and location of waste rock.

Segregation of ore, waste rock as potentially acid generating (PAG) or non-potentially acid generating (NPAG) material based on operational testing during mining activity to differentiate waste rock type is part of the Meadowbank Waste Rock Management Plan. Sampling and testing of waste materials for acid rock drainage (ARD) is conducted during mine operation in order to segregate PAG waste from NPAG waste rock material, so that waste material can be assigned to specific locations or use. This practice has been ongoing since the beginning of the mining operations at Meadowbank, and will continue during the remaining operation period. The geochemical properties of all Meadowbank mining wastes have been confirmed with duplicates samples sent to certified laboratory, through both static and kinetic testing on numerous representative samples, by various test methods and through multiple project development stages.
The results of the NPAG-PAG classification confirmation are logged in the Meadowbank GEMCOM database. Due to the large volume of data, the results are not included in this annual report. These results can be provided upon request.

In 2017 , to validate the method used by Agnico, approximately 315 samples (including143 samples from Vault and 172 from Portage)) from production drill holes in Portage and Vault Pits were sent to an accredited commercial lab (external lab) for acid base accounting (ABA) analysis using the Modified Sobek Method for determination of NP/AP, metal leaching using the Shake Flask Method, bulk metals analysis and for whole rock analysis. The results from the external laboratory confirmed Agnico's methodology and results to differentiate PAG/NPAG rock.

In its recommendations to the 2014 Annual Report, the NIRB requested that Agnico *provide a comparison of its results with the FEIS predictions and an explanation of how it re-evaluated rock disposal practices in order to incorporate preventative and control measures into the Waste Management Plan*. This information is provided below.

In the FEIS, Vault waste rock was found to be 100% Intermediate Volcanic (IV). Agnico's characterization of the Vault waste rock found that it is mostly comprised of IV group rocks, however a small portion is also iron formation. Ultimately, the FEIS was functionally accurate as the IV provides a high buffering capacity, low leachability and is considered NPAG.

Data collected for internal control during operations at Vault was compared to the Vault geochemical FEIS (Golder, 2005). The Vault and Portage database from Agnico included results for analyzed at the on-site laboratory for total sulphur, buffering capacity (NP) , acid potential (AP), the ratio of NP to AP

(NRP) and total carbon. Starting at the end of 2014, Agnico sent quarterly samples to an accredited laboratory to validate Agnico internal determination of Vault waste rock. The Vault FEIS prediction said that the ARD from Vault rock will be low which was consistent with Agnico findings. In the FEIS, it was determined that 14% of the rock will be PAG, 11% uncertain and 75% NPAG. Analysis from Agnico's internal determination shows that in 2017, as previously said, for Vault material, 8.8 % are PAG, 15.3 % are uncertain and 75.9 % are NPAG. Ultimately, there is a slightly higher ratio of NPAG versus what was initially predicted. Similar results were obtained in 2014, 2015 and 2016. As a mitigative measure any PAG or uncertain waste rock material is placed in the middle of the Vault Waste Rock Storage Facility while NPAG material is placed on the perimeter to encapsulate the PAG material. Runoff or seepage water monitoring analysis will confirm the effectiveness of this abatement measure. To date water monitoring analysis from run off indicates no concerns related to ARD.

The water seepage from the Vault RSF area is expected to be of suitable quality to allow discharge to the environment without treatment and capping of this facility is therefore not proposed. Agnico initiated water quality monitoring at Vault in 2014 and results to date confirm the prediction. An adaptive management plan will include continued monitoring of water quality during operations to confirm modelling predictions, and to allow adjustments to the closure plan as required.

As discussed in Section 8.3.3.13, in 2017, ponded water was observed at the base of the VRSF (sampling station ST-24) in June. As per NWB Water License, samples were collected to assess water quality and the results are presented in Table 8.29. No water was pumped from this location as it is mainly a ponding area without flow, and the water is evaporating. From the analysis results for ST-24, available in Table 8.29 of the 2017 Annual Report, there is no indication of acid rock drainage from the Vault RSF.

b. As-built volumes of waste rock used in construction and sent to the Waste Rock Storage Facilities with estimated balance of acid generation to acid neutralization capacity in a given sample as well as metal toxicity;

Refer to the Section 5.2 of this report.

c. All monitoring data with respect to geochemical analyses on site and related to roads, quarries, and the All Weather Access Road;

Unless there are significant changes during reclamation, quarry surface water sampling will not be completed in the future as follow-up water sampling has not provided evidence of geochemical issues in the quarries. As in the past, Quarry 4 and 14 are flooded, as noted in the 2017 Annual Geotechnical Inspection (Appendix B1). Quarry 5 and 15 contained minor water accumulations. The water ponding at freshet or during the summer period in the quarries does not drain to any nearby watercourse. During previous summer periods, no mitigation was deemed necessary as no significant amounts of water were observed in the quarries. During winter, the snow could be removed from the quarries to minimize water runoff at freshet. Slope remediation is in progress in some quarries but none of them were totally reclaimed. Some work to clean unstable blocks and loose rocks was completed in 2017. If deemed necessary, additional work will be completed in 2018. Agnico is currently evaluating which quarries can be progressively closed. The quarry reclamation along the AWAR will form part of the Meadowbank Final Closure Plan. Reclamation activities for some quarries may occur during operations. The remaining reclamation activities for the quarries will occur during the closure period.

Given the stability of the structures and the monitoring results of 2011 to 2017, it was recommended that unless turbidity issues were visually observed, surface water chemistry sampling should not be conducted at fish bearing watercourses. When an erosional issue occurs, it was recommended that detailed monitoring should be conducted and at a minimum, a single water chemistry sample upstream and downstream of the source. If deemed necessary, additional follow-up sampling or monitoring should be conducted and if necessary additional mitigation will be undertaken.

Beginning of June 2017, small streams began flowing and by mid-June all of the streams and rivers along the road opened up, following the normal freshet transition. Four (4) formal erosion inspections were completed by qualified environment technicians on May12,16,26, June 2nd , July 2 and 28, and weekly visual inspections were made during AWAR inspections. Agnico also conducted daily inspections in collaboration with the Meadowbank Energy and Infrastructures Department (in charge of the road and travel the road daily for ongoing maintenance). No turbidity issues were visually observed so surface water quality sampling was not deemed necessary at non-HADD crossings or quarry contact water pools.

d. Leaching observations and tests on pit slope and dike exposure;

No leaching was observed on the pit slope or dike faces in 2017.

e. Any geochemical outcomes or observations that could imply or lead to environmental impact;

In 2013 there was seepage observed at the Portage RSF (station ST-16) that had the potential to lead to environmental impacts. It is important to be noted that the seepage reported at ST-16 is not related with acid rock drainage from the waste rock contained in the RSF, but rather from infiltration of reclaim water from the TSF through the RSF. Several mitigation measures were implemented since 2013 to control effectively this seepage. Following effective mitigative and management actions in 2013 and 2014, seepage was contained and has continued to be monitored throughout 2017. Refer to Section 8.3.3.11 regarding the seepage event; mitigation and monitoring that occurred in NP2 Lake and other downstream lakes (i.e. NP1, Dogleg, and SPL).

f. Geochemical data associated with tailings solids, tailings supernatant, cyanide leach residue, and bleed from the cyanide destruction process including an interpretation of the data;

Agnico takes throughout the year quarterly samples of tailings that are sent to an accredited laboratory to analyse for ABA and Metal Leaching. Table 5.2 below presents the results. The results indicate that the tailings are PAG but have low metal leaching potential. These sample results are also integrated in the Water Quality Forecast updated yearly. Tailings samples analyses were also integrated in the design of the TSF cover for closure.

Table 5.2. 2017 Tailings Monitoring

Analysis	Date / Units	14-Jan-17	3-Apr-17	4-Jul-17	6-Nov-17
NP	t $CaCO_3$/1000 t	33	64	94	69
AP	t $CaCO_3$/1000 t	76,6	58,4	72,5	50,6

Net NP	t $CaCO_3$/1000 t	-43,4	6,06	21	18,1
NP/AP	ratio	0,43	1,1	1,29	1,36
Sulphur	%	2,67	1,94	2,46	1,92
Acid Leachable SO4-S	%	0,22	0,07	0,17	0,3
Sulphide	%	2,45	1,87	2,29	1,62
C	%	0,436	0,87	0,884	0,862
CO_3	%	1,02	2,04	2,16	2,74
Final pH	units	1,78	1,73	1,83	1,55
As	mg/L	0,0220	0,094	0,053	0,035
Cu	mg/L	0,053	0,054	0,047	0,064
Ni	mg/L	0,073	0,066	0,037	0,092
Zn	mg/L	0,088	0,013	0,092	0,079

g. Results related to the road quarries and the All Weather Private Access Road.

See Section 5.1c above.

5.2 WASTE ROCK VOLUME

In accordance with Water License 2AM-MEA1525 Schedule B, Item B-8: ***Volumes of waste rock used in construction and placed in the Rock Storage Facilities.***

The total volume of waste rock generated by Portage and Vault pits in2017 was 20,238,001 tonnes. There is not more mining in Goose Pit so no more waste rock generated in 2017. The use and location of all of the rock, by volume, is presented in Table 5.3 and is identified by the following categories:

- Tailings Dams and dikes– used for the construction of dams or dikes adjacent to the tailings pond;
- Other Construction;
    - Roads – used for road construction and maintenance;
    - Crushers – taken to the mobile crusher and used for construction or maintenance purposes;
    - Miscellaneous uses;
    - Tailings cover construction
- Waste Dump – taken to the rock storage facilities.

The Mine Waste Rock and Tailings Management Plan was revised in March 2018 and can be found in Appendix D1. Details of all waste rock deposition and tailings management are contained in the revised Plan.

Table 5.3. 2017 Rock volumes

	Portage Pit & Vault Pit								Ore Processed in Mill (tonnes)
	Ore	Waste Rock							
		Dikes	Roads	Crushers	Waste Rock Dump	Stockpiles	Other	Total	
January	386,298	45,991	0	12,301	1,498,959	14,815	6	1,572,073	331,889
February	374,894	6,084	22,937	23,998	1,251,365	404,648	2,977	1,712,008	314,269
March	376,855	167	8,508	12,614	919,668	483,332	583	1,424,872	279,684
April	355,41	0	10,674	17,671	1,002,425	655,77	10	1,686,550	328,391
May	437,319	0	135,889	84,18	933,559	434,648	27,889	1,616,165	344,961
June	401,035	12,537	14,316	88,241	977,125	522,816	2,588	1,617,623	322,939
July	334,363	183,868	66,559	6,647	1,016,081	523,311	0	1,796,466	336,222
August	391,414	485,008	12,182	2,361	1,271,636	97,549	19,925	1,888,662	326,409
September	343,504	13,148	107,454	14,945	1,246,694	509,366	189	1,891,796	275,754
October	364,663	259,074	57,565	528	1,169,063	255,796	1,991	1,744,017	328,028
November	321,403	21,676	653	5,395	1,406,720	69,651	1,362	1,505,456	330,465
December	352,291	0	401	571	1,781,334		7	1,782,313	334,023
TOTAL	**4,439,449**	**1,027,553**	**437,137**	**269,453**	**14,474,629**	**3,971,701**	**57,528**	**20,238,001**	**3,853,034**

5.3 TAILINGS STORAGE FACILITY

5.3.1 Tailings Storage Facility Capacity*

As required by Water License 2AM-MEA1525 Schedule B-9: ***An update on the remaining capacity of the Tailings Storage Facility.***

In 2017, a total of 4,042,652 m^3 of tailings slurry was deposited in the tailings storage facilities. A monthly summary of the tailings volume is provided in Table 5.4. From 2010 to 2017, a total of 22,250,000m^3 of tailings slurry from the mill had been deposited in the TSF's.

To calculate the tailings volume placed within the TSF, the in situ dry density of the tailings is used, as the tailings consolidate in the TSF. As of the end of December 2017 a total of 8,080,000 m^3 of tailings had been deposited in the South Cell TSF. The deposition in the South Cell TSF started at the end of November 2014. In 2017 a total of 4,042,652 m^3 of tailings (associated tailings dry in situ density of 1.30 tons/m^3 for that period) were deposited in the South Cell TSF. A total of 14.17 Mm^3 of tailings was deposited in the North Cell between 2010 and 2015; no deposition occurred in the North Cell in 2016 and 2017.

As updates to the mine occurred in 2017, Agnico revised the tailings deposition plan (available in Updated Mine Waste Rock and Tailing Management Plan 2017 presented in Appendix D1). The

* TSF- Tailings Storage Facility

deposition model completed is valid until the end of the mining operation in 2018. The model is based on the data collected during previous years of operation. The filling scheme for the two cells of the tailings storage facility is designed for a single point end of pipe discharge. The strategy of the deposition planning process is as follows:

- Define a deposition sequence based on proposed dike alignments with sufficient capacity to store the life of mine tailings plus a contingency while maintaining the required setback from the Portage Pit;
- Define a deposition sequence that allows the cells to be partitioned (Stormwater Dike) to facilitate the lake dewatering sequence, construction of the Central Dike, and to allow a portion of the TSF to be operated as an attenuation pond for at least 3 years and to diminish ice entrapment negative effects. This has been completed as the Central Dike is constructed to elevation 143m, which is final for the current Life of Mine;
- Define a deposition sequence that maintains a reclaim pond with sufficient depth for efficient operation of the reclaim pumping system while minimizing pond volume as TSF operation best practices;
- Define a deposition sequence that maintains beaches on the upstream faces of perimeter dikes, Stormwater Dike, Central dike, all associated Saddle Dams and peripheral rock fill structures;
- Define a deposition sequence to operate in cells to reduce beach length to more efficiently operate in cold conditions to minimize ice entrapment;
- Define the staged construction schedule for the dikes so that adequate freeboard (2.0m) is maintained within the impoundment and that the deposition sequence does not interfere with the dike's construction;
- Define a deposition sequence that creates a tailings surface that will require the minimum earthworks during closure and if possible will allow covering of some portion of the tailings surface during operations;
- Define a deposition and water transfer sequence that creates a tailings surface that will require the minimum earthworks during closure and if possible will allow covering of some portion of the tailings surface during operations;
- Define a deposition sequence that promotes freezing of the tailings during the operating period; and;
- Define a deposition sequence that can close certain areas of the TSF faster in order to promote rockfill capping during operation.

As mill processing rates and tailings characteristics are liable to fluctuate over the life of the mine, the design of the TSF and tailings deposition plan will continue to evolve based on changes in design parameters including mill process rates, tailings beach slopes, ice entrapment, and tailings in-situ densities. As such, a preliminary deposition plan was done in 2009 to provide guidelines for operation of the facility and to schedule the construction of the TSF perimeter dikes. The preliminary deposition plan was initially updated each year to include data collected from the previous year's deposition within the TSF. Since 2013, Agnico has assigned dedicated engineers, who regularly review/update the deposition plan incorporating any new and relevant information and changes to mine and operational planning.

Agnico performed a bathymetric analysis in July 2017 of the South Cell to further validate the key variables which influence the water balance as well as the deposition plan. Mainly, those key variables

are the tailings dry density (influenced by ice entrapment) and the sub-aerial and sub-aqueous beach angles. Furthermore, a dynamic model was established with parameters influenced in accordance with the real time conditions (i.e. seasonal temperature variation) instead of working with year round estimated average and this allows Agnico to better reflect the actual site conditions.

The 2017 bathymetry was compared to the previous bathymetries realized yearly from 2014. The findings revealed that deposition in the South Cell during 2017 behaved similarly to 2016 due to a comparable beach geometry. However, beach angles have shown to be slightly shallower than in 2016 which are consistent with field observations. Average tailings dry density measured was of 1.30t/m³ in 2017 instead of the modelled 1.48t/m³ used for the same period in the model and based on 2016 bathymetric results. This difference can be explained by the longer sub-aerial tailings beach observed in the South Cell during the last year compared to 2016 which led to an increase in ice entrapment. The analysis of the water balance leads to a revised ice-entrapment of 40% instead of the 36% measured in 2016. Beach angles measured in the South Cell were also a bit shallower at 0.73% sub-aerial beach slope instead of the 0.88% of the previous year and 2.95% sub-aqueous slope instead of 3.03%.

Based on that information, Agnico updated last year's model and prepared a new Tailings Deposition Plan. No major change was made on the deposition strategy other than increasing the freshwater consumption during summer 2018 in order to store a larger amount of water in South Cell prior to the last winter of deposition. The model suggests that this plan will reduce global ice entrapment and secure the operation of the tailings pond. North Cell parameters are used for 2018 deposition as they were considered more representative of the tailings deposition occurring in a TSF pond at closure.

In summary, the main parameters of the deposition plan model consist of:

- The water balance used in this model assumes reclaim flow changes as a function deposition parameter used in the model and higher freshwater consumption is required when Agnico forecast higher ice entrapment ratio;
- For the South Cell, the tailings dry density varies from month to month, between 1.18 t/m^3 and 1.46 t/m^3;
- For the South Cell, the average measured in situ tailings dry density of 1.30 t/m^3 represents the deposition through the whole deposition life of a cell. Furthermore, it represents an operational capacity rather than a flat geometry i.e. what can actually be placed on the field considering the operational constraints (minimum pond volume, beach angles, dike freeboard etc.);
- For the South Cell, sub aerial tailings slope set at 0.73 % and sub aqueous tailings slope set at 2.95 % (obtained from summer 2017 bathymetric analysis).

The main conclusions from the modeling results are:

- The total estimated capacity of the TSF North Cell (structures at EI.150m) and South Cell (structures at EI.143m) is 32.0 Mt (25.0 Mm^3);
- To total capacity of the North Cell is estimated at: 18.2 Mt (14.2 Mm^3);
- To total capacity of the South Cell is estimated at: 15.0 Mt (11.7 Mm^3);
- The estimated remaining capacity in the TSF (in the South Cell only) as of end of December 2017 is 4.6 Mm^3 (3.6 Mm^3)
- The second phase of South cell deposition started at the end of October 2015 and will proceed until the end of operations planned in September 2018;

- The reclaim water system is located in the South Cell;
- The South cell reclaim road and the peripheral infrastructures of the South Cell (Central Dike, Saddle Dams 3, 4 and 5) needed for the tailings deposition are planned to be raised during summer season of 2018 to provide the required tailings storage capacity.

It is important to mention that the original design of the South Cell allows for a final elevation of the structures at elevation 150m, which could provide additional capacity for tailings storage if required. The design of the Central Dike was completed in 2012 and the successive raises of the dike were completed in order to keep flexibility to raise the dike to its final elevation at 150m. In comparison to the original estimates of 21,9 Mt of tailings produced the augmented capacity of 32 Mt enables to operate within Tailings Management Plan requirements.

Table 5.4. 2017 Tailings Volumes

	Total Tailings Slurry (tonnes)	Density of Tailings (% solid)	Density of Slurry (tonnes / m^3)	Tailings Placed in TSF (m^3)
January	576,575	57.6%	1.608	358,464
February	520,796	60.3%	1.650	315,701
March	469,335	59.6%	1.636	286,892
April	552,885	59.4%	1.625	340,262
May	584,262	59.0%	1.622	360,285
June	551,697	58.5%	1.621	340,443
July	564,514	59.6%	1.620	348,371
August	560,116	58.3%	1.605	348,984
September	463,408	59.5%	1.634	283,629
October	544,003	60.3%	1.640	331,640
November	570,480	57.9%	1.607	355,079
December	588,177	56.8%	1.577	372,901
TOTAL	**6,546,247**			**4,042,652**

5.3.2 Tailings Freezeback and Capping Thickness

As required by NIRB Project Certificate No.004, Condition 19: ***Provide for a minimum of two (2) metres cover of tailings at closure, and shall install thermistor cables, temperature loggers, and core sampling technology as required to monitor tailing freezeback efficiency. Report to NIRB's Monitoring Officer for the annual reporting of freezeback effectiveness.***

And

As required by Water License 2AM-MEA1525 Schedule B, Item 18: ***A summary of on-going field trials to determine effective capping thickness for the Tailings Storage Facility and Waste Rock Storage Facilities for the purpose of long term environmental protection.***

Description of the instrumentation (thermistors) installed within the tailings storages facilities structures, the tailings, the rock storage facility and the pits are described below, along with the presentation of the latest results for 2017. The research project on going at Meadowbank including test pads for cover trials on the TSF is also described below.

In the 2012-2013 Annual Monitoring report NIRB (recommendation 14), the Board requested 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*". The action plan and permafrost monitoring program for Second Portage Lake, Portage Pit and Goose Pits were submitted to NIRB previously in response to the above mentioned recommendation. Below is an update with the 2017 data.

Instrumentation in North Cell Tailings Storage Facility (TSF) Structures

This section shows temperature monitoring in each geotechnical structure along the perimeter of the North Cell TSF. Most of the thermistor strings show that the foundations are in the frozen state.

Saddle Dam 1

Agnico started to determine capping thickness in 2009 by installing thermistor SD1-T2, SD1-T3 and SD1-T4 on Saddle Dam 1 to monitor the thermal conditions within the structure and its foundation. The results are illustrated on Figures 5 to 8. The four thermistors are automatically read every 3 hours following the installation of the dataloggers in 2017. Temperature data from thermistor beads located within the structure indicate that the dike foundation remained frozen since the installation of the instrumentation. The foundation remained in a frozen state with temperatures ranging from about –1.3 °C to -5.4 °C. No seepage has been observed since the beginning of service of the structure, which is performing as expected.

The SD1-T1 thermistor string is installed in the centre of the upstream face of the dike underneath the liner to monitor the temperature of the deposited tailings adjacent to the dike. During the year 2017, thermistor SD1-T1 recorded value from 0 to -3°C below the elevation 147 m. Between elevations 133 m and 142 m, temperature values are stable just under 0°C being in the state called the zero curtain. At elevation 149.5m, temperature values vary between -10°C in February to 8°C in August. This thermistor shows a great example of freezeback of the tailings entering a state of permanent frozen condition below the elevation 142 m.

The SD1-T2 thermistor string was installed vertically through the upstream Stage 1 crest in the centre of the dike at elevation 140 m. The data show that the dike foundation remained frozen during the past year with temperatures fluctuating between -1.3°C and -4.2°C. It can be observed that the foundation is close to have reached steady state conditions after modification of its frontier condition (surface of the tailings at this specific location). The top part of this thermistor (from elevation 132 to 140 m) show temperature values consistent with those from the thermistor SD1-T1 being in the zero curtain state. No active layer has been observed below elevation 140m since 2015.

The SD1-T3 thermistor string was installed vertically in the centre of the dike at elevation 150 m. It can be observed that the dike foundation and rockfill remained frozen under the elevation 147 m during the past year with temperatures fluctuation between -4.2°C and -5.4°C. Readings showed that the foundation at this specific emplacement has reached the state of equilibrium at the approximate elevation 120 m, where the annual temperature amplitude is negligible.

The SD1-T4 thermistor string was installed vertically through the upstream toe of the dike near the centre. It indicates that the dike foundation on the upstream toe, including the liner tie-in till plug, remained frozen during the past year with temperatures fluctuation between –0.8 to -7.2 from September 2016 to September 2017, and overall since 2011. As same as SD1-T2, the temperature in the foundation is really close to the state of equilibrium with an almost linear temperature profile. It is important to state that tailings deposition was completed in the North Cell in summer 2015 and that no deposition occurred since then.

Additional information on instrumentation results for Saddle Dam 1 can be found in the 2017 Annual Geotechnical Inspection (Appendix B1).

Figure 5. Thermistor Results SD1-T1

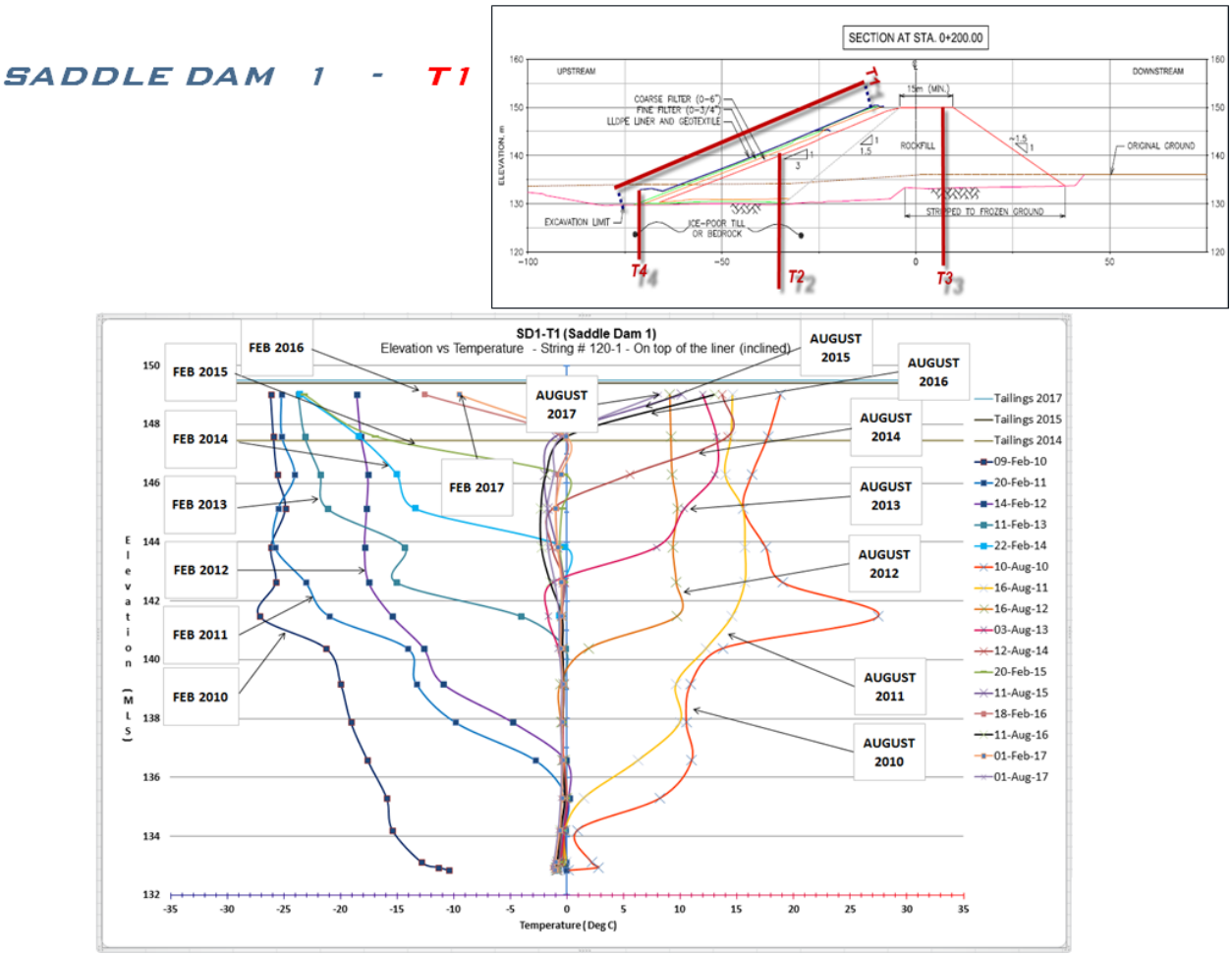


Figure 6. Thermistor Results SD1-T2

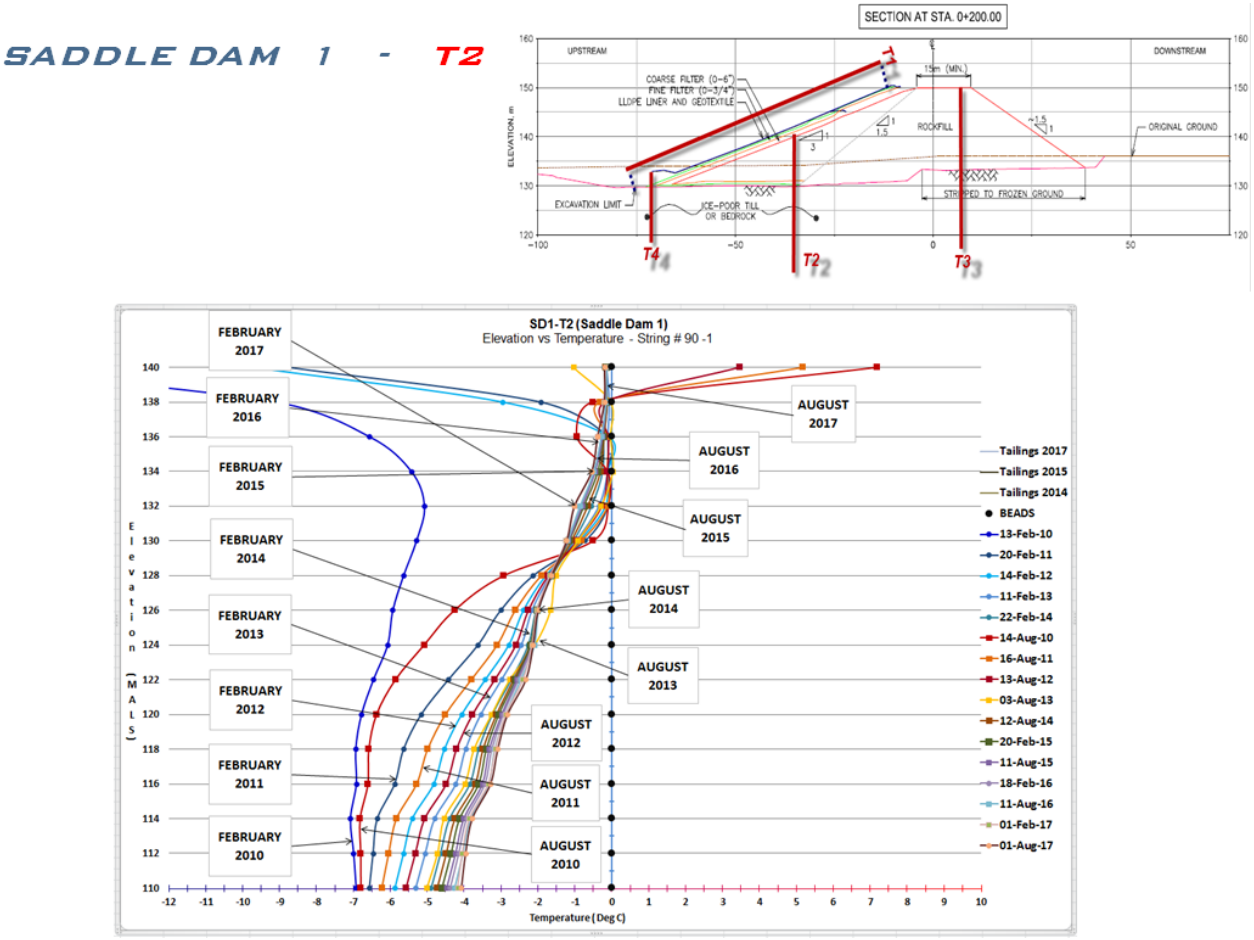


Figure 7. Thermistor Results SD1-T3

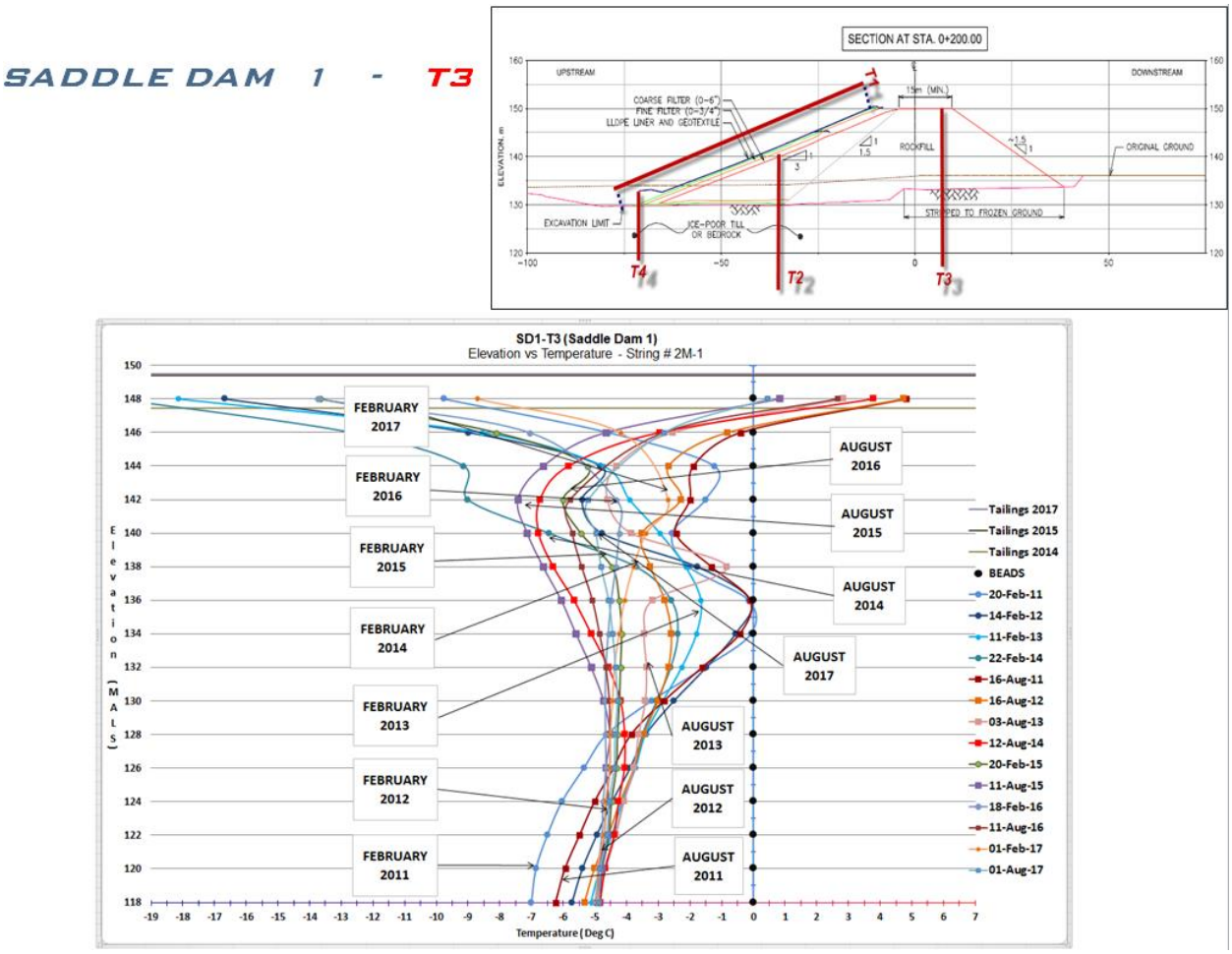
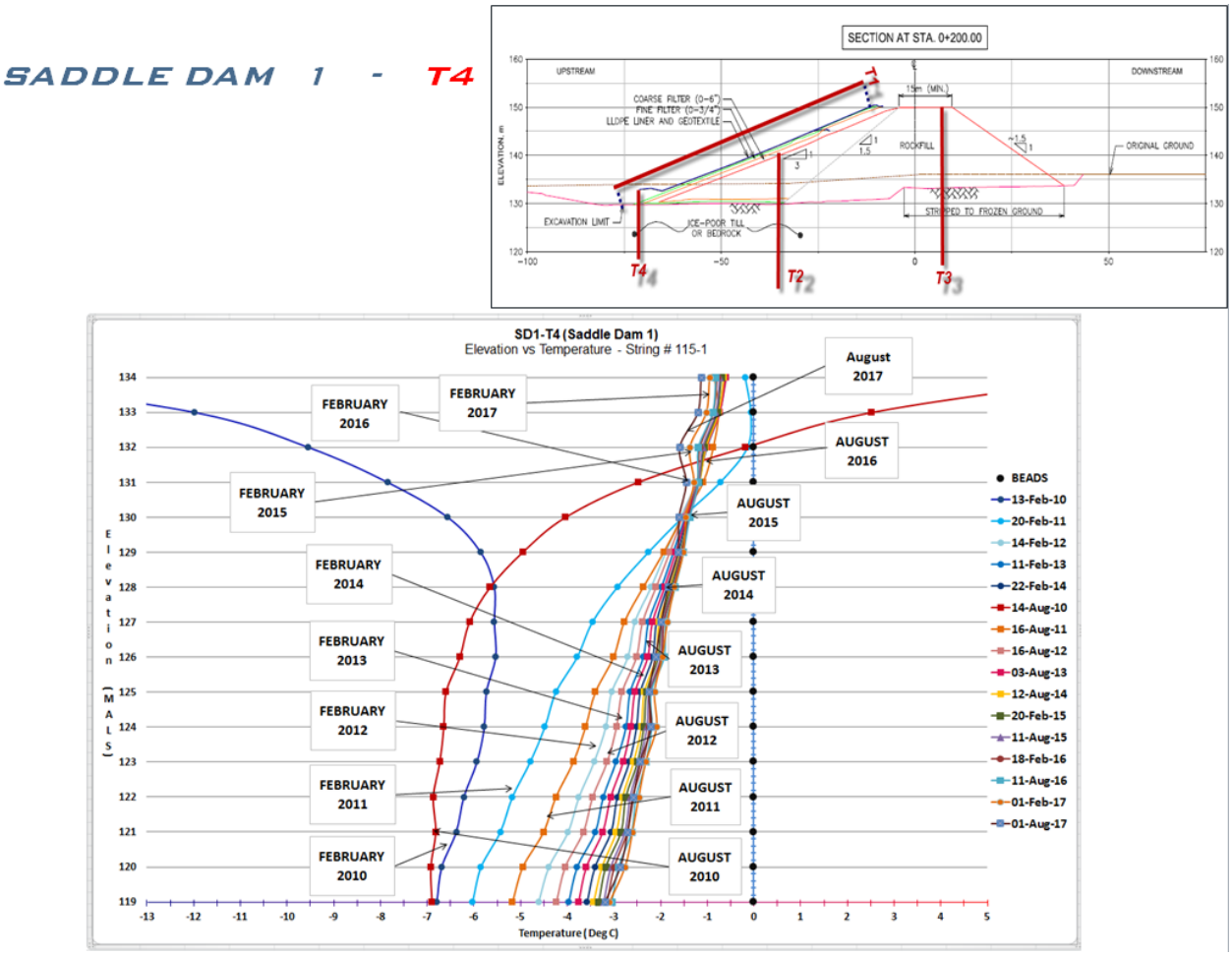


Figure 8. Thermistor Results SD1-T4



Saddle Dam 2

Agnico also installed thermistor strings SD2-T1, SD2-T2, SD2-T3 and SD2-T4 on Saddle Dam 2. The results are illustrated on Figure 9 to 12. Temperature data from thermistor beads within the structure indicate that the dike foundation remained frozen all year long in 2017 with temperatures ranging from about -3.5°C to -8°C. The SD2 dike shows similar or lower temperature values compared with surrounding permafrost conditions for both the foundation and the embankment. No signs of seepage or thawing of the foundation soil were observed. The structure is performing as expected.

The SD2-T1 thermistor string was installed in 2012 in the centre of the upstream face of the dike immediately on top of the geomembrane liner to monitor the thermal regime of the tailings in contact with the structure. Value between 0°C and -3.5°C were recorded in 2017 below elevation 147.2 m, which show that tailings are frozen below this elevation and that the active layer is located above that elevation. It is anticipated that data collected from this location will be useful in monitoring the freezing of the tailings in the coming years.

The SD2-T2 thermistor string was installed vertically through the upstream crest in the centre of the dike at elevation 148 m. It shows that the dike foundation and rockfill shell below the tailings elevation remained frozen during the past year with temperature values between -4.3°C and -7.2°C.

The SD2-T3 thermistor string was installed vertically through the upstream liner tie-in trench near the centre of the dike at about elevation 144 m. It shows that the dike foundation and the semi-pervious backfill placed on top of the compacted till remained frozen during the past year (temperature of the foundation between -4°C and -6.5°C).

The SD2-T4 thermistor string was installed vertically through the upstream toe about mid-way between the centre of the dike and the northwestern abutment. It shows that the dike foundation remained frozen during the past year along with the compacted till base material below the geomembrane liner in this area. The semi-pervious backfill placed on top of the compacted till also remained frozen during the summer of 2017. The temperature varied between -3.7°C to -6.4°C. It is important to state that tailings deposition was completed in the North Cell in summer 2015 and that no deposition occurred since then.

Additional information on instrumentation results for Saddle Dam 2 can be found in the 2017 Annual Geotechnical Inspection (Appendix B1).

Figure 9. Thermistor Results SD2-T1

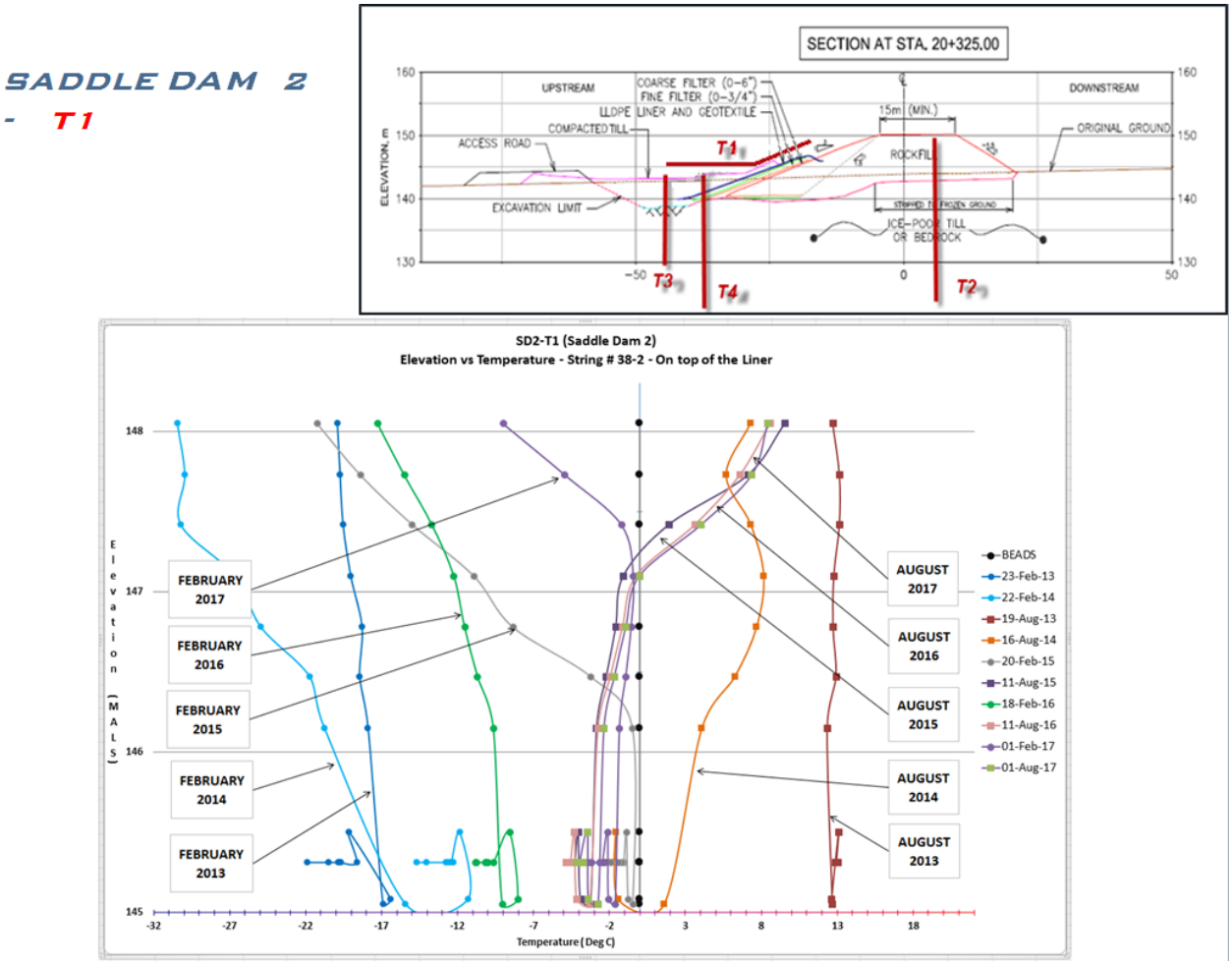


Figure 10. Thermistor Results SD2-T2

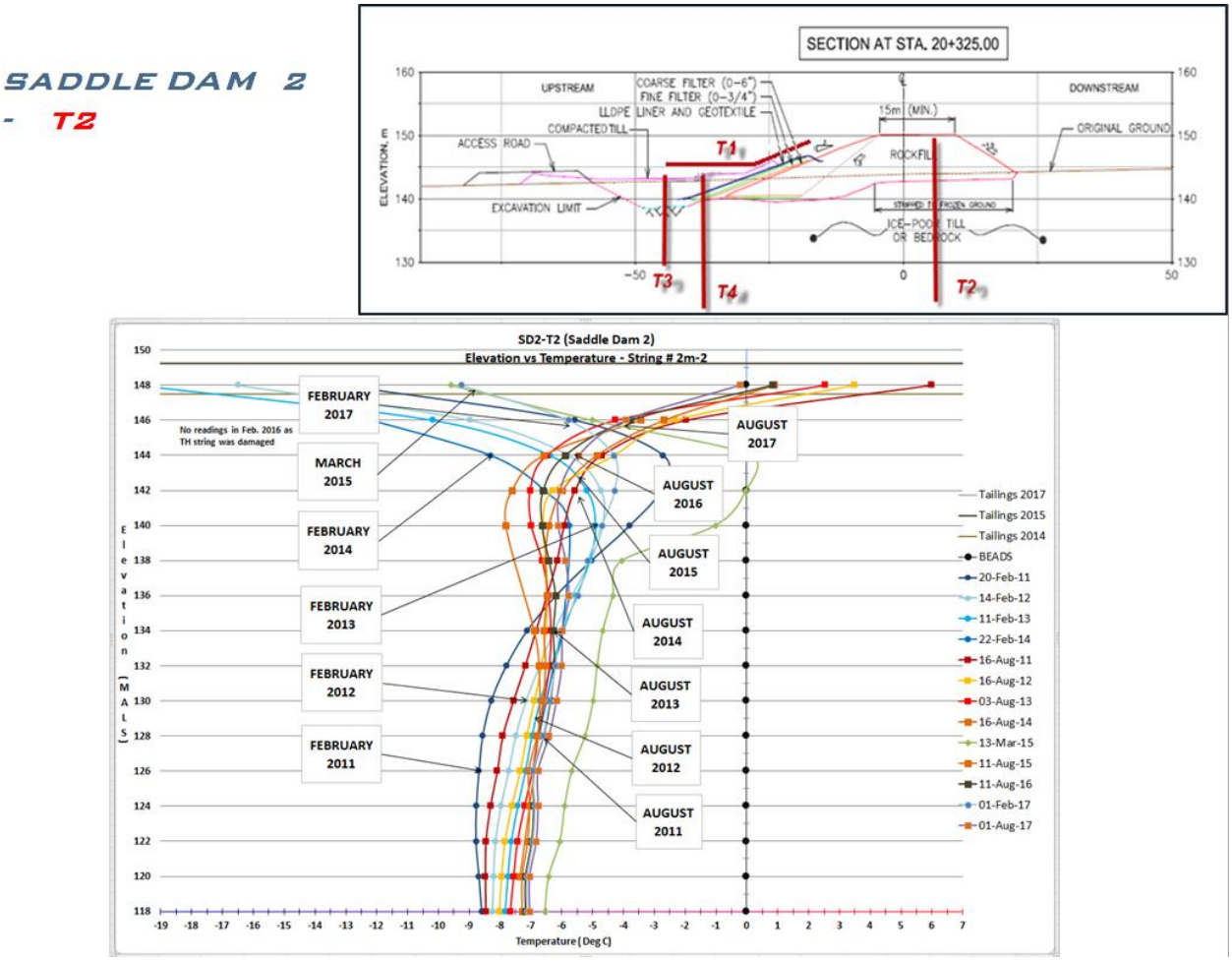
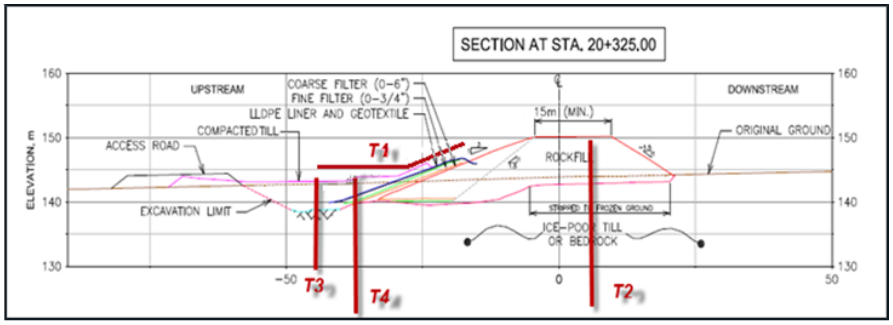


Figure 11. Thermistor Results SD2-T3

SADDLE DAM 2 - T3



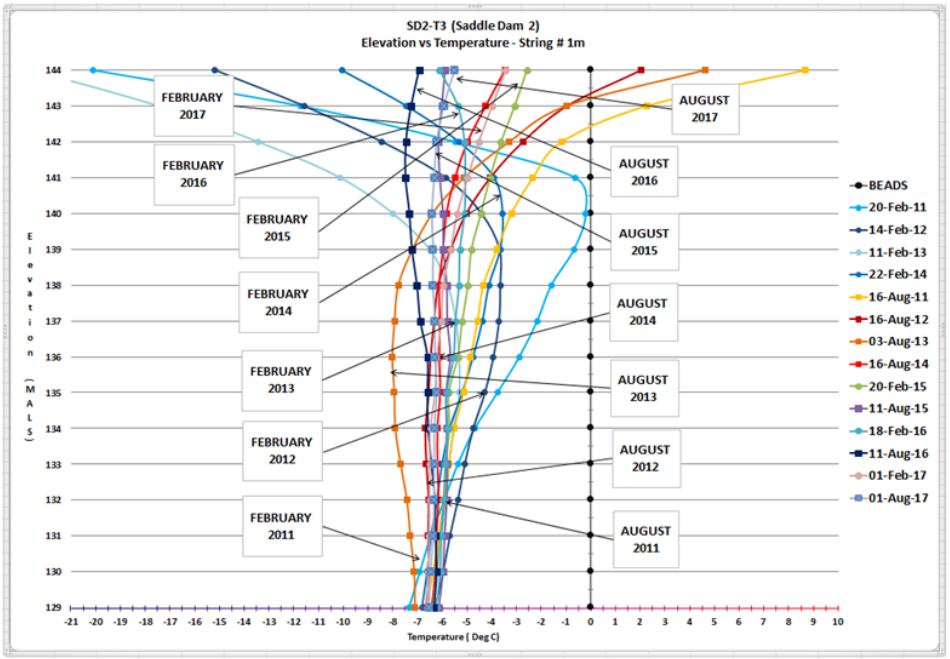
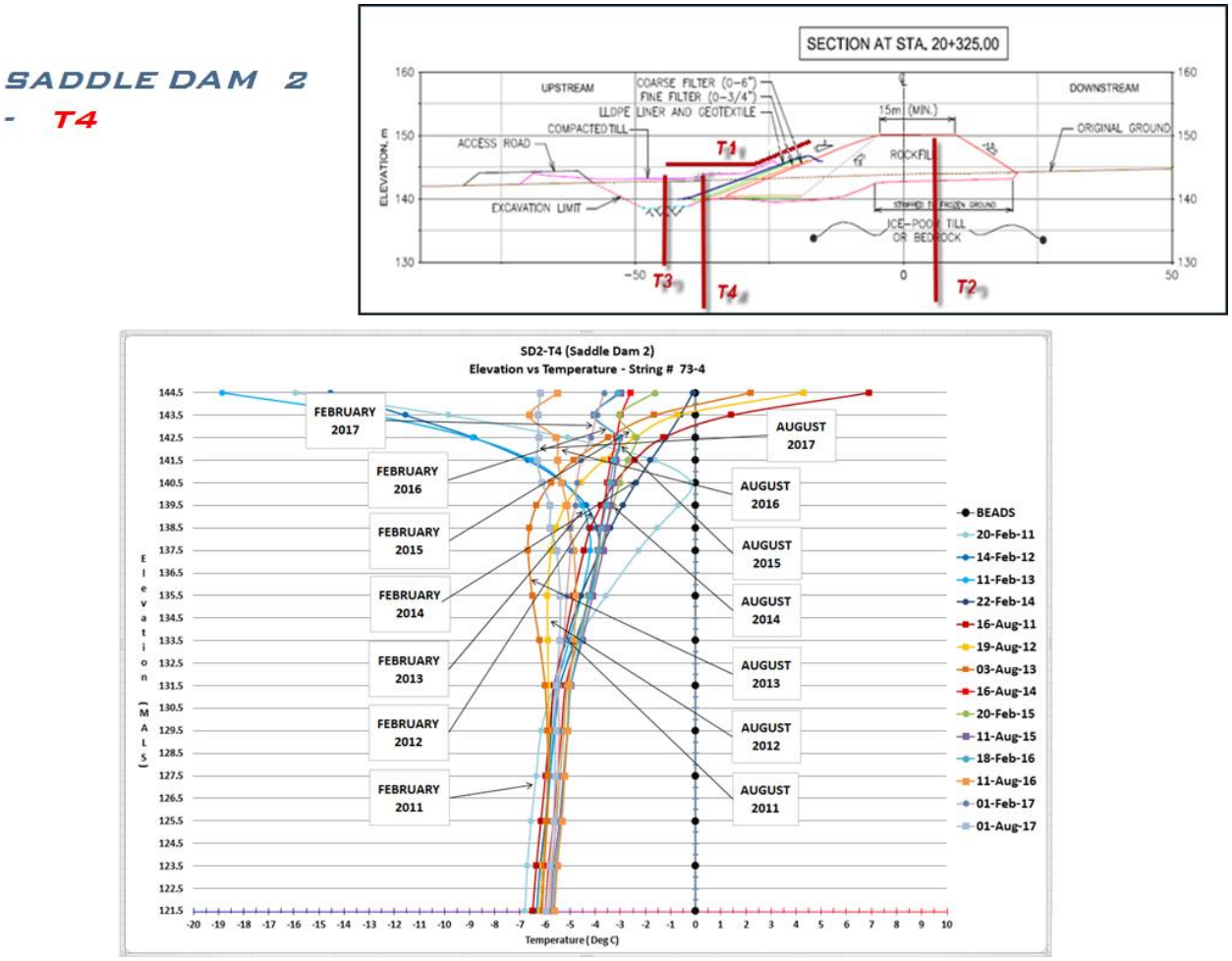


Figure 12. Thermistor Results SD2-T4



Instruments in RF1, RF2

Other thermistors were installed in 2012 in the TSF to monitor the temperature of the tailings as well as the temperature of RF1 and RF2 (which delineate the eastern side of the North Cell TSF). Plots of these thermistors data are presented in Figure 13 to 16. Three thermistors are installed on RF1 (T121-1, T73-6, and RF1-3).

Thermistor T121-1 shows temperatures which vary over its whole profile from -0.8°C to -5.2°C. Thermistor T73-6 shows a wide range of temperatures above elevation 145 m, but below that elevation the temperature fluctuates between 1.5°C and -3°C. A similar trend was observed last year. This trend indicates the presence of an active zone within the upper elevation of the deposited tailings, above elevation 148m approximately. RF1-3 shows frozen conditions all year long below elevation 147 m with temperature values varying between 0°C and -2°C. Above that elevation, the temperature seems to fluctuate seasonally between 4°C and -6°C. This trend indicates the presence of an active zone within the upper elevation of the deposited tailings. One thermistor is installed on RF2 (T122-1) and shows temperatures which vary from -1.6°C to -6.5°C, indicating that the RF2 foundation is in a frozen state. It is

important to state that tailings deposition was completed in the North Cell in summer 2015 and that no deposition occurred since then.

Additional information on instrumentation results for RF1-RF2 can be found in the Annual Geotechnical Inspection (Appendix B1).

Figure 13. Thermistor Results RF1-T121-1

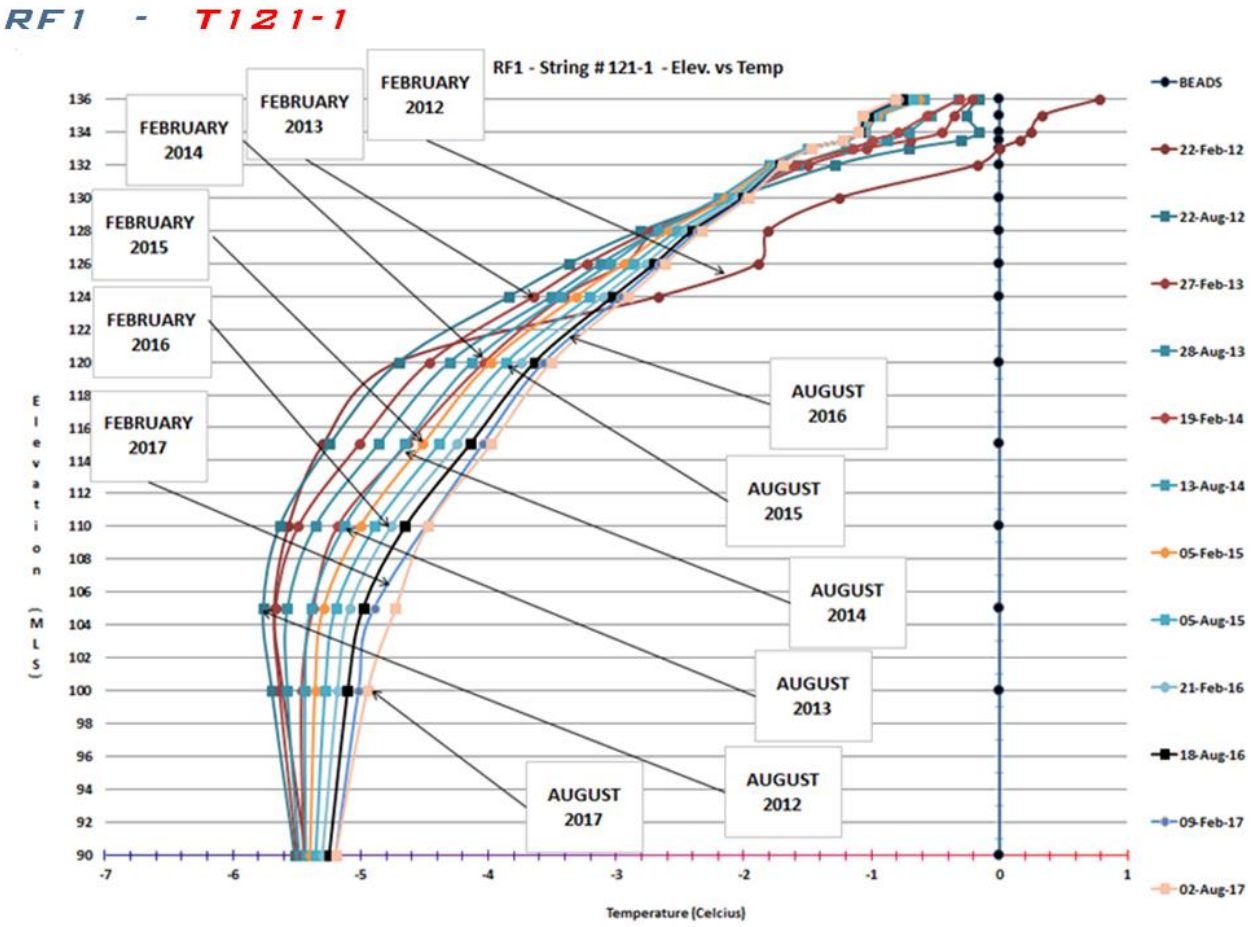


Figure 14. Thermistor Results RF1-T73-6

RF1 - T73-6

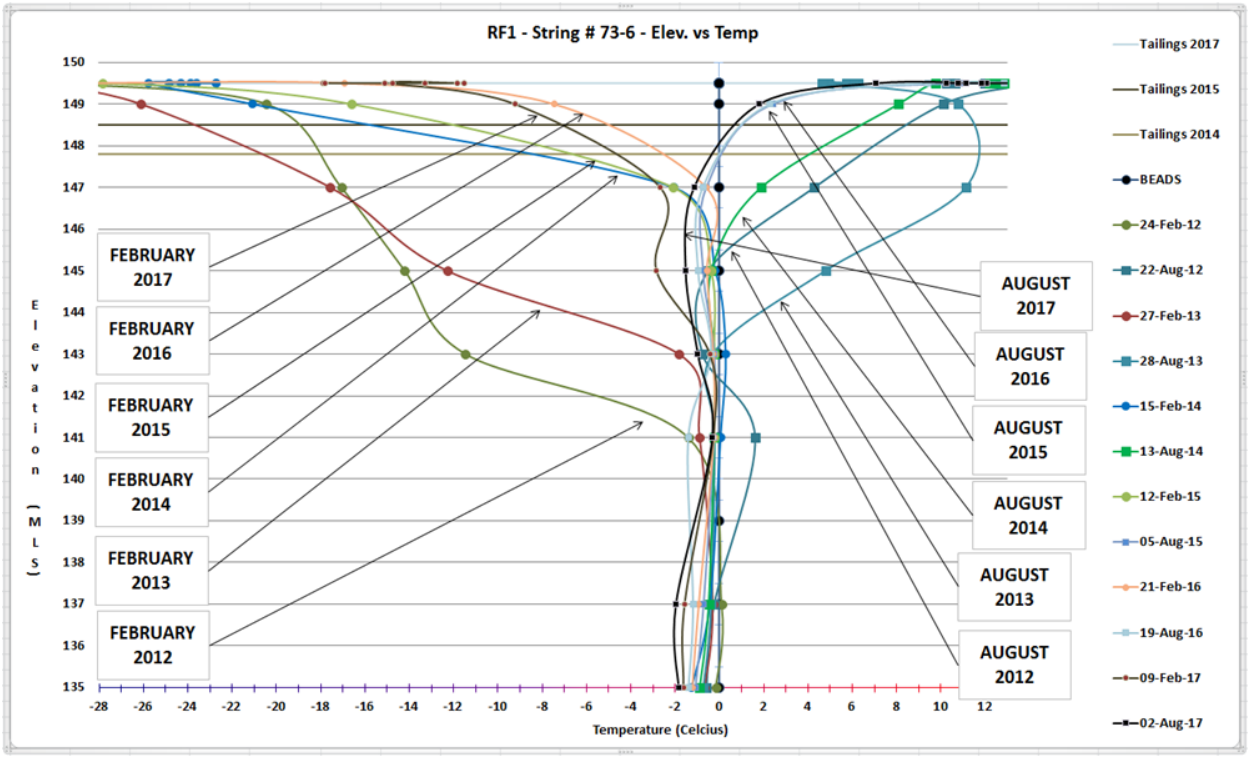


Figure 15. Thermistor Results RF1-RF1-3

RF1 - RF1-3 (ALONG SLOPE)

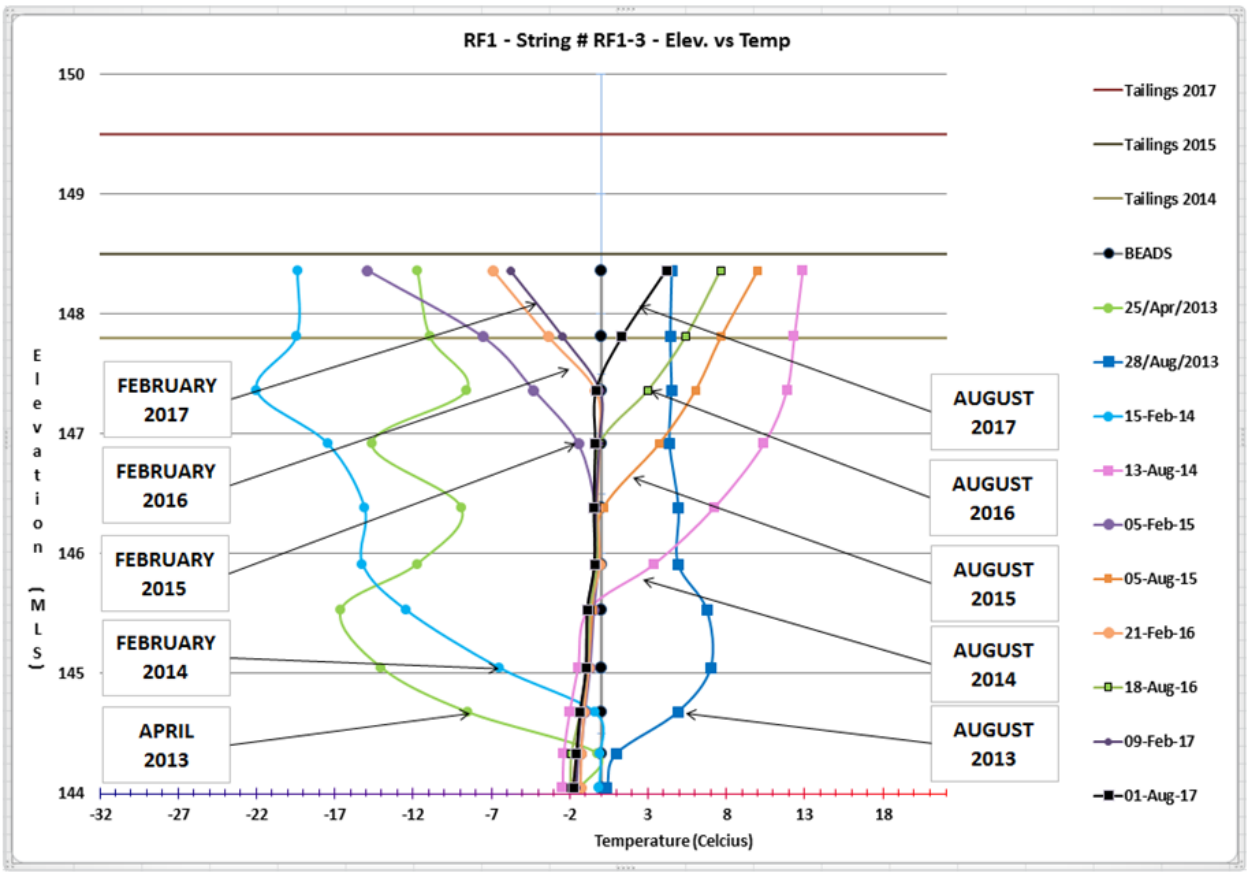
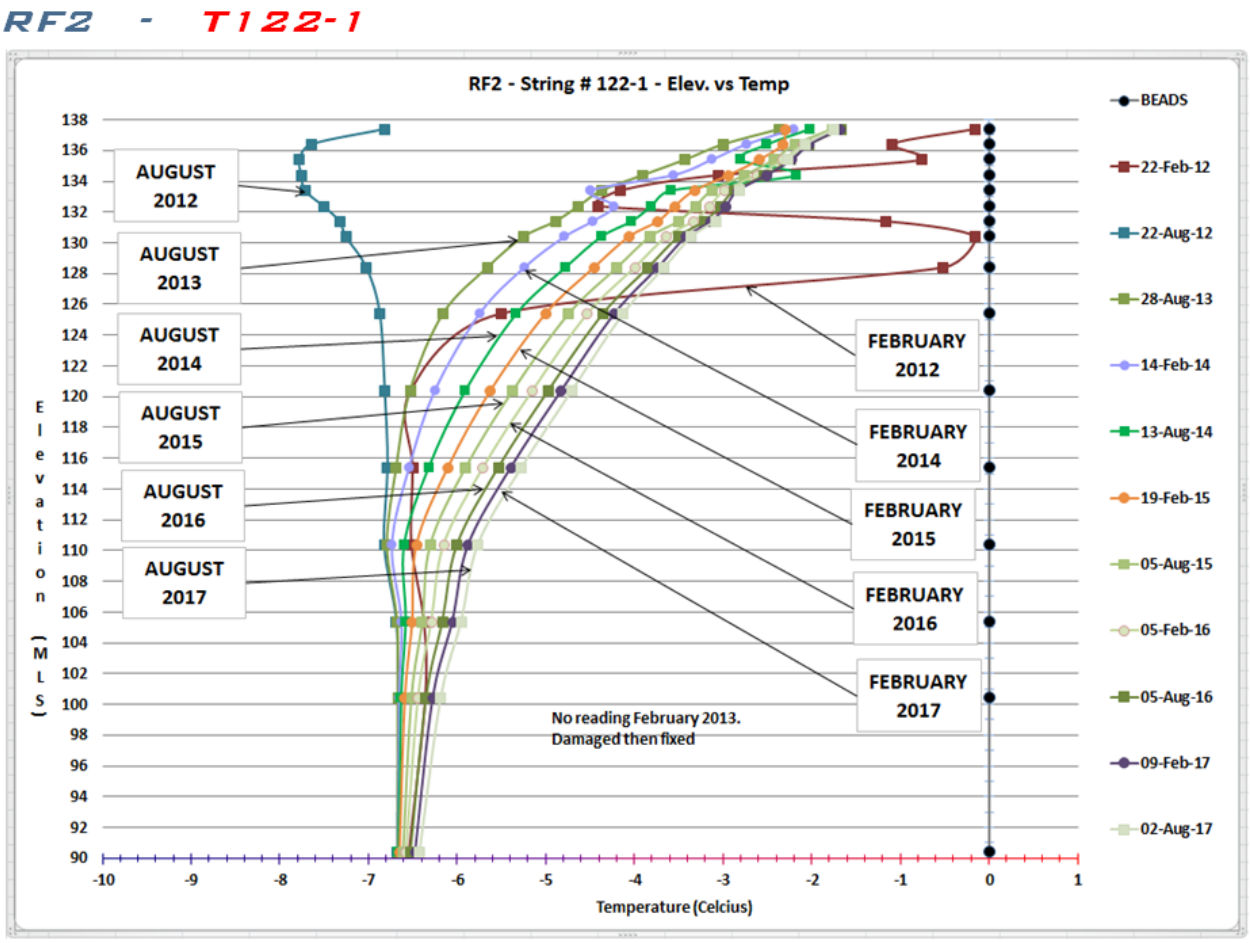


Figure 16. Thermistor Results RF2-T122-1



Instrumentation inside the tailings of the North Cell TSF

To monitor the permafrost aggradation and talik beneath Second Portage Lake, Agnico installed a thermistor (SD1-1 T90-2) in the North Cell tailings, beside Saddle Dam 1 in 2012. Thermistor SD2-1 was installed upstream of the Saddle Dam 2 and SWD-1 was installed upstream of the Stormwater Dike in April 2014, both directly in the tailings.

Thermistor SD1-1 T90-2 was installed in 2012 in the tailings upstream of SD1. All the beads from SD1-1 T90-2 are covered by more than 6 m of tailings. The thermal results from this thermistor show that the tailings are frozen until elevation 143m, with a small zone slightly warmer at approximately elevation 139 m. The foundation (till from the tundra) showed temperature values close to 0°C, varying between -0.5°C and 0.5°C. Plot of this thermistor data for 2017 are presented in Figure 17.

Additional thermistors were installed in the tailings in April 2014. Thermistor SD2-1 was installed upstream of Saddle Dam 2 and SWD-1 was installed upstream of the Stormwater Dike. For both of these thermistors , thermal data are available from April 2014 to October 2014. For thermistors SD2-1 and

SWD-1, thermal data show that tailings are completely frozen in the winter and from approximately 1.2 m down to the tailings surface during summer period. For the thermistor SD2-1, the foundation (till from the tundra) showed temperature below 0°C. For the thermistor SWD-1, the foundation (till and bedrock) show temperatures above 0°C, as expected since this thermistor is located in the talik portion of Second Portage Arm. Due to technical difficulties to protect the thermistor cables from excessive tension, thermistors SD2-1 and SWD-1 were operational respectively until July 2014 and October 2014. Figures 18 and 19 are presenting data recorded during that time.

Agnico installed in winter 2016 two new thermistor strings (NC-T1 and NC-T2) in the North Cell TSF to monitor the tailings freezeback, the permafrost aggradation and talik beneath Second Portage Lake. These instruments are located in the area of the reclaim pond where water is still ponding at elevation 148 m and act as a thermal barrier. These thermistors are showing that the center area of North Cell TSF is generally warmer than the perimeter area.

The thermistor NC-T1 shows a frozen layer from the surface to elevation 144 to 147 m. Below this elevation, tailings temperatures vary from 0°C (elevation 144 m) to 3.5° (elevation 128 m). The bedrock is also in the unfrozen state between elevation 87 to 110 m. This area of the tailings pond was always covered by the reclaim water pond in operation. The freezing process is affected by the water as compared to exposed tailings beaches. However, a trend for April 2016 to July 2017 shows that temperature values are slowly decreasing. For NC-T2, for which data are available until December 2016, tailings are frozen above the elevation 124 m. Below that elevation, tailings temperature stabilizes at approximately 2°C in the bedrock. The difference in the thermal regime between both locations is due to the reclaim pond surface which does not extent over the NC-T2 as much than the NC-T1 at the end of the operation of the North Cell TSF. Figures 20 and 21 are presenting data recorded during the last year. This information was used by Agnico to review the water management strategy of the North Cell to promote freezeback of this area until capping is completed. The current strategy is to minimize the water ponding inside the North Cell TSF. As previously mentioned, tailings deposition was completed in the North Cell in summer 2015 and that no deposition occurred since then.

Figure 17. Thermistor Results SD1-90-2

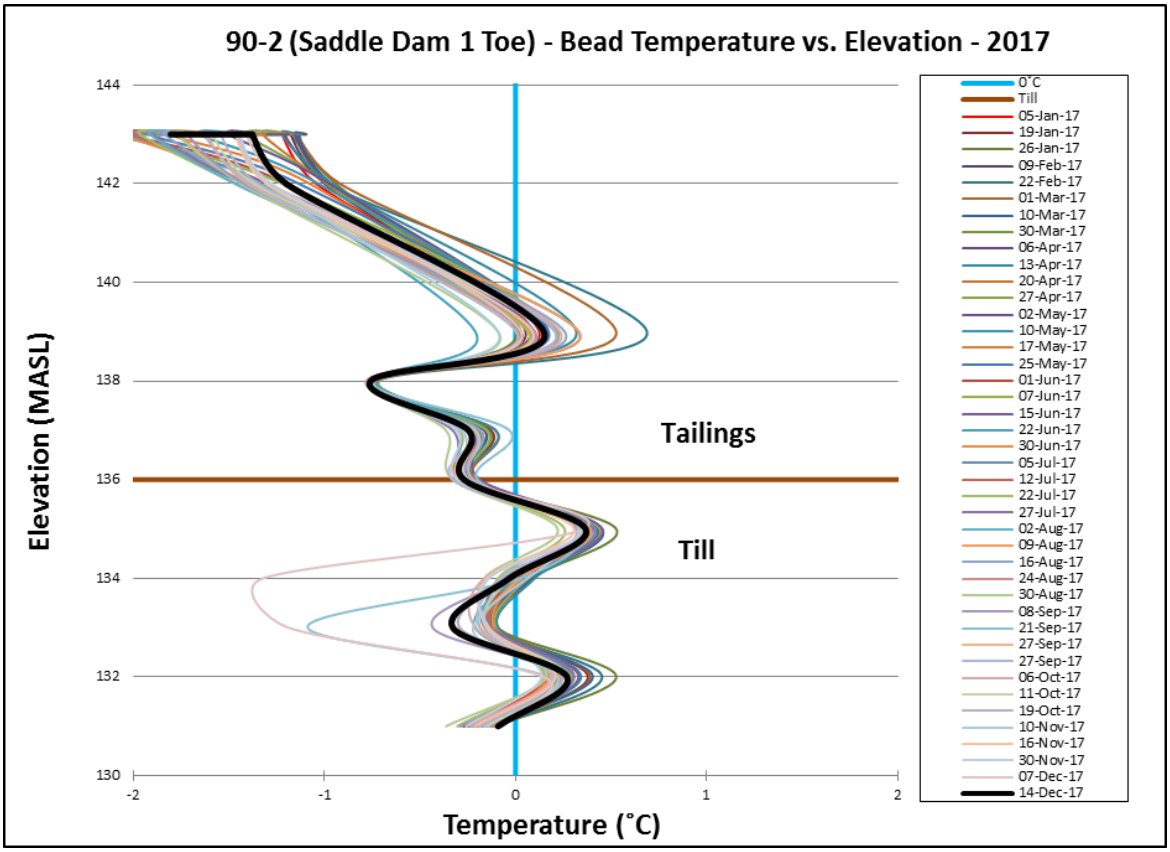


Figure 18. Thermistor Results TSF-SWD-1

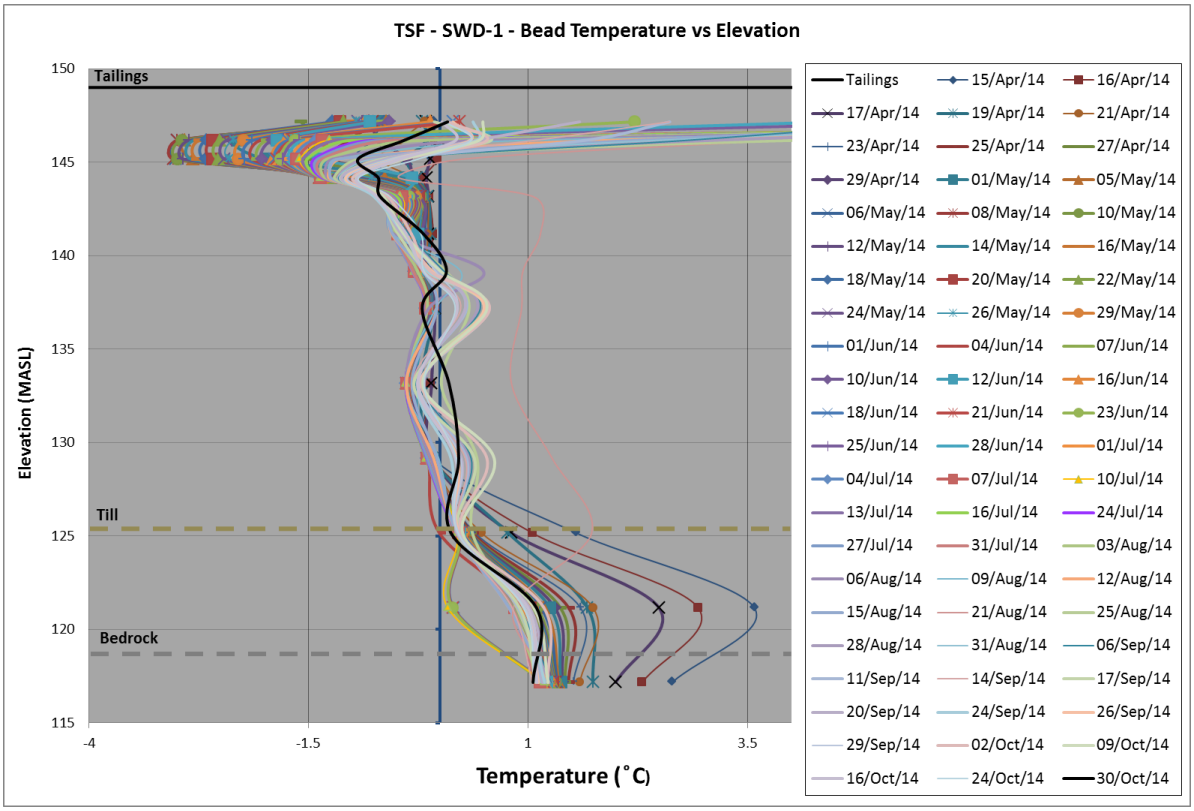


Figure 19. Thermistor Results TSF-SD2-1

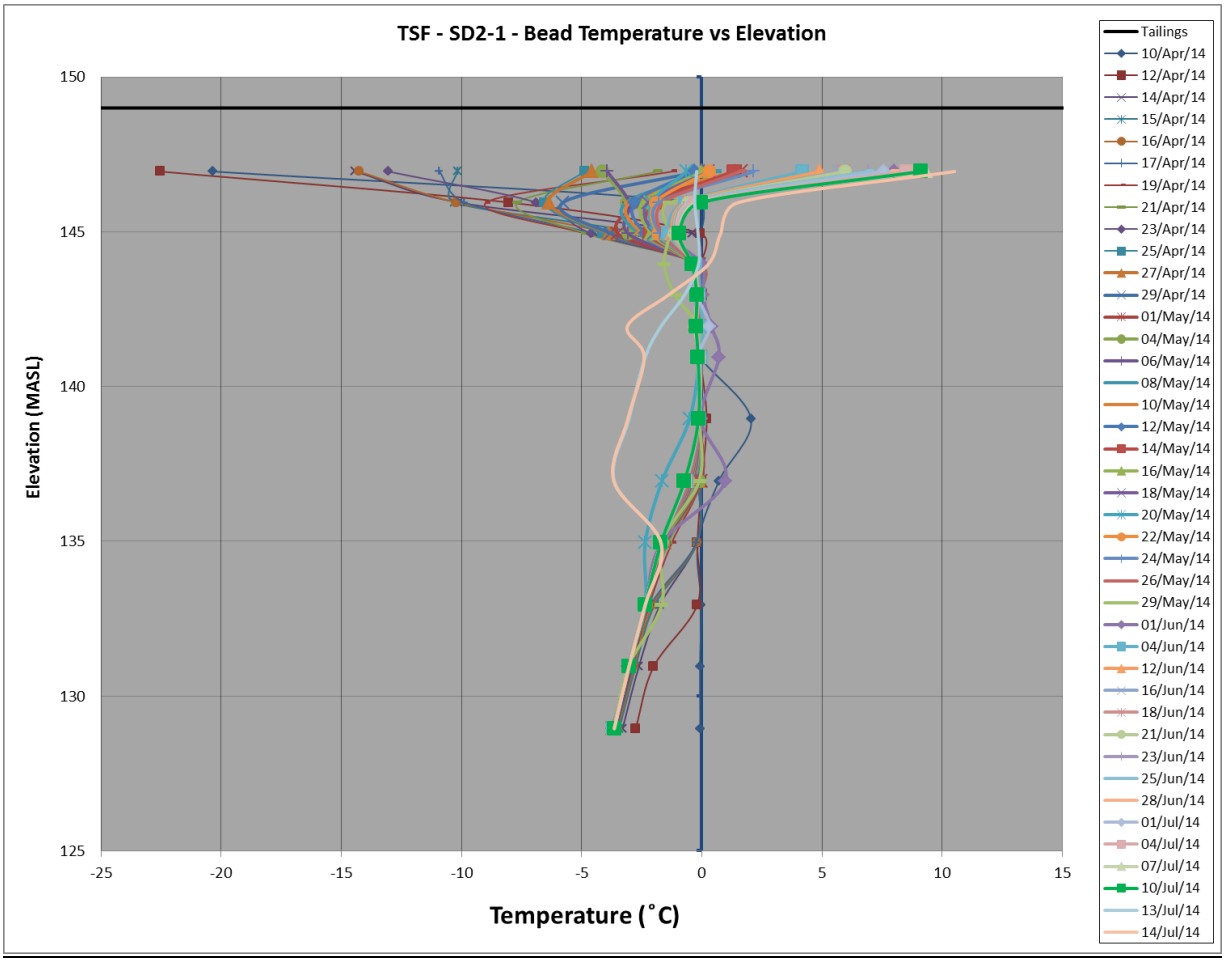


Figure 20. Thermistor Results NC-T1

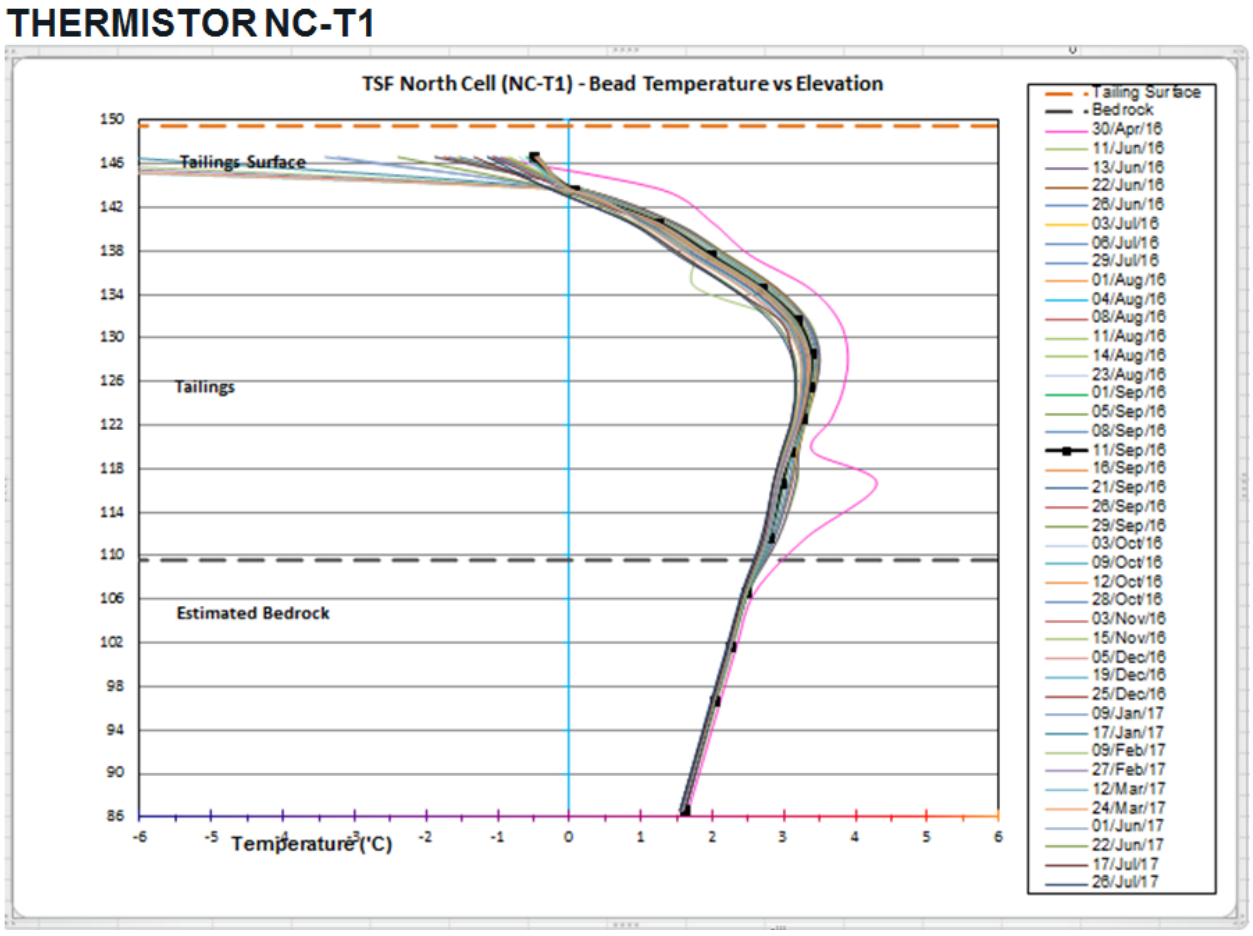
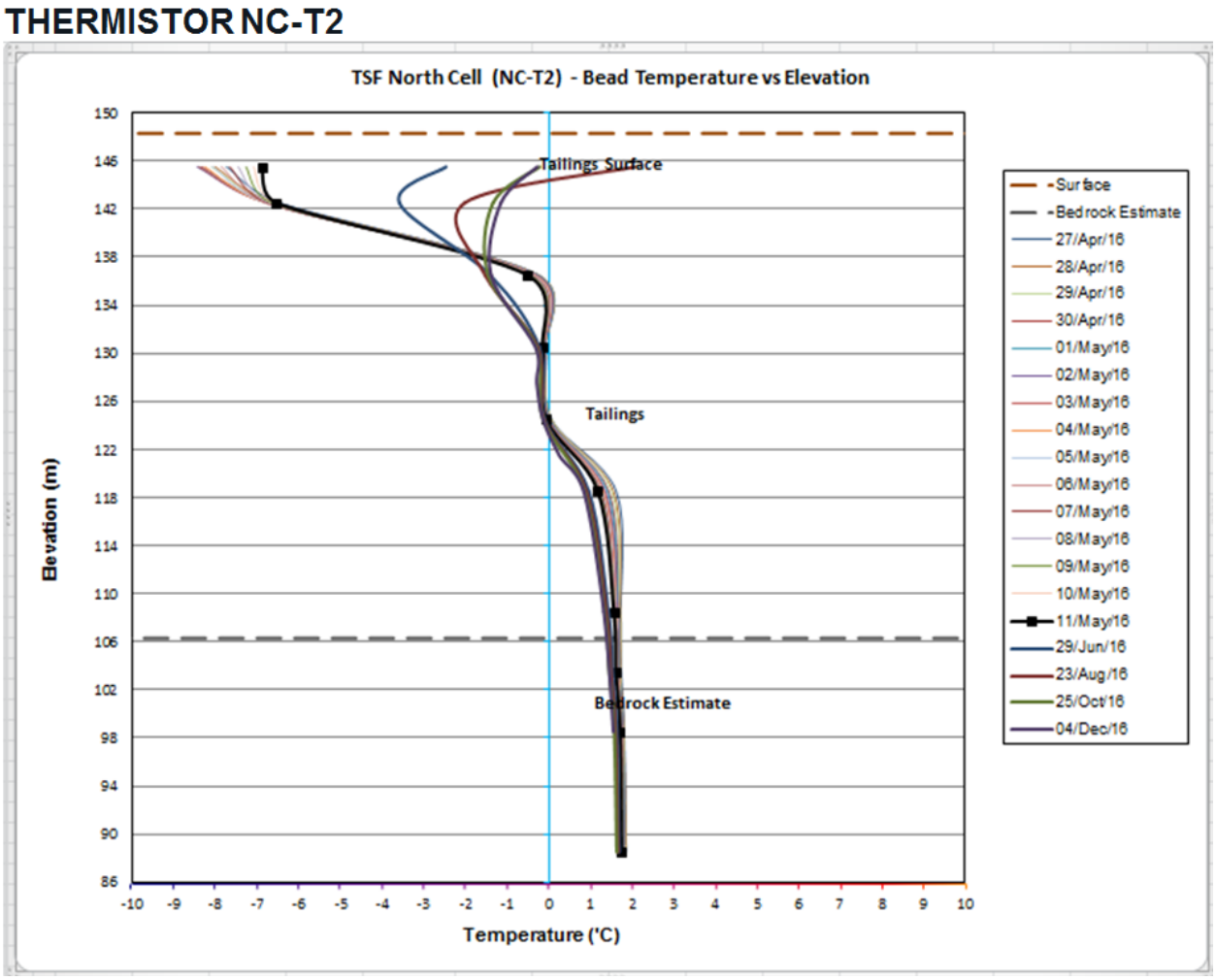


Figure 21. Thermistor Results NC-T2



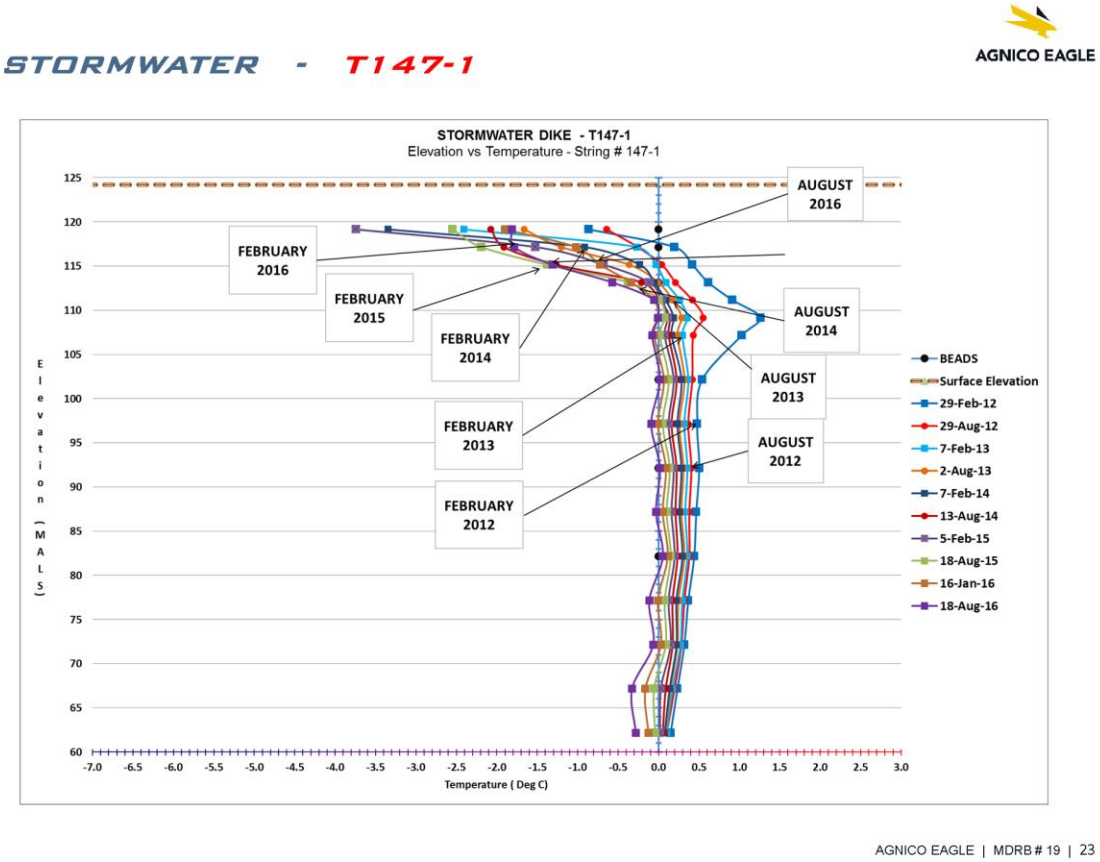
Stormwater Dike

In 2012, Agnico installed a thermistor string (T147-1) at the downstream toe of Stormwater Dike. Temperature readings for this thermistor can be found in Figure 22. The thermistor string was damaged in 2016, so the latest reading is from August 2016. This thermistor was being used to monitor the freezeback of the talik. Thermistor T147-1 showed the existence of a frozen crust of material from elevation 120 to 112 m that stayed frozen during the summer of 2016. Below elevation 110 m, the temperature varied between -0.3°C and 0.1°C. This thermistor was located under the active reclaim pond of the South Cell and was not exposed to freezeback conditions since the beginning of the operation of the South Cell. Freezeback should occur once the operation of the South Cell deposition will be completed.

In 2017, three new thermistors (SWD-01, SWD-02 and SWD-03) and two new piezometers were installed in investigation boreholes (PZ-SWD-02, and PZ-SWD-03).

Additional information on instrumentation results for Stormwater dike can be found in the Annual Geotechnical Inspection (Appendix B1).

Figure 22. Thermistor Results SWD-147-1



Central Dike and Second Portage Lake Arm

Thermistors were installed on Central Dike in the winter of 2013 to monitor the dike's performance, and provide information on the permafrost aggradation of Second Portage Lake Arm, along and following construction, operation, and into closure. The instruments installed along the central key trench show thawed conditions within the till and the bedrock and most of the rockfill (except for the presence of an active layer in the upper portion of the dike). The instruments installed along the downstream toe of the final Central Dike footprint indicate that permafrost conditions are developing. Four additional boreholes were drilled and instrumented in 2016 during the seepage field investigation in the key trench alignment (595-P1, 810-P1, 825-P1 and 850-P1). Two thermistor strings were also installed on the upstream face to monitor the temperature within the tailings of the South Cell.

Seven additional boreholes were drilled and instrumented in 2017 (700-P1, 745-P3, 800-P2, 800-P3, 875-P2, 975-P3 and 1050-P3). The instrumentation on Central Dike consists in 2017 in a total of 69 piezometers and 20 thermistor strings installed in 20 boreholes.

Results and additional information on instrumentation results for Central Dike can be found in the Annual Geotechnical Inspection (Appendix B1).

Saddle Dams 3 and 4

The construction of these structures was initiated in 2015. Instruments were installed in SD3 and SD4 in March 2016 and more are planned to be installed in the following years. The thermal data so far are showing good performance of these structures.

During the construction season 2015 of SD3, Agnico identified a fault zone under the foundation and the 2016 instrumentation campaign was carried out in order to evaluate performance of the foundation. It is important to mention that no tailings or reclaim water is ponding so far against the upstream face of SD3. All thermistors are showing that the foundation is frozen from approximately elevation 123 to 132 m. SD3 is exposed to freeze and thaw cycles on a depth between 2 and 5 m under the surface as showed on Figures 23 to 26.

SD4 shows a similar thermal regime compared with SD3. All thermistors are showing that the foundation is frozen from approximately elevation 129 to 137 m. Above this elevation, SD4 is exposed to freeze and thaw cycles as showed on Figure 27 and 28.

Figure 23. Thermistor Results SD3-T2

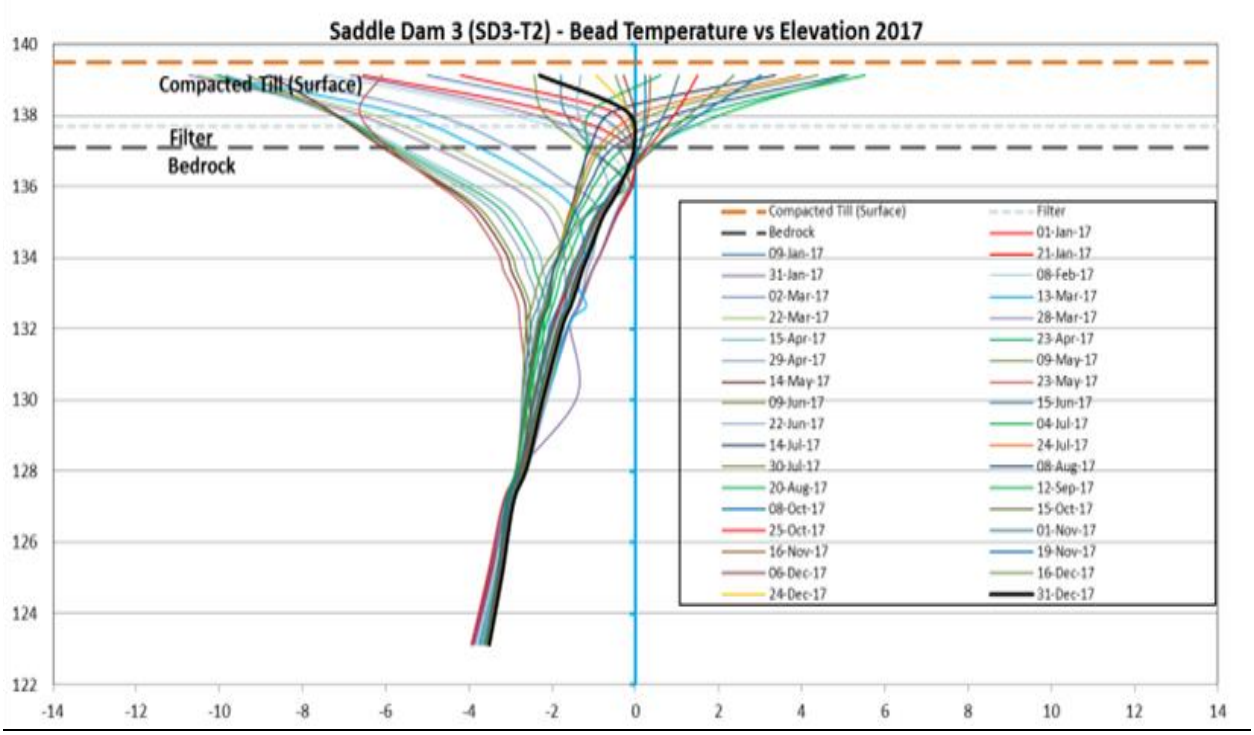


Figure 24. Thermistor Results SD3-T3

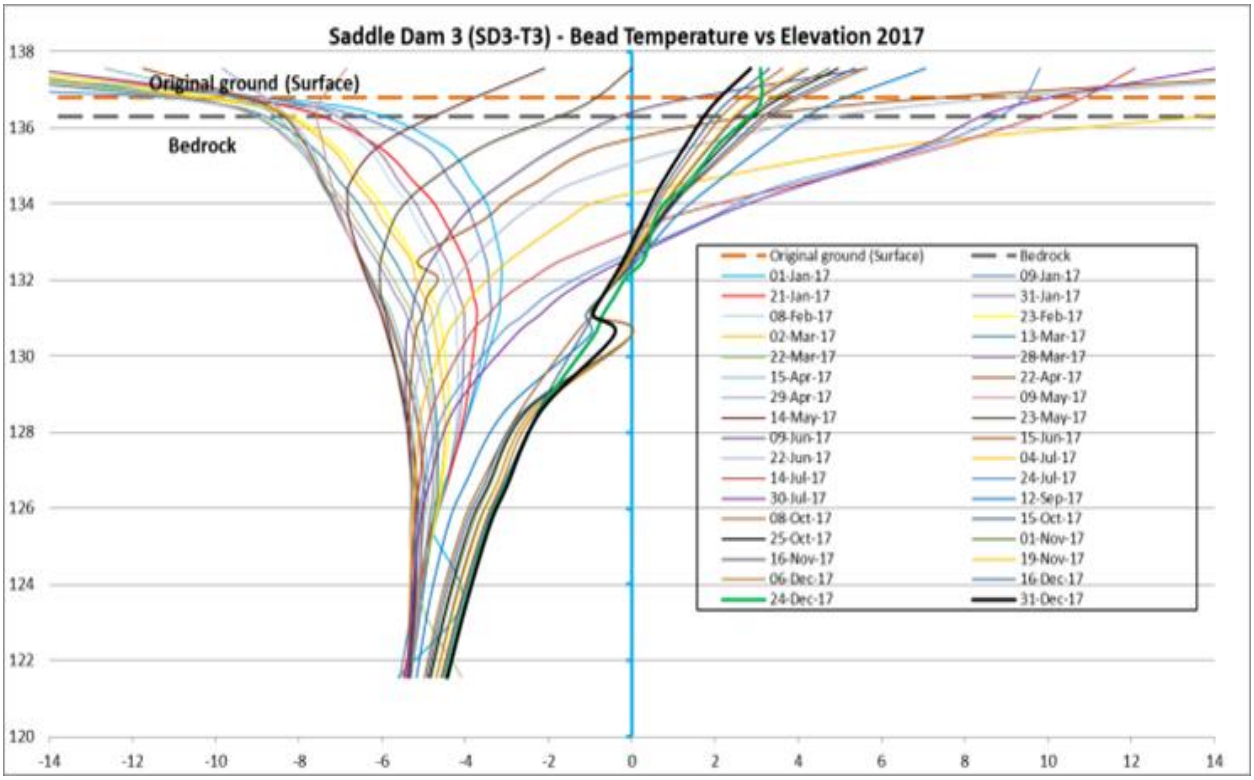


Figure 25. Thermistor Results SD3-T4

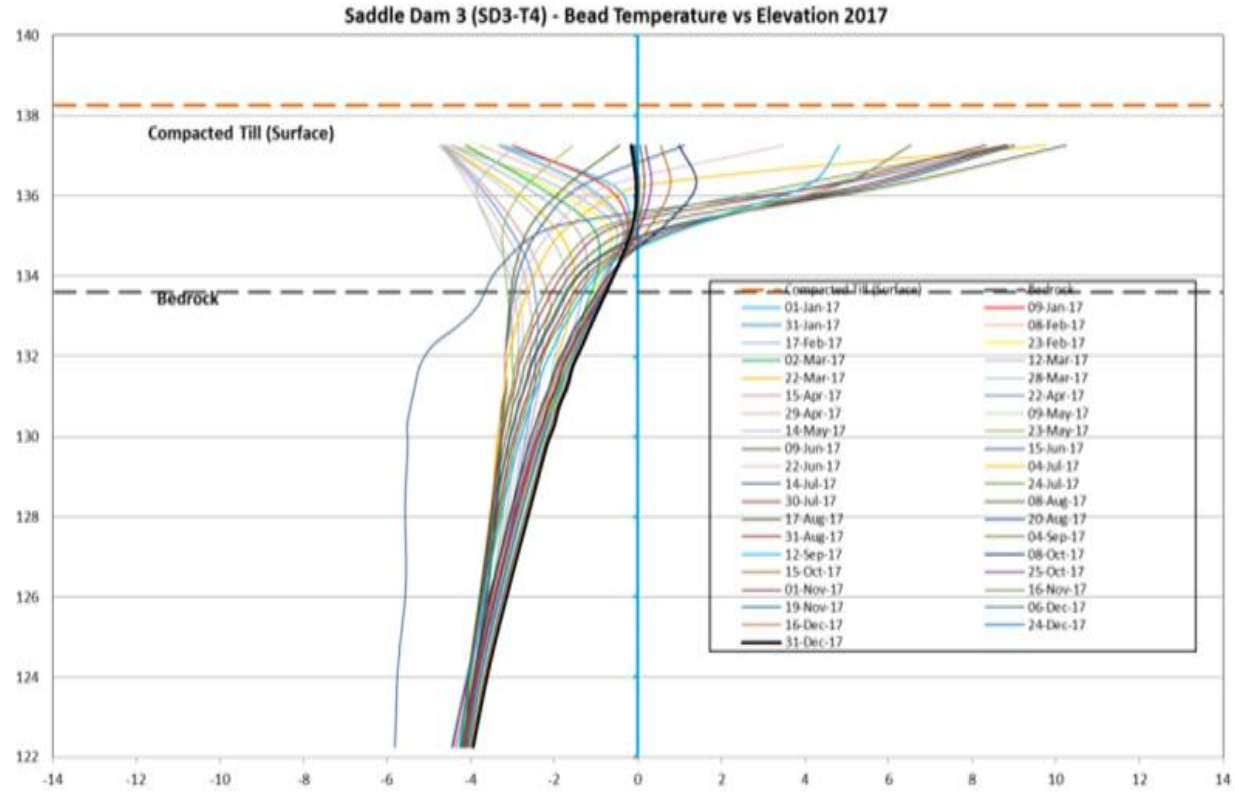


Figure 26. Thermistor Results SD3-T5

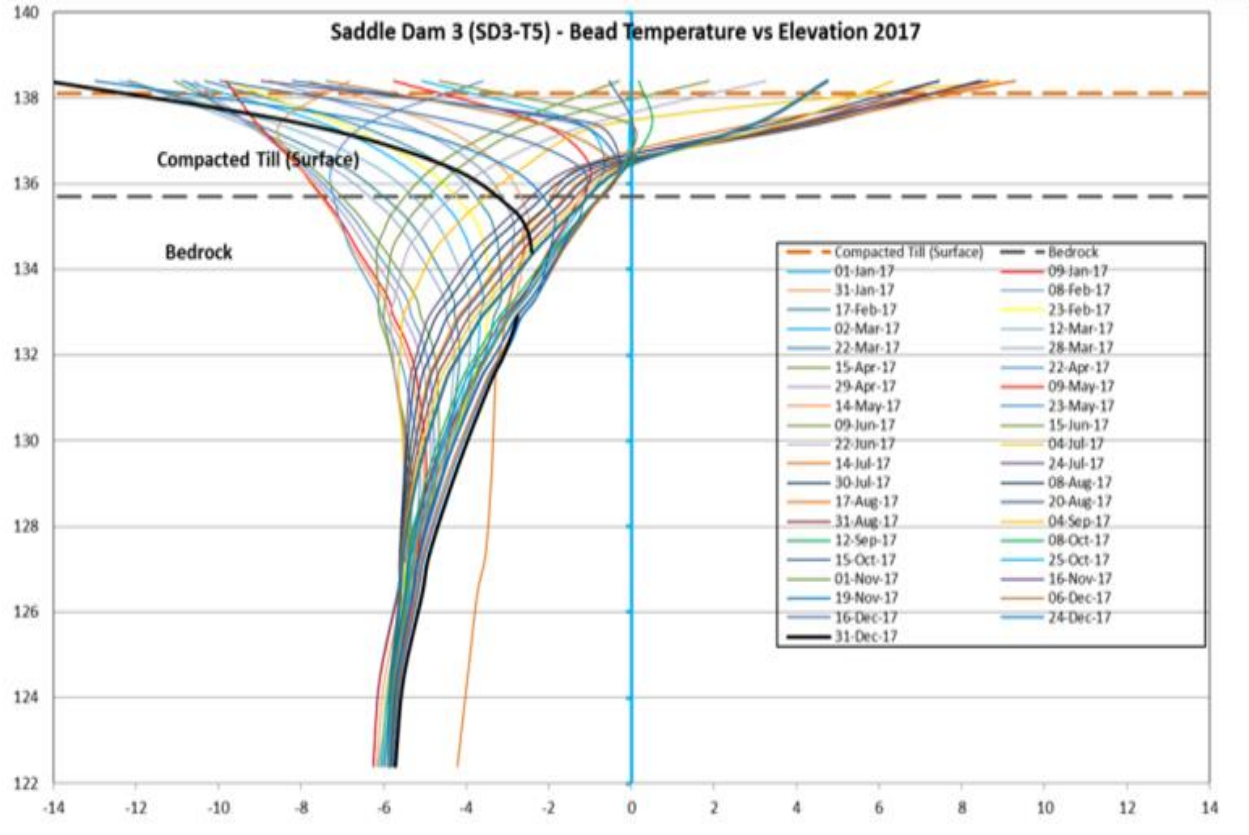


Figure 27. Thermistor Results SD4-T2

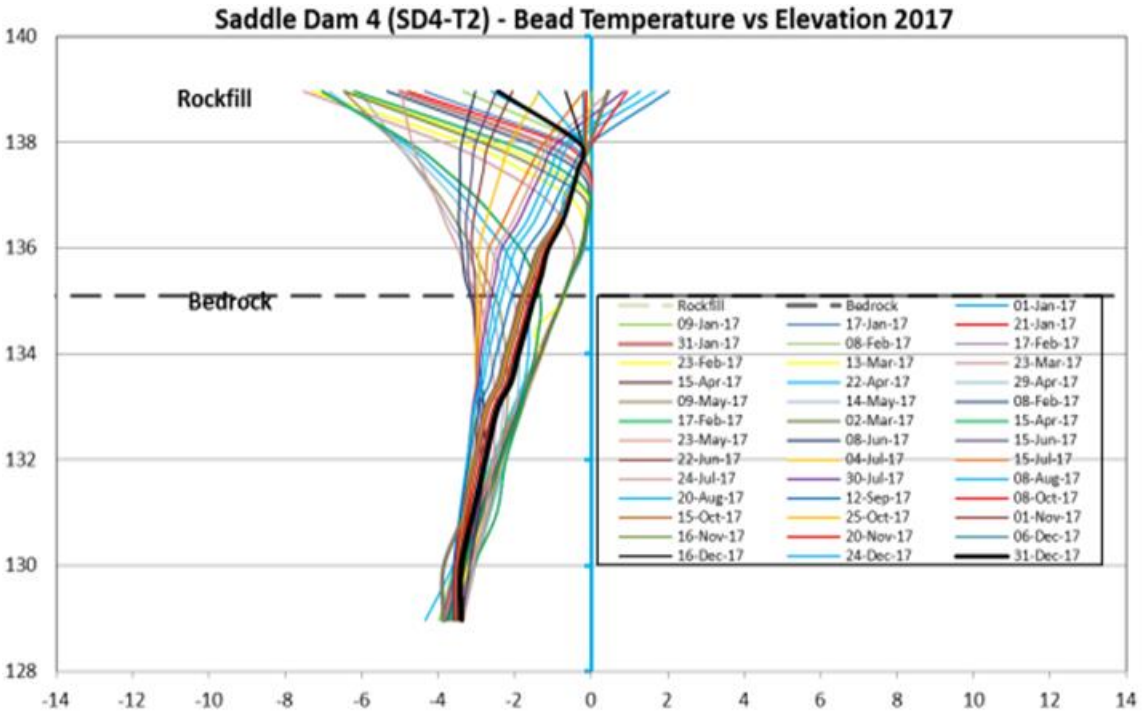
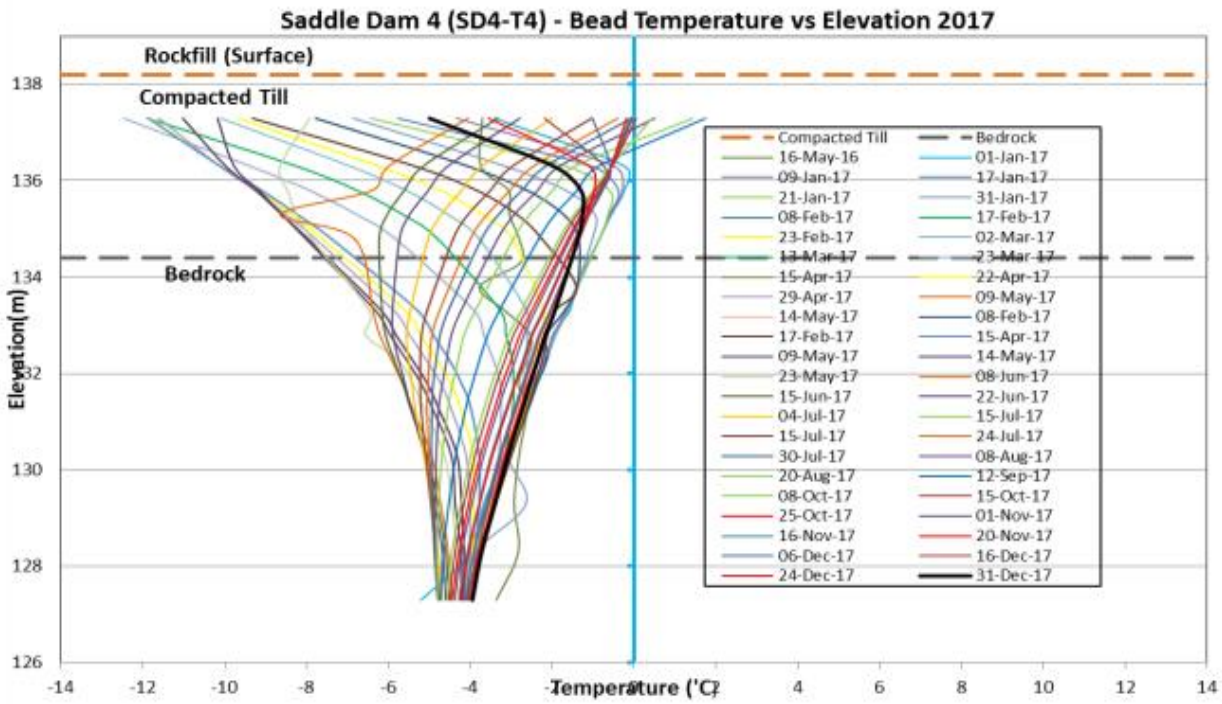


Figure 28. Thermistor Results SD4-T4



Instruments in Rock Storage Facility

Thermistors are also installed in the Waste Rock Storage Facility to measure the freezeback of the waste rock pile and also to verify the performance of the NAG cover placed over the PAG material in the RSF. Thermistor RSF-1 was installed in February 2013 and RSF-3, RSF-4, RSF-5 and RSF-6 were installed on the RSF in November 2013. Plots of these thermistor data are presented in Figure 29 to Figure 33. No major differences were observed since 2016.

The results of the thermistor RSF-1 for 2017 indicate that below approximately 4 m from the surface, the temperature remains under 0°Call year long. The results of the thermistor RSF-3 for 2017 indicate that below approximately 3.0 m from the surface, the temperature remains under 0°C all year long. Between the elevations 147 and 140 m, the temperature gets close to 0°Cand then decreases with depth. The results of the thermistor RSF-4 for 2014-2015 indicate that below approximately 3.0 m from the surface, the temperature remained under 0°C all year long. Between the elevations 180 and 140 m, the temperature is between -1°C and 0°C and then decreases with depth. This instrument was damaged in spring 2015. The results of the thermistor RSF-5 for 2017 indicate that below approximately 3.0 m from the surface the temperature remains under 0°C all year long. At further depth, the temperature remained between approximately -2 and -7 °C. The results of the thermistor RSF-6 for 2017 indicate that below approximately 3.0 m from the surface the temperature remained under 0°C all year long. At further depth, the temperature remained approximately between -3 and -7°C.

Figure 29. Thermistor Results RSF1

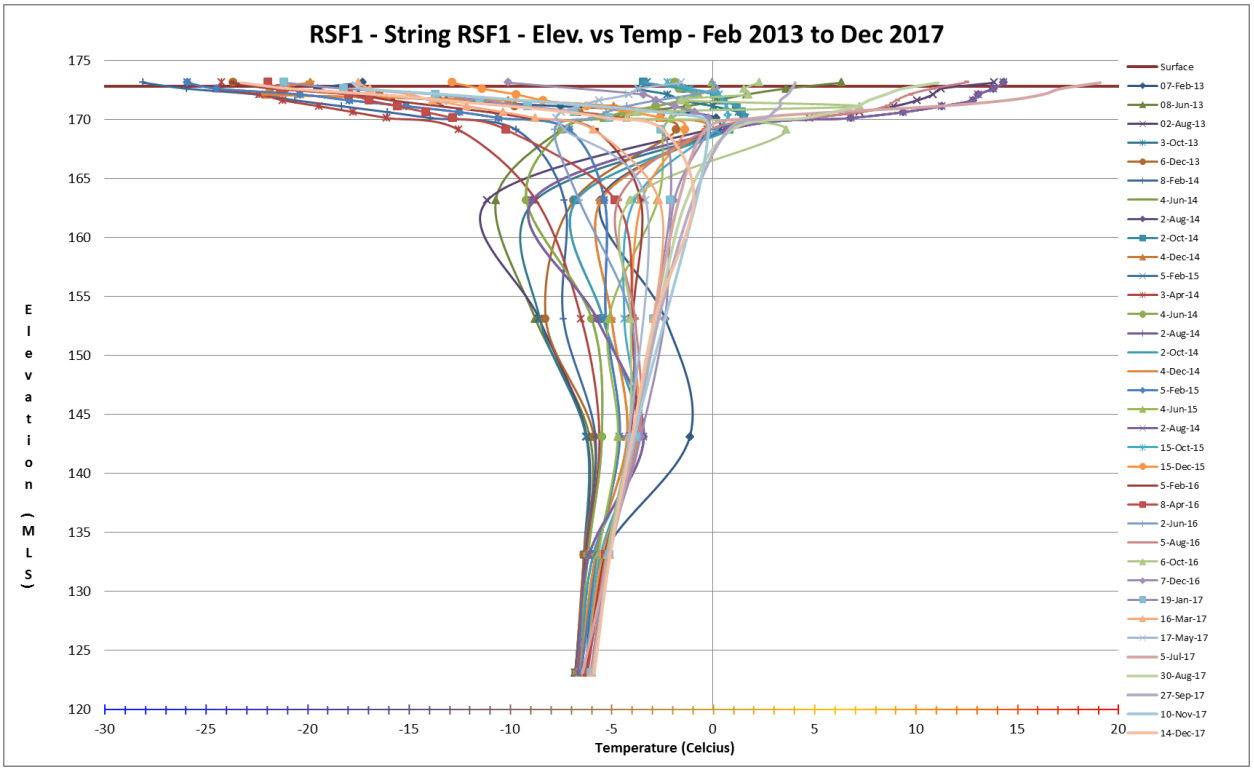


Figure 30. Thermistor Results RSF-3

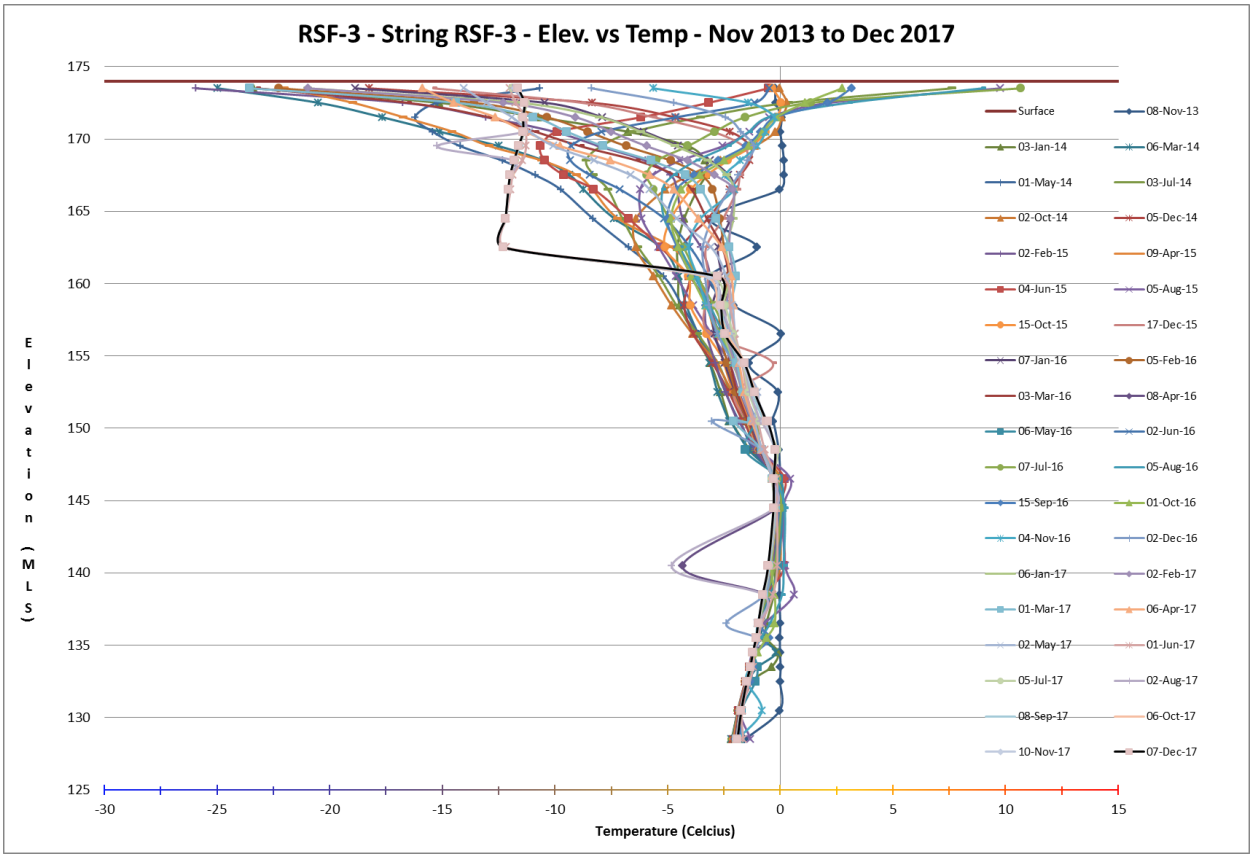


Figure 31. Thermistor Results RSF-4

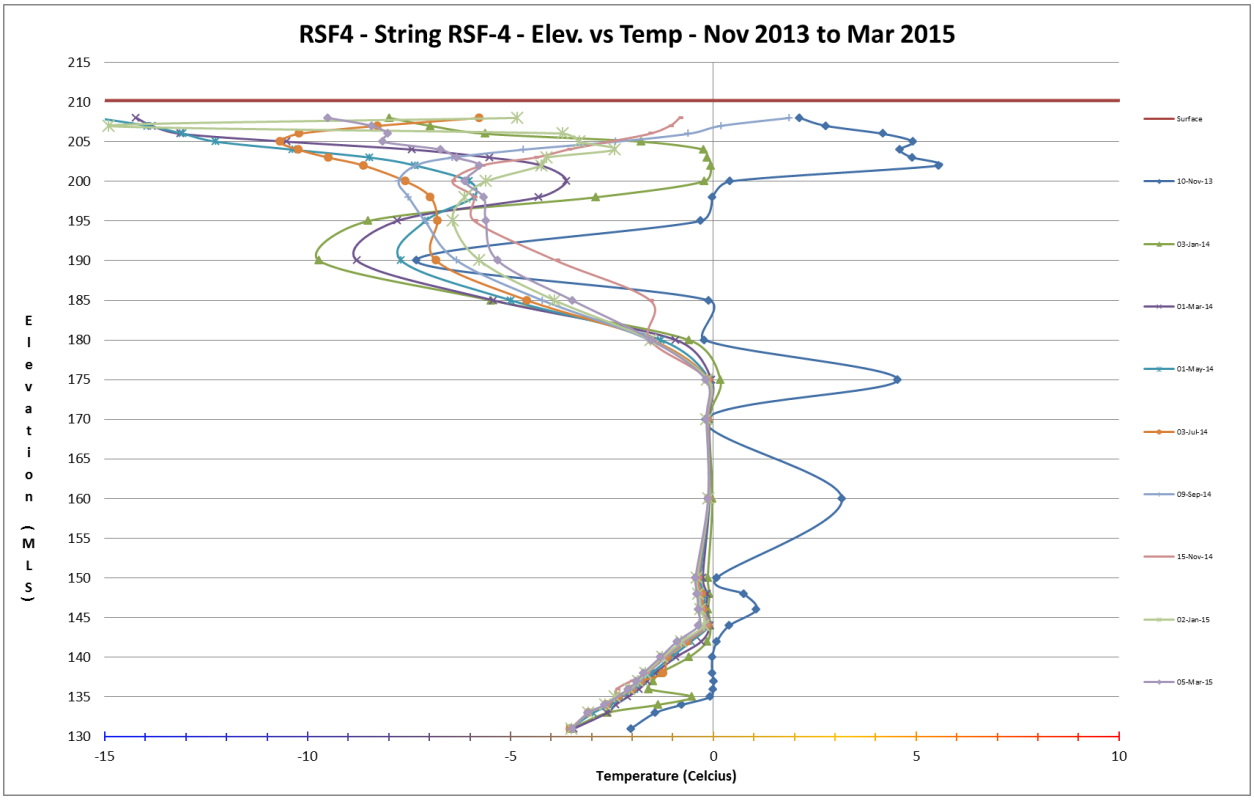


Figure 32. Thermistor Results RSF-5

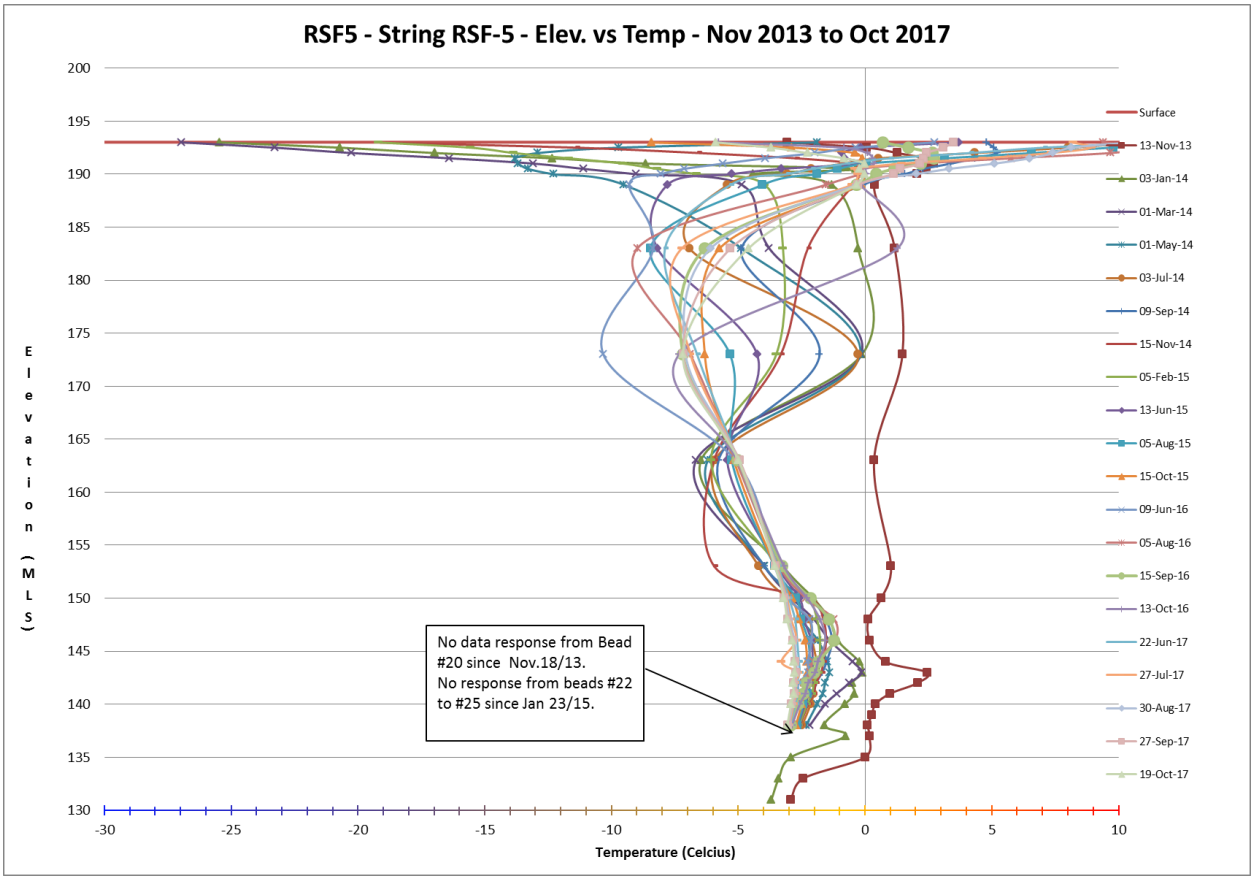
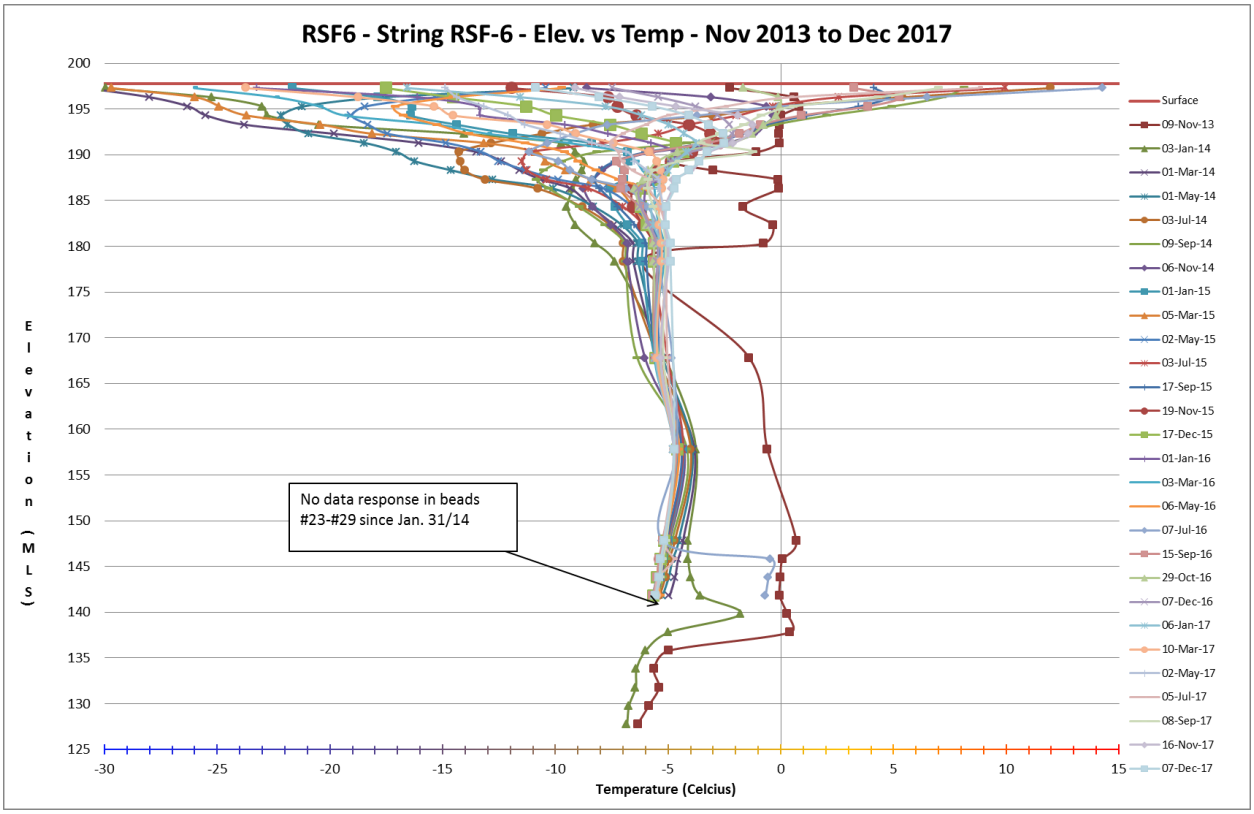


Figure 33. Thermistor Results RSF-6



Instruments in Pits

Portage Pit

No thermistors were installed directly in Portage Pit because of the mining and rock backfilling activities. However, the permafrost aggradation can be monitored with the thermistors installed in the East Dike and Central Dike.

Five thermistors have been installed on East Dike. Since different observations were made for each thermistors please refer to Section 4.1.2 of the 2017 Annual Geotechnical Inspection found in Appendix B1.

As part of the instrumentation in the Central Dike, thermistors, as mentioned, were installed during the winter of 2013 to monitor the dike's performance. These were installed along the west side of Portage Pit. The instruments along the Portage Pit limit show variable results. The bedrock temperature decreases from -6 °C (El. 105 m) to -3.5°C (El. 50 m) at 465-P3, decreases from -6.75 °C (El. 105 m) to -0.7 °C (El. 50 m) at 650-P3 and is between 0.5 and 1°C at 875-P3. This seems to indicate that a permafrost condition is still developing along the Portage Pit west wall perimeter.

Two additional thermistors were added in the south east section of Portage Pit (Portage Pit E) in June 2016. The instruments show similar bedrock temperature from 0.4°C (El. 12m) to 1.8°C (El. 95m) which is expected due to the presence of the talik prior to mining in this area of the Portage Pit.

Additional information on instrumentation results for Portage Pit can be found in the Annual Geotechnical Inspection (Appendix B1).

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. As mentioned in Section 4.2 of the 2017 Annual Geotechnical Inspection found in Appendix B1, this thermistor showed that the temperature profile at SD-09 on the upstream side of the dike shows that the soils located beneath the dike foundation and liner appear to have remained frozen (permafrost) below El. 128 m.

Also, thirty-three thermistors (from T1 to T30 and T3' to T5') are installed on Bay-Goose Dike. Please refer to Section 4.3.2 of the 2017 Annual Geotechnical Inspection in Appendix B1 for a complete review. New thermistors were installed in 2012 between Bay Goose Dike and Bay Goose Pit to monitor aggradation of permafrost. To date, result show that the freezeback is occurring.

Summary of On-Going Field Trials

A research project in collaboration with the Research Institute of Mines and Environment (RIME) was initiated in 2014 at Meadowbank. The Research Institute on Mines and Environment, through the NSERC-UQAT Chair on Mine Site Reclamation, is mandated to evaluate the performance of three field experimental cells constructed in 2014 and 2015 on Meadowbank's North Cell TSF. The three experimental cells that were built on Meadowbank's TSF are two insulation covers and one thermal cover with capillary barrier effects (CCBE).

The tested experimental cells are a 2m and a 4m thick insulation cover as well as a 2m thick cover with capillary barrier effects. The cells were built with coarse and fine non-potentially acid generating (NAG) ultramafic waste rock (soapstone) and are instrumented in order to follow their thermal and hydrogeological behaviors.

Results have been reviewed by the RIME and Agnico. The results of the experimental cells have been used so far in the work for the cover design of the TSF North and South Cell. Data collection was still ongoing in 2017 and results will be used in future studies as needed.

Also in collaboration with the RIME, in 2016 a laboratory testing program was developed to obtain a good overview of the effects of freeze/thaw (F/T) and wet/dry (W/D) cycles on the soapstone. The developed experimental program is primarily focused towards the evaluation of the resistance to F/T and W/D of the soapstone to be used as cover materials for the TSF and RSF. Testing was completed to evaluate the effects of F/T and W/D on rock cores and rock slabs, the effects of F/T on various soapstone grain size fractions, and the effects of F/T on the permeability of a compacted soapstone layer. Based on the testing results and weathering criteria available in the literature, it seems that Meadowbank's soapstone has a good resistance to F/T and W/D cycles.

Other laboratory work (such as frost heave or bearing capacity tests) could be conducted in the future if required for other engineering purposes.

SECTION 6. WASTE MANAGEMENT ACTIVITIES

6.1 LANDFILL MONITORING, WASTE ROCK STORAGE FACILITY AND CENTRAL DIKE

As required by Water License 2AM-MEA1525 Schedule B, Item 10*: Summary of quantities and analysis of seepage and runoff monitoring from the Landfills, Waste Rock Storage Facility and Central Dike.*

Seepage and runoff monitoring of the Landfill is discussed below in Sections 8.3.3.11 and 8.3.7.2. Seepage and runoff from the Rock Storage Facility and Central Dike are discussed in Sections 8.3.3.11 and 8.3.7.2, respectively.

6.2 GENERAL WASTE DISPOSAL ACTIVITY

As required by Water License 2AM-MEA1525 Schedule B, Item 11: *A summary report of general waste disposal activities including monthly and annual quantities in cubic metres of waste generated and location of disposal.*

And

NIRB Project Certificate No.004 Condition 74*: Provide annual report of the quantity and type of waste generated at the mine site distinguishing landfilled, recycled and incinerated streams.*

A monthly summary of the amount of waste transferred to the incinerator in 2017 is included in Table 6.1. More details regarding quantities incinerated can be found in Section 6.3.

Table 6.2 below indicates the volume of waste in cubic meter (m^3) disposed of in each sub-landfill and Figure 34 indicates the location of each sub-landfill used to date. Sub-landfill #8a have been covered with NPAG waste rock by the end of November. Based on surveys conducted at the end of each quarter, Agnico landfilled 13,345 m^3 between January 1st 2017 and December 31st 2017.

The waste consists primarily of plastics, fiberglass, wood, cardboard, rubber, clothing and some metal that was not recycled.

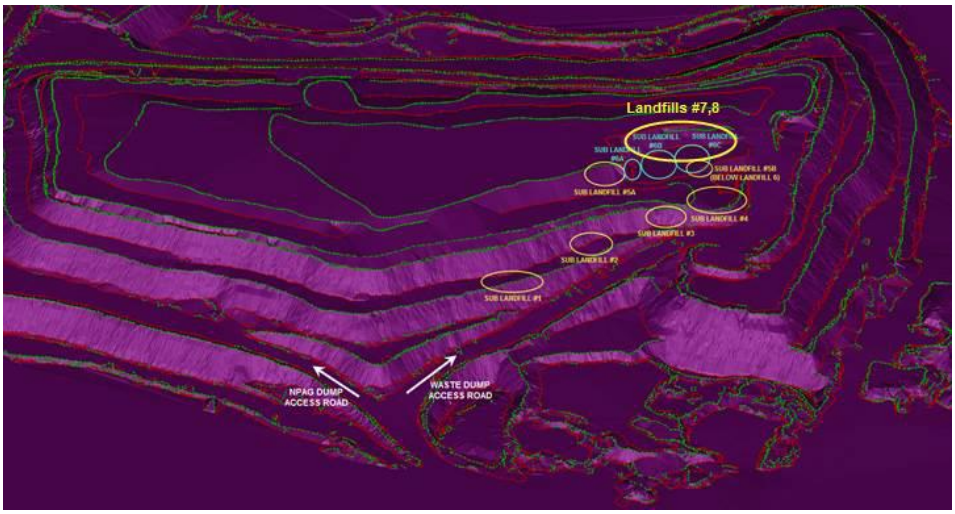
Table 6.1. 2017 Volume of waste transferred to the incinerator

Month	Volume of waste send to incinerator (m^3)
January	331.8
February	309.7
March	320.7
April	276.5
May	298.6
June	298.6
July	353.92
August	353.92
September	331.80
October	342.86
November	331.80
December	342.86

Table 6.2. Volume of waste disposed in each sub-landfill (from survey)

	COORDINATES (UTM)				
LANDFILL	NORTHING	EASTING	ELEV	VOLUME (m^3)	DATE COVERED
#1	7215715.58	638601.454	160	3650	**12-Dec**
#2	7215795.798	638711.423	186	840	**27-Feb**
#3	7215743.117	638827.768	195	-	**-**
#4	7215784.8	638891.4	200	9507	**Jan-19-2014**
#5A	7206586.1	643115.9	210	3870	**Nov-30-2014**
#5B	7206586.1	643115.9	210	?	**Mar-13-2015**
#6A	7215788.8	638793.3	212	278	**Mar-21-2015**
#6B	7215795.06	638854.73	212	3260	**Sep-05-2015**
#6C	7215790.8	638878.1	212	9290	**May-20-2016**
#7	7215790.8	638878.1	213.5	5394	**Dec-20-2016**
#8a	7215790.8	638878.1	217	11700	**Nov-30-2017**
#8b	7215814.2	638888.4	217	1645	**Jan-27-2018**

Figure 34. Sub-landfill location.



In 2017, a total of 75 sea cans were filled with hazardous waste (HAZMAT) and recyclable material were shipped off site to an approved waste disposal facility in Quebec. The total weight was 243,40 tonnes. This amount of sea can and total weight do not include the scrap metal, scrap tire and batteries. The sea cans were shipped from the spud barge at Agnico's Baker Lake marshalling facilities to Bécancour, Quebec by sealift. These materials were transported under Waste Manifest #'s HL55796-7 in accordance with the GN Guidelines for the shipment of such waste. In 2016, manifest tracking problems were identified within the transportation chain. An investigation was thus completed and a procedure put forward for the 2017 shipping season. A letter detailing results and actions was sent to the GN on July 6th 2017. The modified procedure was implemented for the 2017 season and seemed to address outstanding issues with manifests tracking. A description of the types of waste, packaging and volume is provided in Table 6.3.

Table 6.3. Waste shipped to licensed hazardous waste companies.

Waste	Drum	Tote	Pail	Quadrex	Mass (Kg)
Diesel, fuel	34 (205L)	10	-	-	13524
Empty plastic drum	79 (205 L)	-	-	-	1185
Empty plastic pail	-	-	4780	-	4780
Antifreeze (concentration >30%)	-	55	-	-	47072
Kitchen grease	69 (205 L)	-	-	-	8441
Oil	108 (205 L)	-	-	-	19359
Oil filters	231 (205 L)	-	-	-	26364
Oily contaminated solid	4 (205 L)	-	-	434	63573
Oily water	-	33	-	-	39624
Water grease	148 (205 L)	-	-	-	18832
Water grease	11 (60L)	-	-	-	-

In 2017, Agnico Eagle generated approximately 10,678 tonnes of waste. This represents 78.7% of general waste disposed in the landfill, 5.2% of organic waste disposed in the incinerator, 13.8% of waste recycled on and off-site, and 2.3 % of industrial/hazardous waste sent to an approval facility off-site. As shown of Table 6.4 below the percentage of waste recycle, disposed on site or off-site are very similar to last year.

Table 6.4. Percentage of Waste disposed in 2015, 2016 and2017

Waste	2015 Weight (tonne)	2016 Weight (tonne)	2017 Weight (tonne)	2015 Total waste (%)	2016 Total waste (%)	2017 Total waste (%)	Disposal Recycling location
General	8,561	8,672	8,403	74.9	76.5	78.7	Landfill On-site disposal
Organic	545	541	557	4.8	4.8	5.2	Incinerator On-site disposal
Industrial/ Hazardous	289	161	243	2.5	1.4	2.3	Off-site disposal + recycling
Waste oil	358	280	280	3.1	2.5	2.6	On site recycling
Steel	1,449	1,550	1097	12.7	13.6	10.3	Off-site recycling
Wood	88	55	0	0.8	0.5	0	Baker lake recycling
Batteries	38	17	17	0.3	0.1	0.2	Off-site recycling
Tire	97.3	67	81	0.9	0.6	0.8	Off-site recycling
TOTAL	**11,425**	**11,343**	**10,678**	**100**	**100**	**100**	

Several projects for waste reduction/recycling were undertaken or were ongoing in 2017at Meadowbank:

- Recycling of used protective personnel equipment (PPE)
    - The objective of the Used PPE Project is to provide a second life to reusable PPEs. With the collaboration of all departments, Agnico collected used PPE around the Meadowbank site to create a used PPE inventory. This used PPE is now reused instead of ordering new equipment and disposing of reusable materials in the landfill. This initiative has been successful in reducing waste sent to landfill and as an overall cost saving measure.
- Waste oil recycling plan
    - Agnico has an existing waste oil reuse plan. In 2017 Agnico reused approximately 317,635Lof waste oil as a fuel source in the on-site incinerator (65,800L) and in waste oil heaters (251,835L). Table 6.8 provides a breakdown of the volume of waste oil incinerated by month. All waste oil produced in 2016 was kept onsite, filtered and reused. Agnico is planning on continuing to reuse all waste oil produced in 2017 during 2018. The project to separate glycol and water from waste oil was integrated into standard practice and as contributed to increase waste oil availability for re-use on site.

- Steel Recycling
    - A total of 1,097 tonnes of steel was packaged and transported south for recycling. This material was removed from our solid waste stream and not landfilled on site.
- Aluminum Recycling
    - In 2017, aluminum pop cans were donated to local groups as was done in 2016. It is anticipated that these will be donated in 2018 to a local charity or shipped south for recycling.
- Battery recycling
    - In 2017, 17 tonnes of batteries were shipped south and recycled in an accredited facility.
- Tire recycling
    - In 2017, 81 tonnes of scrap tire were shipped south and recycled in an accredited facility.

6.3 INCINERATOR

As per Water License 2AM-MEA1525 Schedule B, Item 12: ***Report of Incinerator test results including the materials burned and the efficiency of the Incinerator as they relate to water and the deposit of waste into water.***

And

NIRB Project Certificate No.004 Condition 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 AEM 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.***

The incinerator was in operation throughout 2017. The incinerator daily report logbook is included in Appendix E1 and covers all months of the year. Based on the data, approximately 50% of the material incinerated was food waste; the other 50% was dry waste comprised of food containers, cardboard boxes, paper and absorbent rags. In 2017, a total of 3,893.12 m^3 burn in the incinerator. The location of the incinerator is highlighted in Figure 1.

Maintenance work was conducted at the incinerator in 2014 and 2015. Work conducted was designed to maximise heat in the primary and secondary chambers to enhance gas burning. In June 2014, maintenance was conducted on both chambers of the incinerators. In the primary chamber, ceramic fiber blocks used as refractory material were replaced by firebricks on all walls excluding the ceiling. In February 2015, the first phase of the secondary chamber renovation was conducted. Firebricks were installed at the burner end of the chamber and on portions of the inner wall of the chamber. This work

was continued in October 2015. In 2016 and 2017, no major work other that regular maintenance was conducted on the incinerator.

In 2017, there were no recorded temperatures below 1,000ºC in the secondary chamber. Agnico considers that maintenance work conducted at the incinerator in 2014, 2015 and 2016 was effective in improving efficiency of the unit. Agnico will continue monitoring temperatures in the secondary chamber and conduct additional improvements at the incinerator if necessary.

As per discussions with Environment Canada, the frequency of stack testing changed in 2012 to every other year. Results from the 2014 test indicated that mercury level average (64.09 µg / Rm³ @ 11 % v/v O_2) exceeded the Environment Canada guideline (20 µg / Rm³ @ 11 % v/v O_2) during the incinerator stack testing. As a result an investigation with Meadowbank's Energy and Infrastructure department was performed to determine the potential sources of this exceedance. Although Agnico had an alkaline battery recycling program, the investigation revealed that there could be a significant volume of batteries disposed of along with regular solid waste destined for the onsite incinerator. As a result, Agnico committed to conduct confirmatory stack testing in the summer of 2015 and implemented a comprehensive site wide information program to reinforce the requirements of the battery recycling program. It was also determined that a possible source of batteries going to the wrong disposal route was ones used around the living/camp facilities. Thus, the information provided to employees included flow chart on disposal within camp use. Information was posted on the Agnico intranet site, was discussed during meetings conducted by the Environmental Department and copies of the proper batteries disposal charts were distributed in all the dorm wings. This flowchart describes how batteries should properly be disposed of onsite. Eighteen (18) meetings were held regarding this issue. Waste management technical memos were also published on Agnico intranet and sent to all contractors and employees.

The number of quatrex of batteries backhauled in 2017(Table 6.5) confirms the ongoing segregation efforts were effective at reducing the number of batteries burnt in the incinerator.

Table 6.5. Number of quatrex of batteries backhauled

Year	Quantity (unit)
2013	29
2014	12
2015	34
2016	20
2017	20

In accordance with Agnico's Incinerator Waste Management Plan, stack testing was conducted from December 1st to December 6th, 2017 by Consulair Air & Environment Global Management. The "Stack sampling tests Report" is provided in Appendix E2. Results from the 2017 test indicated that the application standards for dioxins and furans (PCDD/F) were met for all test, as well as the applicable mercury (Hg) (Table 6.6).

Table 6.6. 2017 Stack Testing Mercury and Dioxine and Furane Results

SUMMARY OF RESULTS		
CONTAMINANTS	**TEST RESULTS**	**STANDARDS**
MERCURY (HG)	3.80 µg / Rm^3 @ 11 % v/v O_2	20 µg / Rm^3 @ 11 % v/v O_2
DIOXINS AND FURANS (PCDD/F)	0.022 ng / Rm^3 @ 11 % v/v O_2	0.08 ng TEQ / Rm^3 @ 11 % v/v O_2

R: Reference conditions 25 °C and 101.3 kPa on a dry basis.

As per KIA recommendation regarding the 2015 Annual report: "*Agnico should implement more frequent stack testing if the biennial monitoring reveals exceedances in mercury, dioxin and/or furan emissions*". Agnico Eagle agrees and already increased the stack testing frequency when the mercury exceedance occurred in 2014. Additional stack testing were done in 2015,2016 and 2017 and results are all below the emission standard. Canada-wide Standards (CWS) for Dioxins and Furans and the CWS for Mercury Emissions states that "where five years data has been accumulated with all results reported below the Level of Quantification (emission standard), the stack testing frequency may be revised to a biennial schedule". In order to be compliant with these recommendations, Agnico Eagle will complete stack testing in 2018 and 2019. The stack testing frequencies will then return to biennial if all results are below the emission standard following ECCC approbation. Agnico Eagle will include clarification on stack testing frequency into the next revision of the Incinerator Waste Management Plan.

In 2017 Agnico monitored the ash quality twice a year as stated in the Incinerator Waste Management Plan. The purpose of sampling ash is to determine its acceptability for disposal in the landfill, pursuant to the GN Environmental Guidelines for Industrial Discharge. Following sampling conformity, ash was disposed of in the landfill instead of TSF for the whole 2017. Samples were collected from the incinerator on January 16th and August16th. Results contained in Table 6.7 indicate no exceedance of Environmental Guidelines for Industrial Discharge. Agnico will continue to monitor the ash quality bi-annually in 2017.

In 2017, approximately 65,800L of waste oil was burned in the incinerator. Volumes of waste oil reused as fuel in 2017 are presented in Table 6.8.

No sampling frequency for waste oil is specified in the GN Environmental Guideline for Used Oil and Waste Fuel (2012). To ensure compliance with the Guideline parameters, Agnico sample the waste oil feedstock twice a year. This data is presented in Table 6.9. In 2017, Agnico collected two (2) samples of waste oil. One on January 23th and the other sample on August 16th. All metals and PCB parameters met the GN Environmental Guideline.

Table 6.7. 2017 Incinerator Ash Monitoring

Parameters	Units	Guideline for Industrial Waste Discharge*	Mine Site Incinerator 1/16/2017	Mine Site Incinerator 08/16/2017
Arsenic	mg/L	2.5	0.0161	0.2105
Barium	mg/L	100	0.1312	0.0682
Cadmium	mg/L	0.5	0.0032	0.0186
Chromium	mg/L	5	0.0092	< 0.0006
Lead	mg/L	5	< 0.0005	< 0.0005
Mercury	mg/L	0.1	0.0049	0.00041
Selenium	mg/L	1	0.019	0.017
Silver	mg/L	5	< 0.0005	< 0.0005
Zinc	mg/L	500	0.817	4.77

Footnotes: * Government of Nunavut Environmental Guideline for Industrial Waste Discharges (D of SD, 2011).

Table 6.8. 2017 Volume of waste oil incinerated and consumed at the Meadowbank site.

Month	Volume of waste oil incinerated or consumed (at the incinerator) (m^3)	*Volume of waste oil incinerated or consumed (in the furnase (at Cat Dome, Blue coveralll and SS Coverall) (m^3)
January	3.7	40.45
February	4.4	37.83
March	5.3	29.75
April	1.5	32.8
May	9.25	20.5
June	7.2	8
July	8.6	0
August	3.25	0
September	3.8	3.45
October	3.6	19.75
November	8.2	23.45
December	7	35.86
Total	**65.8**	**251.84**

Table 6.9. 2017 waste oil monitoring

Parameters	Units	Maximum Allowable Concentration *	1/23/2017	8/16/2017
Cadmium	mg/L	2	< 1	< 1
Chromium	mg/L	10	< 1	< 1
Lead	mg/L	100	< 5	< 5
PCB	mg/L	2	< 1	< 1
Total Halogen	mg/L	1000	69.1	81.6
Flash point	^{o}C	≥ 37.7	> 80	> 80

Footnotes: * GN Environmental Guideline for Used Oil and Waste Fuel (GN, 2012)

6.4 ADDITIONAL INFORMATION

As required by Water License 2AM-MEA1525 Schedule B, Item 25: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

The Board did not request any additional details on waste disposal in 2017.

SECTION 7. SPILL MANAGEMENT

As per Water License 2AM-MEA1525 Schedule B, Item 13 ***A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.***

A summary of all unauthorized discharges that were reported to the GN Spill hotline in 2017 is presented in Table 7.1. A summary of all spills can be found in Table 7.2. This data was also included in monthly monitoring reports submitted to the NWB. GN Spill Reporting Forms and the follow up report as requested by the Water License 2AM-MEA1525 Part H, Item 8 for reported spills are included in Appendix F1.

In 2017, twenty-eight (28) spills were reported to the GN Spill hotline. Twelve (12), sixteen (16), seven (7) and, nine (9) spills, eighteen (18) spills and thirty-four (34) were reported in 2011, 2012, 2013, 2014 and 2015 and 2016 respectively. Agnico also see a significant increase in the non-reportable spills between 2015 and 2016 and between 2016 and 2017. Sixty-eight (68), eighty-two (82), eighty-five (85), sixty-three (63), one hundred forty-eight (148) ,three hundred seventy-four (374) and four hundred forty-two (442) non-reportable spills were reported internally to the Environment Department in 2011, 2012, 2013, 2014, 2015, 2016 and 2017 respectively.

Agnico acknowledges there is an increase in reported spills and began a Spill Reduction Action Plan in 2016. Key Performance Indicators (KPI) were developed to monitor the reported spills. The action plan detail is provided in Appendix F2. A Spill Frequency is calculated and reported to the daily management meeting. All spills are discussed daily in the management meeting with respective departments. The Spill Frequency is the ratio of the total number of spill to date in the year over the number of days in the current year. The total number of spill to date includes the spills internally reported as well as the spills reported to the regulators. This KPI is used to follow trends related to spill increase or reduction, and to guide corrective actions when required.

General awareness on spill management and reporting with management and operations were expanded by meeting equipment users and stakeholders. Increased focus on reporting, identifying and notifications assisted in finding opportunities of reduction and also contributed to the increase noted above. This process enabled proactive maintenance to be done on equipment identified and reduce the overall quantities of material spilled. At this time, the GN reportable spills have plateaued (34 in 2016 and 28 in 2017) and has a downward trend. Mandatory spill training is included in the Meadowbank site induction and the Environmental Department is working in a collaborative approach to ensure field personnel are reminded consistently on best practices in spill management. Refresher training is also being developed.

All internal reported spills and reported to regulators are managed according to the spill contingency plan. Spills are contained and cleaned, contaminated material is disposed to the appropriate area, such as the onsite landfarm and the clean-up actions are monitored by the Environment team.

To prevent and ensure all spills are reported internally, spill prevention training was provided to employees in 2017. Training activities include the following:

- All employees and contractors must participate in an induction session online prior to the arrival at the mine site, which includes a training section on spill management (prevention, reporting and cleaning).

- Every employee and contractor who operates a vehicle on site must participate in training on vehicle operation. Spill management is a component of this training session;

- 12 toolbox meetings were given in 2017 by the Environmental Department to different departments at Meadowbank. Topics during the meetings included spill reporting, spill response. Departments receiving these toolbox sessions included security, powerhouse, warehouse, mine, mill, maintenance, site services, camp, kitchen, FGL maintenance and others (housekeeping, Arctic Fuels, etc.);

- Personnel at the Baker Lake Marshalling facility were given an information/training session on how to react to a major spill at the Baker Lake Bulk Fuel Storage & Marshalling Facility in July 2017. Among these personnel were Marshalling Area Supervisors, Warehouse Technicians, Environmental Technicians, and contractors from Intertek. This training was provided by the Environment Department.

A mock spill exercise was completed on September 15th, 2017 at the Baker Lake spud barge area. The scenario was a leaking flange near the refueling station. The fuel was leaking on the side of the road heading towards the shoreline.. Agnico Eagle's Environmental staff lead the exercise, which included Intetek Contractor staff and Procurement and Logistics department workers, and documented the spill actions as well as acted as the "Control Room" responder. The exercise was used to gain experience on spill intervention and awareness of spill management gear. Overall, the reaction of participants was satisfactory and lessons learned from the event will ensure a more efficient future response, if needed.

Table 7.1. 2017 spills reported to the GN 24Hr spill OnLine.

Date of Spill	Hazardous Material	Qty	Units (L / Kg)	Location	Cause of spill	Clean-up action taken	SPILL #
January 28, 2017	Hydraulic oil	200	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2699
January 29, 2017	Hydraulic oil	300	L	Vault Parking	Defective wiggins	Contaminated soil picked up and disposed of appropriately	2698
February 12, 2017	Hydraulic oil	350	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2726
February 21, 2017	Hydraulic oil	180	L	Mill	Unscrewed hydraulic line	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2750
February 25, 2017	Grey Water	130	L	Camp	Operator was pumping from STP to sewage truck and the hose broke	Spill was contained and contaminated soil picked up and disposed of appropriately	2760
March 13, 2017	Hydraulic oil	500	L	Portage pit	Broken O'ring and pump	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2801
March 29, 2017	Diesel Fuel	4885	L	AWAR km 77	The tanker when off-road and flip on his side puncturing the tank	Transfer the fuel to another tanker, move the tanker out of the ditch and clean up the contaminated material	2834
April 8, 2017	Hydraulic oil	125	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2865
April 21, 2017	Hydraulic oil	200	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2894
April 26, 2017	Hydraulic oil	400	L	Portage waste dump	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2913
May 9, 2017	TSS	33.66	Kg	Effluent of the East Dike Seepage	Probably due to freshet with snow melting	Discharge was stopped in SPL on May 11 and directed back to Portage pit	3019

June 5, 2017	Sulphur prill	0.2	Kg	Mill	Some sulphur prills spilled from a ripped bag when the employee opened the seacan	Spill was contained and contaminated soil picked up and disposed of appropriately	3022
June 6, 2017	TSS	50	Kg	NP1 lake	Due to freshet	Barriers deployed, fences, booms, have been put in place and exceedance were of short duration.	3108
June 15, 2017	Hydraulic oil	190	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3049
July 2, 2017	Hydraulic oil	200	L	Pushback parking	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3097
July 28, 2017	Fuel	200	L	Vault Camp	Probably originated from the refilling procedures of the tank	Spill was contained and contaminated soil picked up and disposed of appropriately	3165
July 29, 2017	Coolant	120	L	Vault pit	High pressure caused leak	Spill was contained and contaminated soil picked up and disposed of appropriately	3170
August 7, 2017	Hydraulic oil	200	L	Phaser Pit	Pinched valve	Spill was contained and contaminated soil picked up and disposed of appropriately	3317
August 9, 2017	NaOH	25	kg	AWAR km 23	Tractor-Trailer roll-over	Spill was contained and contaminated soil picked up and disposed of appropriately	3274
September 14, 2017	Diesel	500	L	BL refueling station	The fuel meter was not accurate (new fuel meter)	Spill was contained and contaminated soil picked up and disposed of appropriately	3279
September 22, 2017	TSS	5.895	KG	Second portage discharge	TSS Exceedance due to a natural event	Stop the discharge	3349
October 5, 2017	Hydraulic oil	165	L	Phaser pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3346

October 9, 2017	Fuel	150	L	Baker Lake Tank farm	Overfilling	Spill was contained and contaminated soil picked up and disposed of appropriately.	3363
October 10, 2017	Hydraulic oil	200	L	Phaser pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3372
October 28, 2017	Diesel	100	L	Portage Pit	Fuel nozzle froze and stayed open while refueling	Spill was contained and contaminated soil picked up and disposed of appropriately.	3409
December 9, 2017	Hydrex Oil	200	L	Oil pad	Punctured tote when manipulated with forklift due to uneven ground	Spill was contained and contaminated soil picked up and disposed of appropriately.	3513
December 11, 2017	Coolant	400	L	Open Pit Meadowbank	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3519
December 14, 2017	Windshield washer	150	L	Vault coverall	Broken valve	Spill was contained and contaminated soil picked up and disposed of appropriately.	3525

Table 7.2. 2017 Non-reportable spills

Date of Spill	Hazardous Material	Quantity	Units (L / Kg)	Location	Cause of spill	Clean-up action taken	Intelex spill #
January 1, 2017	Hydraulic oil	85	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2629
January 2, 2017	Compressor Oil	25	L	Portage pit	Broken O'ring	Spill was contained. Contaminated soil picked up and disposed of appropriately	2634
January 6, 2017	Hydraulic oil	20	L	Vault road	Broken steering hose	Contaminated soil picked up and disposed of appropriately	2636
January 7, 2017	Power Steering Oil	15	L	Vault road	Broken hydraulic hose	Spill was contained. Contaminated soil picked up and disposed of appropriately	2637
January 9, 2017	Diesel Fuel	10	L	Portage pit	Fuel breather blocked	Contaminated soil picked up and disposed of appropriately	2652
January 9, 2017	Coolant	40	L	Portage pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2654
January 9, 2017	Coolant	50	L	Vault pit	Engine fan busted	Contaminated soil picked up and disposed of appropriately	2653
January 10, 2017	Coolant	25	L	Maintenance Shop	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2655
January 13, 2017	Engine Oil	3	L	Amaruq Road KM 16	Mechanical leak	Spill was contained. Contaminated soil picked up and disposed of appropriately	2666
January 14, 2017	Hydraulic oil	30	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2667
January 15, 2017	Engine Oil	5	L	Tear Drop Lake Road	Broken oil pan	Contaminated soil picked up and disposed of appropriately	2671

January 15, 2017	Hydraulic oil	30	L	Vault Waste Dump	Broken driving shaft	Contaminated soil picked up and disposed of appropriately	2672
January 15, 2017	Hydraulic oil	30	L	Portage pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2675
January 16, 2017	Hydraulic oil	10	L	Portage Stockpile	Changed implement oil filter	Contaminated soil picked up and disposed of appropriately	2673
January 16, 2017	Coolant	50	L	Portage pit	Broken flange on radiator	Spill was contained. Contaminated soil picked up and disposed of appropriately	2674
January 18, 2017	Hydraulic oil	30	L	Vault Camp	Broken O'ring	Spill was contained. Contaminated soil picked up and disposed of in the landfarm	2677
January 20, 2017	Power Steering Oil	10	L	Vault Camp	Broken steering hose	Contaminated soil picked up and disposed of in the landfarm	2678
January 24, 2017	Hydraulic oil	4	L	Amaruq Road KM 3.5	Mechanical leak	Spill was contained and contaminated soil picked up and disposed of appropriately	2691
January 26, 2017	Hydraulic oil	15	L	Pushback Parking	Equipment failure	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2692
January 27, 2017	Diesel Fuel	5	L	Pushback Parking	Fuel truck vent failure	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2693
January 28, 2017	Coolant	50	L	Vault pit	Broken heater hose	Contaminated soil picked up and disposed of appropriately	2696
January 28, 2017	Hydraulic oil	200	L	Vault pit	Broken hydra	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2699
January 29, 2017	Hydraulic oil	300	L	Vault Parking	Defective wiggins	Contaminated soil picked up and disposed of appropriately	2698
February 1, 2017	Diesel Fuel	15	L	Primary crusher Stockpile	Fuel tank vent failure	Spill was contained. Contaminated soil picked up and disposed of appropriately	2701

February 1, 2017	Transmission Oil	30	L	Vault Parking	Broken transmission hose	Other - Spill was collected but disposed of in wrong location.	2703
February 2, 2017	Hydraulic oil	80	L	Vault pit	Broken hydraulic hose	Spill was contained. Contaminated soil picked up and disposed of appropriately	2704
February 3, 2017	Hydraulic oil	35	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2705
February 4, 2017	Hydraulic oil	60	L	Portage pit	Broken hosing filter	Spill was contained. Contaminated soil picked up and disposed of appropriately	2706
February 5, 2017	Hydraulic oil	70	L	Vault Rock Storage Facility	Broken hydraulic hose	Spill was contained. Contaminated soil picked up and disposed of appropriately	2707
February 7, 2017	Hydraulic oil	40	L	Portage pit	Broken hydraulic hose	Spill was contained. Contaminated soil picked up and disposed of appropriately	2713
February 9, 2017	Coolant	50	L	Vault Rock Storage Facility	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2718
February 10, 2017	Hydraulic oil	5	L	Vault road	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2719
February 11, 2017	Engine Oil	10	L	Vault pit	Cracked oil pan	Contaminated soil picked up and disposed of appropriately	2721
February 11, 2017	Hydraulic oil	20	L	Amaruq Road, Esker 2C	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2724
February 11, 2017	Coolant	30	L	Marginal Stockpile	Radiator failure	Contaminated soil picked up and disposed of appropriately	2723
February 12, 2017	Coolant	3	L	MBK Camp	Coolant overfilling	Contaminated soil picked up and disposed of appropriately	2727
February 12, 2017	Hydraulic oil	350	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2726
February 13, 2017	Hydraulic oil	60	L	Amaruq Road - Esker 2A	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2732

February 14, 2017	Hydraulic oil	10	L	Bay Goose Waste dump	During mechanical repairs	Contaminated soil picked up and disposed of appropriately	2728
February 14, 2017	Hydraulic oil	60	L	Portage pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2729
February 14, 2017	Activated carbon	30	Kg	Transit Laydown 4	Broken bag inside a seacan	Took the roll off bin to the area than removed all material from the ground	2731
February 15, 2017	Hydraulic oil	80	L	Portage pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	2733
February 16, 2017	Hydraulic oil	90	L	End of truck shop	Mechanical failure	Contaminated soil picked up and disposed of appropriately	2730
February 17, 2017	Windshield Washer	10	L	Vault Camp	Valve on washer fluid tote was not fully closed and some washer fluid leaked	Contaminated soil picked up and disposed of appropriately	2736
February 18, 2017	Coolant	25	L	Vault pit	Radiator failure	Spill was contained and contaminated soil picked up and disposed of appropriately	2734
February 18, 2017	Hydraulic oil	5	L	Goose Road	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	2735
February 18, 2017	Coolant	90	L	Vault Parking	Coolant Leak on equipment	Contaminated soil picked up and disposed of appropriately	2737
February 18, 2017	Hydraulic oil	90	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2739
February 18, 2017	Coolant	50	L	Vault pit	Coolant Leak on equipment	Contaminated soil picked up and disposed of appropriately	2738
February 19, 2017	Coolant	40	L	Portage pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2742
February 20, 2017	Hydraulic oil	60	L	Vault road	Torque converter failure	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2743

February 20, 2017	Hydraulic oil	3	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2744
February 21, 2017	Hydraulic oil	180	L	Mill	Unscrewed hydraulic line	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2750
February 22, 2017	Hydraulic oil	70	L	Mill	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2748
February 22, 2017	Hydraulic oil	15	L	Portage pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2752
February 22, 2017	Hydraulic oil	90	L	Mill	Unscrewed hydraulic line	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2749
February 22, 2017	Coolant	20	L	Portage pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2753
February 23, 2017	Hydraulic oil	8	L	FGL Shop	During the transport of the used oil with a zoom-boom, the drum fell on the ground. (It was not attached)	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2756
February 23, 2017	Hydraulic oil	70	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2755
February 24, 2017	Transmission Oil	15	L	Maintenance Shop	Broken transmission line	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2759
February 24, 2017	Coolant	20	L	Vault Camp	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2758

February 25, 2017	Grey Water	130	L	Camp	Operator was pumping from STP to sewage truck and the hose broke	Spill was contained and contaminated soil picked up and disposed of appropriately	2760
February 25, 2017	Hydraulic oil	60	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2764
February 26, 2017	Diesel Fuel	5	L	Vault Parking	Fuel breather blocked	Contaminated soil picked up and disposed of appropriately	2763
February 27, 2017	Hydraulic oil	25	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2765
March 1, 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2771
March 1, 2017	Diesel Fuel	5	L	Maintenance Shop	Mechanical failure	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2768
March 2, 2017	Hydraulic oil	15	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2772
March 2, 2017	Hydraulic oil	60	L	Vault Parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2773
March 4, 2017	Hydraulic oil	50	L	Vault Parking	Broken O'ring	Contaminated soil picked up and disposed of appropriately	2778
March 5, 2017	Hydraulic oil	60	L	Portage pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2781
March 5, 2017	Power Steering Oil	1	L	Vault Parking	Broken steering hose	Contaminated soil picked up and disposed of appropriately	2782
March 6, 2017	Windshield Washer	25	L	Blue Coverall	Drop the drum on the side when moving close to is area	Contaminated soil picked up and disposed of appropriately	2784

March 6, 2017	Hydraulic oil	50	L	Primary crusher	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm.	2783
March 6, 2017	Coolant	50	L	Vault pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2785
March 10, 2017	Hydraulic oil	40	L	Amaruq Road, KM 25	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2794
March 10, 2017	Hydraulic oil	30	L	Amaruq Road, KM 20	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2793
March 11, 2017	Hydraulic oil	60	L	Vault pit	Broken O'ring	Contaminated soil picked up and disposed of appropriately	2792
March 12, 2017	Coolant	60	L	Vault pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2798
March 13, 2017	Hydraulic oil	70	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2799
March 13, 2017	Hydraulic oil	500	L	Portage pit	Broken O'ring and pump	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2801
March 18, 2017	Hydraulic oil	15	L	Portage pit	Quick attach on hydraulic hose came loose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2803
March 20, 2017	Engine Oil	15	L	Portage pit	Oil pan punctured	Contaminated soil picked up and disposed of appropriately	2808
March 21, 2017	Water + Rust	30	L	Meadowbank tank farm	Unfrozen contaminated snow melted during idling	Contaminated soil picked up and disposed of appropriately	2811
March 21, 2017	Water + Rust	90	L	Meadowbank tank farm	Unfrozen contaminated snow melted during idling	Contaminated soil picked up and disposed of appropriately	2818
March 21, 2017	Hydraulic oil	50	L	Vault Camp	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2809
March 21, 2017	Hydraulic oil	20	L	Maintenance Shop	Broken seal	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2810

March 22, 2017	Engine Oil	40	L	Portage pit	Mechanical failure	Contaminated soil picked up and disposed of appropriately	2815
March 22, 2017	Hydraulic oil	15	L	Vault Parking	Mechanical failure	Contaminated soil picked up and disposed of appropriately	2812
March 22, 2017	Hydraulic oil	10	L	Pushback parking	Mechanical failure	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2816
March 23, 2017	Engine Oil	10	L	Portage pit	Mechanical failure	Contaminated soil picked up and disposed of appropriately	2817
March 24, 2017	Transmission Oil	44	L	End of the airstrip	Broken transmission hose	Contaminated soil picked up and disposed of appropriately	2822
March 25, 2007	Hydraulic oil	4	L	end of Airstrip	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2824
March 25, 2017	Hydraulic oil	40	L	Portage pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2823
March 25, 2017	Diesel Fuel	50	L	Amaruq Road, bridge km 10.7	Mechanical failure	Contaminated soil picked up and disposed of appropriately	2829
March 25, 2017	Hydraulic oil	40	L	Amaruq Road, KM 5.5	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2827
March 26, 2017	Hydraulic oil	60	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2826
March 27, 2017	Hydraulic oil	20	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2830
March 27, 2017	Coolant	15	L	Vault pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2831
March 29, 2017	Hydraulic oil	80	L	Portage pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2832
March 29, 2017	Diesel Fuel	4885	L	AWAR km 77	The tanker when off-road and flip on his side puncturing the tank	Transfer the fuel to another tanker, move the tanker out of the ditch and clean up the contaminated material	2834

March 30, 2017	Hydraulic oil	30	L	Pushback parking	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2833
April 1, 2017	Hydraulic oil	25	L	Portage pit	Broken O'ring	Contaminated soil picked up and disposed of appropriately	2846
April 3, 2017	Coolant	50	L	Vault pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2853
April 3, 2017	Hydraulic oil	30	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2854
April 5, 2017	Hydraulic oil	15	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2857
April 5, 2017	Hydraulic oil	80	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2858
April 6, 2017	Hydraulic oil	4	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2859
April 7, 2017	Diesel	25	L	Amaruq Road, bridge KM 24	Disconnection of the diesel fuel hose when moving the equipment	Spill was contained and contaminated soil picked up and disposed of appropriately	2867
April 7, 2017	Diesel	10	L	Vault Camp	Broken fuel tank	Spill was contained and contaminated soil picked up and disposed of appropriately	2861
April 8, 2017	Hydraulic oil	90	L	Vault pit	Broken O'ring	Contaminated soil picked up and disposed of appropriately	2866
April 8, 2017	Hydraulic oil	125	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2865
April 8, 2017	Hydraulic oil	40	L	Vault Camp	Broken O'ring	Contaminated soil picked up and disposed of appropriately	2864
April 12, 2017	Hydraulic oil	20	L	Portage pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2873

April 14, 2017	Hydraulic oil	90	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2872
April 14, 2017	Coolant	7	L	Amaruq Road, KM 19	Radiator leak	Contaminated snow was collected and disposed of properly	2880
April 14, 2017	Hydraulic oil	50	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2876
April 15, 2017	Hydraulic oil	25	L	Vault pit	Failed components	Contaminated soil picked up and disposed of appropriately	2897
April 15, 2017	Coolant	15	L	Vault pit	Failed components	Contaminated soil picked up and disposed of appropriately	2898
April 15, 2017	Coolant	25	L	Pushback Parking	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2878
April 15, 2017	Transmission Fluid	25	L	Vault Parking	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2879
April 17, 2017	Coolant	30	L	Portage Rock Storage Facility	Broken coolant hose	Contaminated snow picked up and disposed of adequately	2883
April 17, 2017	Coolant	10	L	Vault Rock Storage Facility	Coolant was overfilled and overflowed out of the tank with engine temperature increasing	Contaminated snow picked up and disposed of adequately	2887
April 20, 2017	Hydraulic oil	30	L	Goose Pit	Failed components	Contaminated soil picked up and disposed of appropriately	2899
April 20, 2017	Coolant	80	L	Vault pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2890
April 21, 2017	Engine oil	10	L	Maintenance shop	Dipstick popped out	Contaminated soil picked up and disposed of appropriately	2891
April 21, 2017	Hydraulic oil	200	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2894

April 22, 2017	Coolant	80	L	Vault pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2901
April 23, 2017	Hydraulic oil	10	L	Vault Parking	Wheel seal leak	Contaminated soil picked up and disposed of appropriately	2903
April 23, 2017	Hydraulic oil	90	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2905
April 23, 2017	Hydraulic oil	5	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2904
April 24, 2017	Hydraulic oil	8	L	Amaruq road, KM 30	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2909
April 25, 2017	Jet-A	50	L	MBK tarmac	The nozzle was left up side down and was dipping in the bottom of the trailer	Contaminated soil picked up and disposed of appropriately	2912
April 25, 2017	Hydraulic oil	10	L	Amaruq road, KM 30	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2914
April 26, 2017	Hydraulic oil	400	L	Portage waste dump	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2913
April 27, 2017	Diesel	10	L	Pushback Parking	Failure on equipment anti-return device	Contaminated soil picked up and disposed of appropriately	2918
April 27, 2017	Coolant	40	L	Amaruq Road, Esker 2B, KM 25	A seacan slipped on the side during elevation and cause a coolant spill	Spill was contained and contaminated soil picked up and disposed of appropriately	2917
April 27, 2017	Diesel	10	L	Maintenance Shop	Anti-return device on the equipment failure	Contaminated soil picked up and disposed of appropriately	2919
April 29, 2017	Diesel	20	L	Portage pit	Broken release valve	Contaminated soil picked up and disposed of appropriately	2920
April 30, 2017	Hydraulic oil	60	L	Amaruq Road, KM 44.8	Broken oil tank	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2928
April 30, 2017	Grease	10	L	Vault pit	Broken drive chain that punctured the housing	Contaminated soil picked up and disposed of appropriately	2924

May 3, 2017	Antifreeze	15	L	Vault pit	Broken antifreeze line	Contaminated soil picked up and disposed of appropriately	2932
May 4, 2017	Hydraulic oil	25	L	Vault pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2933
May 4, 2017	Coolant	30	L	Vault pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2934
May 5, 2017	Hydraulic oil	30	L	Vault pit	Broken O'ring	Contaminated soil picked up and disposed of appropriately	2935
May 5, 2017	Diesel	40	L	Vault pit	Breather malfunction	Contaminated soil picked up and disposed of appropriately	2936
May 5, 2017	Diesel	40	L	Vault pit	Breather malfunction	Contaminant wasn't collected due to the Shovel already loading. Incident reported to shop.	2938
May 5, 2017	Hydraulic oil	20	L	Portage pit	Broken hydraulic hose	Contaminated soil picked up and disposed of appropriately	2937
May 6, 2017	Diesel	30	L	Vault pit	Breather malfunction	Contaminated soil picked up and disposed of appropriately	2940
May 6, 2017	Diesel	40	L	Vault pit	Breather malfunction	Contaminated soil picked up and disposed of appropriately	2942
May 6, 2017	Coolant	40	L	Portage pit	Heated hose rupture	Contaminated soil picked up and disposed of appropriately	2941
May 6, 2017	Diesel	30	L	Vault pit	Breather malfunction	Contaminated soil picked up and disposed of appropriately	2939
May 7, 2017	Coolant	75	L	Vault parking	Radiator failure	Contaminated soil picked up and disposed of appropriately	2944
May 8, 2017	Hydraulic oil	40	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2947
May 9, 2017	TSS	33.66	Kg	Effluent of the East Dike Seepage	Probably due to freshet with snow melting	Discharge was stopped in SPL on May 11 and directed back to Portage pit	3019

May 11, 2017	Hydraulic oil	5	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2953
May 11, 2017	Coolant	30	L	Vault pit	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	3398
May 12, 2017	Coolant	30	L	Vault Camp	Radiator failure	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2958
May 14, 2017	Coolant	15	L	West Road	Broken coolant hose	Contaminated soil picked up and disposed of appropriately	2963
May 14, 2017	Coolant	20	L	Vault kitchen parking	Leak on the truck	Contaminated soil picked up and disposed of appropriately	2959
May 14, 2017	Hydraulic oil	60	L	Vault road	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm.	2965
May 14, 2017	Hydraulic oil	80	L	East Diversion Ditches Road	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	2966
May 14, 2017	Hydraulic oil	6	L	Portage Rock Storage Facility	Broken hydraulic hose	Contaminated soil picked up and disposed of in the landfarm	2962
May 14, 2017	Diesel	30	L	Portage pit	The air vent was leaking fuel	Spill was contained and contaminated soil picked up and disposed of in the landfarm.	2964
May 15, 2017	Hydraulic oil	20	L	Amaruq Road, Esker 2B	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2967
May 17, 2017	Hydraulic oil	30	L	Amaruq Road, Quarry 35	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2968
May 19, 2017	Hydraulic oil	20	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2974

May 20, 2017	Hydraulic oil	60	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2973
May 21, 2017	Hydraulic oil	5	L	Portage pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	2975
May 21, 2017	Hydraulic oil	35	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2976
May 22, 2017	Hydraulic oil	10	L	Meadowbank Camp	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2982
May 25, 2017	Hydraulic oil	8	L	Amaruq road	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2988
May 28, 2017	Coolant	10	L	Vault pit	Broken coolent hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2993
May 28, 2017	Hydraulic oil	40	L	Saddle Dam 3	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2998
May 29, 2017	Hydraulic oil	60	L	Vault camp	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	2999
May 31, 2017	Hydraulic oil	50	L	Vault parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3007
June 1, 2017	Hydraulic oil	25	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3008
June 2, 2017	Hydraulic oil	30	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3009

June 2, 2017	Hydraulic oil	30	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3010
June 4, 2017	Antifreeze	30	L	Vault road	Broken antifreeze line	Spill was contained and contaminated soil picked up and disposed of appropriately	3015
June 5, 2017	Hydraulic oil	30	L	Vault rock storage facility	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3017
June 5, 2017	Sulphur prill	0.2	Kg	Mill	Some sulphur prills spilled from a ripped bag when the employee opened the seacan	Spill was contained and contaminated soil picked up and disposed of appropriately	3022
June 6, 2017	TSS	50	Kg	NP1 lake	Due to freshet	Barriers deployed, fences, booms, have been put in place and exceedance were of short duration.	3108
June 6, 2017	Hydraulic oil	60	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3023
June 7, 2017	Coolant	20	L	Vault road	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3021
June 8, 2017	Hydraulic oil	20	L	Pushback parking	The operator noticed a leak while cleaning the haul truck	Spill was contained and contaminated soil picked up and disposed of appropriately	3024
June 8, 2017	Hydraulic oil	30	L	Goose road	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3030
June 9, 2017	Hydraulic oil	30	L	Primary crusher pad	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3029

June 10, 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3035
June 10, 2017	Hydraulic oil	30	L	Winter parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3041
June 10, 2017	Coolant	30	L	Amaruq road, Quarry at Km 35	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3036
June 11, 2017	Coolant	95	L	Vault pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3034
June 11, 2017	Hydraulic oil	40	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3037
June 11, 2017	Hydraulic oil	25	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3033
June 12, 2017	Hydraulic oil	50	L	Vault pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3042
June 12, 2017	Hydraulic oil	80	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3043
June 13, 2017	Hydraulic oil	50	L	Vault pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3044
June 13, 2017	Hydraulic oil	50	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3046
June 13, 2017	Hydraulic oil	80	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3045

June 14, 2017	Hydraulic oil	80	L	Vault pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3047
June 14, 2017	Hydraulic oil	50	L	Vault pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3048
June 15, 2017	Coolant	10	L	Pushback parking	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3053
June 15, 2017	Hydraulic oil	190	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3049
June 16, 2017	Hydraulic oil	20	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3061
June 16, 2017	Engine oil	20	L	Pushback parking	Failed engine component	Spill was contained and contaminated soil picked up and disposed of appropriately	3060
June 16, 2017	Hydraulic oil	30	L	Vault pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3058
June 16, 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3059
June 17, 2017	Hydraulic oil	50	L	Vault pit	Failed component	Spill was contained and contaminated soil picked up and disposed of appropriately	3062
June 17, 2017	Hydraulic oil	10	L	Vault pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3063
June 18, 2017	Hydraulic oil	15	L	Vault kitchen	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3064

June 24, 2017	Coolant	45	L	Vault parking	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3075
June 27, 2017	Coolant	60	L	Vault pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3086
June 30, 2017	Fuel	10	L	Vault camp	Possible crack on the fuel tank	Spill was contained and contaminated soil picked up and disposed of appropriately	3090
July 1, 2017	Fuel	35	L	Portage Rock Storage Facility	The fuel tank had expended because of the high temperature and fuel overflowed	Spill was contained and contaminated soil picked up and disposed of appropriately	3096
July 1, 2017	Hydraulic oil	10	L	Portage pit	Loose fitting	Spill was contained and contaminated soil picked up and disposed of appropriately	3094
July 2, 2017	Hydraulic oil	200	L	Pushback parking	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3097
July 3, 2017	Hydraulic oil	20	L	Tailings Storage Facility South Cell	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3099
July 3, 2017	Hydraulic oil	40	L	Vault Pit	Leak during mechanical works	Spill was contained and contaminated soil picked up and disposed of appropriately	3098
July 3, 2017	Coolant	80	L	Vault parking	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3103
July 6, 2017	Coolant	40	L	Vault pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3105

July 6, 2017	Coolant	25	L	Pushback parking	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3104
July 7, 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic pan	Spill was contained and contaminated soil picked up and disposed of appropriately	3106
July 8, 2017	Diesel	30	L	Maintenance Shop	Fuel leak	Spill was contained and contaminated soil picked up and disposed of appropriately	3107
July 9, 2017	Hydraulic Oil	20	L	Portage Rock Storage Facility	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3110
July 10, 2017	Coolant	6	L	Amaruq road KM 53	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3114
July 10, 2017	Coolant	20	L	Vault pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3111
July 13, 2017	Coolant	6	L	Amaruq road KM 43.5	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3120
July 13, 2017	Coolant	50	L	Vault pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3117
July 14, 2017	Coolant	6	L	Amaruq road KM 40.5	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3119
July 14, 2017	Hydraulic oil	40	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3116
July 14, 2017	Hydraulic oil	5	L	Vault camp	Loose fitting	Spill was contained and contaminated soil picked up and disposed of appropriately	3118

July 15, 2017	Coolant	30	L	Vault road	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3122
July 16, 2017	Coolant	30	L	Vault pit	The water pump blew	Spill was contained and contaminated soil picked up and disposed of appropriately	3125
July 18, 2017	Coolant	8	L	Amaruq road KM 6	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3133
July 19, 2017	Hydraulic oil	40	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3141
July 19, 2017	Hydraulic oil	40	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3144
July 20, 2017	Coolant	8	L	Amaruq road KM 53	Coolant leak on equipment	Spill was contained and contaminated soil picked up and disposed of appropriately	3142
July 22, 2017	Coolant	50	L	Vault pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3145
July 22, 2017	Coolant	20	L	Portage Pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3146
July 22, 2017	Coolant	30	L	Saddle Dam	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3148
July 23, 2017	Hydraulic oil	40	L	Amaruq road KM 26	Broken fan hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3149
July 23, 2017	Hydraulic oil	80	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3153

July 24, 2017	Hydraulic Oil	40	L	Amaruq road, Esker 3, KM 46	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3155
July 25, 2017	Engine Oil	15	L	Amaruq road KM 5.5	Mechanic overflow	Spill was contained and contaminated soil picked up and disposed of appropriately	3154
July 25, 2017	Coolant	40	L	Amaruq road KM 56	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3159
July 25, 2017	Hydraulic oil	10	L	Saddle Dam 4	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3156
July 26, 2017	Hydraulic oil	40	L	Goose Pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3399
July 26, 2017	Hydraulic oil	50	L	Vault	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3158
July 27, 2017	Transmission Fluid	30	L	Vault pit	Broken transmission line	Spill was contained and contaminated soil picked up and disposed of appropriately	3164
July 28, 2017	Fuel	200	L	Vault Camp	An instrumentation technician was there to pass and terminate a cable that was running by the fuel tank. When he got there, he noticed the spill.	Spill was contained and contaminated soil picked up and disposed of appropriately	3165
July 29, 2017	Coolant	120	L	Vault pit	High pressure caused leak	Spill was contained and contaminated soil picked up and disposed of appropriately	3170
July 29, 2017	Coolant	5	L	Vault Rock Storage Facility	Engine over heated and coolant came out of the overflow	Spill was contained and contaminated soil picked up and disposed of appropriately	3168

August 3, 2017	Hydraulic oil	50	L	Portage Rock Storage Facility	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3179
August 3, 2017	Hydraulic oil	30	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3178
August 3, 2017	Coolant	50	L	Vault parking	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3182
August 4, 2017	Hydraulic oil	15	L	Portage Rock Storage Facility	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3181
August 6, 2017	Hydraulic oil	80	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3185
August 6, 2017	Coolant	5	L	Vault pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3184
August 7, 2017	Hydraulic oil	200	L	Phaser Pit	Pinched valve	Spill was contained and contaminated soil picked up and disposed of appropriately	3317
August 8, 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3191
August 9, 2017	NaOH	25	kg	AWAR km 23	Tractor-Trailer roll-over	Spill was contained and contaminated soil picked up and disposed of appropriately	3274
August 9, 2017	Hydraulic oil	20	L	135 Waste dump	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3192
August 9, 2017	Coolant	15	L	Vault pit	Broken water pump	Spill was contained and contaminated soil picked up and disposed of appropriately	3195

August 10, 2017	Hydraulic oil	15	L	135 Waste dump	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3193
August 12, 2017	Transmission Fluid	20	L	Vault parking	Loose hose on transmission	Spill was contained and contaminated soil picked up and disposed of appropriately	3199
August 12, 2017	Hydraulic oil	10	L	Tailing pond	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3197
August 12, 2017	Hydraulic oil	30	L	Waste dump	Hydraulic hose failure	Spill was contained and contaminated soil picked up and disposed of appropriately	3198
August 13, 2017	Hydraulic oil	6	L	Amaruq road Quarry KM 35	20 L. pail not closed properly	Spill was contained and contaminated soil picked up and disposed of appropriately	3216
August 13, 2017	Hydraulic oil	40	L	Portage pit	Broken steering hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3218
August 14, 2017	Hydraulic oil	5	L	Amaruq road, Quarry KM 35	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3217
August 15, 2017	Coolant	1	L	Meadowbank camp	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3210
August 16, 2017	Hydraulic oil	40	L	Transit laydown	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3209
August 16, 2017	Hydraulic oil	4	L	Saddle Dam 3	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3215
August 16, 2017	Hydraulic oil	80	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3212

August 17, 2017	Engine oil	40	L	Portage pit	Engine leak	Spill was contained and contaminated soil picked up and disposed of appropriately	3208
August 17, 2017	Hydraulic oil	90	L	Vault pit	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3211
August 18, 2017	Engine oil	20	L	Portage pit	Residual oil from maintenance repairs	Spill was contained and contaminated soil picked up and disposed of appropriately	3219
August 20, 2017	Hydraulic oil	15	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3222
August 20, 2017	Hydraulic oil	40	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3221
August 23, 2017	Hydraulic oil	35	L	Vault transit	Broken hydraulic pump	Spill was contained and contaminated soil picked up and disposed of appropriately	3231
August 25, 2017	Coolant	75	L	Primary Crusher	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3232
August 25, 2017	Hydraulic oil	50	L	Primary Crusher	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3235
August 25, 2017	Brake oil	2	L	Amaruq road KM 46	Broken galliper	Spill was contained and contaminated soil picked up and disposed of appropriately	3236
August 25, 2017	Transmission oil	90	L	Portage pit	Broken transmission hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3234
August 26, 2017	Hydraulic oil	6	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3240

August 27, 2017	Coolant	15		Portage pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3400
August 28, 2017	Diesel	15		Pushback Parking	Overflow when refueling	Spill was contained and contaminated soil picked up and disposed of appropriately	3401
August 29, 2017	Hydraulic oil	4	L	Vault RSF	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3246
August 29, 2017	Coolant	30	L	Vault pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3247
August 31, 2017	Hydraulic oil	40	L	Meadowbank camp	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3248
August 31, 2017	Hydraulic oil	45	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3250
September 2, 2017	Fuel	6	L	Vault pit	Fuel leak	Spill was contained and contaminated soil picked up and disposed of appropriately	3252
September 2, 2017	Transmission	10	L	Pushback Parking	Cracked transmission hose.	Spill was contained and contaminated soil picked up and disposed of appropriately	3253
September 3, 2017	Hydraulic oil	50	L	Vault pit	Hydraulic leak	Spill was contained and contaminated soil picked up and disposed of appropriately	3254
September 4, 2017	Hydraulic oil	50	L	Vault pit	Hydraulic leak	Spill was contained and contaminated soil picked up and disposed of appropriately	3257
September 6, 2017	Coolant	70	L	Vault pit	Broken heater hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3261

September 9, 2017	Coolant	20	L	Saddle dam 3	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3264
September 10, 2017	Coolant	20	L	Amaruq transit pad	Fan broke and hit the rad	Spill was contained and contaminated soil picked up and disposed of appropriately	3268
September 11, 2017	Hydraulic oil	60	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3269
September 13, 2017	Hydraulic oil	80	L	Primary crusher	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3273
September 14, 2017	Diesel	500	L	BL refueling station	The fuel meter was not accurate (new fuel meter)	Spill was contained and contaminated soil picked up and disposed of appropriately	3279
September 15, 2017	Coolant	10	L	Portage pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3280
September 16, 2017	Hydraulic oil	10	L	Refer pad	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3283
September 17, 2017	Hydraulic oil	50	L	Vault RSF	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3284
September 18, 2017	Hydraulic oil	60	L	Portage pit	Front right jack cylinder seal broke.	Spill was contained and contaminated soil picked up and disposed of appropriately	3286
September 18, 2017	Hydraulic oil	7	L	Vault parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3285
September 18, 2017	Coolant	35	L	Vault dump	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3288

September 19, 2017	Compressor Oil	20	L	Vault Pit	Drain plug broke off	Spill was contained and contaminated soil picked up and disposed of appropriately	3289
September 20, 2017	Hydraulic oil	40	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately	3292
September 21, 2017	Transmission Fluid	75	L	Vault Pit	Blown Oring on the transmission line	Spill was contained and contaminated soil picked up and disposed of appropriately	3295
September 22, 2017	TSS	5.895	KG	Second portage discharge	TSS Exceedence due to a natural event	Stop the discharge	3349
September 23, 2017	Diesel	10	L	Camp/ tankfarm	Fuel nozzle slipped out of tank	Spill was contained and contaminated soil picked up and disposed of appropriately	3299
September 25, 2017	Coolant	20	L	Vault parking	Broken radiator hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3304
September 25, 2017	Oil	25	L	Lube station	Hose came off of the Used Oil tote	Spill was contained and contaminated soil picked up and disposed of appropriately.	3343
September 25, 2017	Coolant	30	L	Vault parking	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3309
September 26, 2017	Transmission Fluid	35	L	South Cell TSF	Broken Transmission	Spill was contained and contaminated soil picked up and disposed of in the land farm.	3307
September 26, 2017	Hydraulic oil	40	L	Portage Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm	3311
September 26, 2017	Hydraulic oil	50	L	Vault Road	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3308

September 27, 2017	Hydraulic oil	50	L	Vault Pit	Busted on "0" ring	Spill was contained and contaminated soil picked up and disposed of appropriately	3312
September 28, 2017	Hydraulic oil	90	L	Vault Road	Hydraulic fitting	Spill was contained and contaminated soil picked up and disposed of appropriately.	3310
September 29, 2017	Diesel	10	L	Saddle dam 3	Broken welding	Spill was contained and contaminated soil picked up and disposed of appropriately.	3342
September 29, 2017	Diesel	10	L	Saddle Dam 3	Broken welding	Spill was contained and contaminated soil picked up and disposed of appropriately.	3330
September 30, 2017	Hydraulic oil	50	L	Saddle dam 3	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3341
September 30, 2017	Hydraulic oil	50	L	Saddle dam 3	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3331
October 2, 2017	Hydraulic oil	20	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3335
October 2, 2017	Hydraulic oil	60	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3345
October 2, 2017	Hydraulic oil	3	L	Vault pit parking	Broken hoist cylinder hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3329
October 2, 2017	Hydraulic oil	25	L	Vault pit parking	Hydraulic hose leak	Spill was contained and contaminated soil picked up and disposed of appropriately.	3344
October 3, 2017	Coolant	63	L	Phaser pit	Coolant leak due to broken rad	Spill was contained and contaminated soil picked up and disposed of appropriately.	3336

October 3, 2017	Hydraulic oil	20	L	Vault kitchen parking	Broken hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3337
October 3, 2017	Petroleum products	20	L	Vault kitchen parking	Broken hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3338
October 4, 2017	Diesel	20	L	Phaser and Vault intersection	Poor driving visibility and driver's misjudge	Spill was contained and contaminated soil picked up and disposed of appropriately.	3351
October 5, 2017	Hydraulic oil	165	L	Phaser pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3346
October 5, 2017	Coolant	10	L	Portage pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3348
October 5, 2017	Diesel fuel and Engine oil	20	L	Outside of maintenance shop	Fuel entering engine oil while running. Fuel overfilled engine oil crank case and overflowed out of crank case breathers onto the ground.	Spill was contained and contaminated soil picked up and disposed of appropriately.	3347
October 5, 2017	Engine oil	20	L	Outside of maintenance shop	Engine oil was escaping out of oil pan drain tube.	Spill was contained and contaminated soil picked up and disposed of appropriately.	3350
October 6, 2017	Hydraulic oil	40	L	Vault pit	O-Ring on Hammer hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3355
October 6, 2017	Diesel	24	L	Portage pit	Crack on fuel tank	Spill was contained and contaminated soil picked up and disposed of appropriately.	3354
October 6, 2017	Engine oil	5	L	Portage pit	Failure seal between the engine and a pump	Spill was contained and contaminated soil picked up and disposed of appropriately.	3356

October 7, 2017	Compressor Oil	16	L	Vault pit	busted hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3358
October 7, 2017	Diesel	50	L	Maintenance downline dome side	Fuel meter leaking	Spill was contained and contaminated soil picked up and disposed of appropriately.	3357
October 8, 2017	Petroleum products	60	L	Vault refuge parking	Unreported spill	Spill was contained and contaminated soil picked up and disposed of appropriately.	3361
October 8, 2017	Diesel	4	L	Portage pit	Split in the fuel tank	Spill was contained and contaminated soil picked up and disposed of appropriately.	3360
October 9, 2017	Hydraulic oil	90	L	Phaser pit	Hydraulic cap came off the tank	Spill was contained and contaminated soil picked up and disposed of appropriately.	3359
October 9, 2017	Fuel	150	L	Baker Lake Tank farm	Overfilling	Spill was contained and contaminated soil picked up and disposed of appropriately.	3363
October 10, 2017	Hydraulic oil	50	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3371
October 10, 2017	Hydraulic oil	200	L	Phaser pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3372
October 10, 2017	Hydraulic oil	85	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3370
October 12, 2017	Hydraulic oil	20	L	South cell	Final drive Leaking	Spill was contained and contaminated soil picked up and disposed of appropriately.	3375
October 12, 2017	Coolant	60	L	Transit spud barge Baker Lake	Cracked tote inside a sea can and while lifting, some coolant spilled out	Spill was contained and contaminated soil picked up and disposed of appropriately.	3383

October 15, 2017	Hydraulic oil	10	L	Vault parking	Leaking hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3381
October 16, 2017	Diesel	25	L	Pushback parking	Overfilled tank	Spill was contained and contaminated soil picked up and disposed of appropriately.	3380
October 16, 2017	Hydraulic oil	20	L	Portage Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3384
October 17, 2017	Hydraulic oil	67	L	Vault parking	Leaking hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3388
October 18, 2017	Hydraulic oil	78	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3390
October 18, 2017	Engine Oil	62	L	Portage Rock Storage Facility	Engine failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3389
October 18, 2017	Hydraulic oil	20	L	Vault Rock Storage Facility	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3391
October 20, 2017	Hydraulic oil	15	L	Vault parking	Swing filter failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3396
October 25, 2017	Hydraulic oil	30	L	Vault Rock Storage Facility	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3404
October 27, 2017	Hydraulic oil	30	L	Pushback parking	Rubber seal on hydraulic hose of hoist cylinder failed	Spill was contained and contaminated soil picked up and disposed of appropriately.	3405
October 28, 2017	Diesel	100	L	Portage Pit	Fuel nozzle froze and stayed open while refueling	Spill was contained and contaminated soil picked up and disposed of appropriately.	3409

October 28, 2017	Hydraulic oil	60	L	Vault Pit	Quick attach hose failed	Spill was contained and contaminated soil picked up and disposed of appropriately.	3411
October 29, 2017	Hydraulic oil	60	L	Pushback parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3413
October 30, 2017	Hydraulic oil	75	L	Maintenance Shop	Oil storage tank failed	Spill was contained and contaminated soil picked up and disposed of appropriately.	3414
October 30, 2017	Hydraulic oil	80	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3417
October 30, 2017	Hydraulic oil	80	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3420
November 1, 2017	Coolant	50	L	Vault parking	O'ring failure from radiator	Spill was contained and contaminated soil picked up and disposed of appropriately.	3510
November 2, 2017	Compressor oil	30	L	Portage Pit	O'ring hose failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3432
November 2, 2017	Diesel	90	L	Vault refuge parking	Busted fuel Hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3433
November 6, 2017	Coolant	10	L	Vault parking	Leaking radiator	Spill was contained and contaminated soil picked up and disposed of appropriately.	3438
November 7, 2017	Hydraulic Oil	10	L	Portage Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3442
November 5, 2017	Hydraulic Oil	1	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3444

November 7, 2017	60 WT gear oil	40	L	Phaser Pit	Maintenance repair	Spill was contained and contaminated soil picked up and disposed of appropriately.	3445
November 8, 2017	Transmission oil	10	L	Vault kitchen	Transmission cover was unscrew	Spill was contained and contaminated soil picked up and disposed of appropriately.	3451
November 8, 2017	Coolant	10	L	Camp / Sana yard	Leak on a hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3458
November 9, 2017	Diesel	5	L	Meadowbank tank farm	Spill occurred when removing the fuel tube from the tanker truck.	Spill was contained and contaminated soil picked up and disposed of appropriately.	3459
November 12, 2017	Diesel	5	L	Vault parking	Hydraulic "O" ring failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3460
November 11, 2017	Diesel	30	L	Vault parking	Frozen Vent On Fuel Tank	Spill was contained and contaminated soil picked up and disposed of appropriately.	3463
November 12, 2017	Hydraulic Oil	50	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3464
November 13, 2017	Diesel	10	L	Vault Pit	Broken component on a fuel line from the fuel tank to the engine	Spill was contained and contaminated soil picked up and disposed of appropriately.	3466
November 14, 2017	Hydraulic Oil	80	L	Vault Pit	Hydraulic Block failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3467
November 14, 2017	Engine Oil	12	L	Maintenance Shop	Engine failed and engine oil spilled	Spill was contained and contaminated soil picked up and disposed of appropriately.	3468
November 20, 2017	Hydraulic Oil	20	L	Vault parking	Blown hydraulic line	Spill was contained and contaminated soil picked up and disposed of appropriately.	3472

November 24, 2017	Hydraulic oil	10	L	Vault Phaser 1 Dump	Broken hydraulic oil	Spill was contained and contaminated soil picked up and disposed of appropriately.	3482
November 24, 2017	Coolant	40	L	Portage Pit	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3483
November 24, 2017	Hydraulic oil	10	L	Vault parking	Busted hydraulic o-ring	Spill was contained and contaminated soil picked up and disposed of appropriately.	3484
November 26, 2017	Hydraulic Oil	10	L	Pushback Parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3487
November 27, 2017	Hydraulic Oil	25	L	Portage Pit	Final drive plug failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3492
November 27, 2017	Hydraulic Oil	25	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3493
November 27, 2017	Hydraulic Oil	15	L	Portage Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3494
December 1, 2017	Glycol	15	L	Maintenance	Broken radiator hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3499
December 2, 2017	Steering oil	50	L	Waste dump	Broken hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3502
December 2, 2017	Hydraulic fluid	23	L	Maintenance shop	Leak	Spill was contained and contaminated soil picked up and disposed of appropriately.	3500
December 5, 2017	Coolant	70	L	Camp	Overfilled	Spill was contained and contaminated soil picked up and disposed of appropriately.	3507

December 6, 2017	Hydraulic fluid	20	L	Vault parking	Broken quick attach hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3506
December 8, 2017	Coolant	20	L	Primary crusher	Busted coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3511
December 9, 2017	Hydraulic Oil	90	L	Vault Pit	Hydraulic hose failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3512
December 9, 2017	Hydrex Oil	200	L	Oil pad	Punctured tote when manipulated with forklift due to uneven ground	Spill was contained and contaminated soil picked up and disposed of appropriately.	3513
December 9, 2017	Engine Oil	5	L	Auxiliary Equipment Meadowbank	Broken hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3518
December 9, 2017	Coolant	30	L	Vault pit	Broken hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3514
December 9, 2017	Coolant	30	L	Vault pit	Broken hose clamp	Spill was contained and contaminated soil picked up and disposed of appropriately.	3516
December 10, 2017	Engine oil	60	L	Vault RSF	Leak	Spill was contained and contaminated soil picked up and disposed of appropriately.	3517
December 11, 2017	Coolant	400	L	Open Pit Meadowbank	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3519
December 11, 2017	Hydraulic oil	85	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3520
December 12, 2017	Engine oil	20	L	Phaser pit	Breather vent frozen	Spill was contained and contaminated soil picked up and disposed of appropriately.	3521

December 14, 2017	Windshield washer	150	L	Vault coverall	Broken valve	Spill was contained and contaminated soil picked up and disposed of appropriately.	3525
December 14, 2017	Hydraulic oil	60	L	Vault parking	O'ring failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3529
December 15, 2017	Oil	12	L	Lube station	Overfilled	Spill was contained and contaminated soil picked up and disposed of appropriately.	3531
December 16, 2017	Hydraulic oil	30	L	Primary Crusher	O'ring failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3534
December 17, 2017	Coolant	20	L	Vault parking	Leak on the radiator core	Spill was contained and contaminated soil picked up and disposed of appropriately.	3532
December 17, 2017	Hydraulic oil	30	L	Vault kitchen	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3533
December 18, 2017	Engine oil	15	L	Vault parking	Drain plug wear under flywheel housing	Spill was contained and contaminated soil picked up and disposed of appropriately.	3537
December 18, 2017	Hydraulic oil	15	L	Mine Meadowbank	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3538
December 18, 2017	Hydraulic oil	30	L	Tear Drop Lake Road	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3539
December 19, 2017	Hydraulic oil	20	L	Mine Meadowbank	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3543
December 19, 2017	Coolant	35	L	Pushback parking	Leak on the radiator core	Spill was contained and contaminated soil picked up and disposed of appropriately.	3540

December 20, 2017	Hydraulic oil	10	L	Phaser pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3544
December 20, 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3541
December 21, 2017	Hydraulic oil	10	L	Vault parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3552
December 21, 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3551
December 22, 2017	Coolant	10	L	Primary crusher ramp	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3553
December 23, 2017	Hydraulic oil	15	L	Portage pit-E	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3559
December 22, 2017	Engine oil	10	L	Waste dump	Oil leak	Spill was contained and contaminated soil picked up and disposed of appropriately.	3556
December 23, 2017	Engine oil	40	L	Primary crusher	Breather was plugged so engine oil spilled over the loader and onto the ground.	Spill was contained and contaminated soil picked up and disposed of appropriately.	3555
December 23, 2017	Coolant	50	L	Portage pit	Coolant leak	Spill was contained and contaminated soil picked up and disposed of appropriately.	3554
December 23, 2017	Hydraulic oil	10	L	Vault	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3557
December 23, 2017	Hydraulic	15	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3558

December 24, 2017	Fuel	40	L	Phaser pit	Leak coming out of the breather	Spill was contained and contaminated soil picked up and disposed of appropriately.	3561
December 24, 2017	Hydraulic oil	50	L	Vault	Broken hydraulic cap	Spill was contained and contaminated soil picked up and disposed of appropriately.	3560
December 24, 2017	Hydraulic oil	10	L	Vault parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3564
December 24, 2017	Hydraulic oil	5	L	Vault parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3563
December 24, 2017	Coolant	10	L	Vault parking	Broken coolant line	Spill was contained and contaminated soil picked up and disposed of appropriately.	3565
December 24, 2017	Fuel	20	L	Vault	Leak	Spill was contained and contaminated soil picked up and disposed of appropriately.	3562
December 25, 2017	Coolant	25	L	Vault parking	Broken coolant line	Spill was contained and contaminated soil picked up and disposed of appropriately.	3567
December 25, 2017	Fuel	20	L	Vault	Leak	Spill was contained and contaminated soil picked up and disposed of appropriately.	3566
December 27, 2017	Engine oil	5	L	Portage parking	Loose engine oil filter	Spill was contained and contaminated soil picked up and disposed of appropriately.	3568
December 28, 2017	Hydraulic oil	75	L	Phaser	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3576
December 29, 2017	Hydraulic fluids	60	L	Winter parking	Failed wheel seal during cold start up	Spill was contained and contaminated soil picked up and disposed of appropriately.	3575

December 29, 2017	Hydraulic	50	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.	3574
December 29, 2017	Coolant	50	L	Phaser	Coolant hose failure	Spill was contained and contaminated soil picked up and disposed of appropriately.	3579
December 30, 2017	Hydraulic oil	80	L	Close to Vault Parking	Broken steering cylinder.	Spill was contained and contaminated soil picked up and disposed of appropriately.	3582

Landfarm

Meadowbank's first landfarm (Landfarm 1) is located on the north-west side of the South Tailings Cell (Tailing Storage Facility; TSF). The South Tailings Cell is currently active; tailings are deposited and water is reclaimed from the cell. The tailings and water level in the South Tailings Cell are increasing in elevation over time, and eventually Landfarm 1 will become flooded with reclaim water. For this reason, Agnico decided to find an alternate location for a new landfarm (Landfarm 2), in order to continue the treatment of contaminated soil. Landfarm 2 was constructed in 2016, but no contaminated soil was added until 2017.

It is estimated that between September 2016 and January 2017, 1485 m^3 of soil were added to Landfarm 2 from excavation of spills around the Meadowbank site. In addition, 605 m^3 were relocated to Landfarm 2 from Landfarm 1, leaving 655 m^3 in Landfarm 1. Approximately 175 m^3 of coarse material was removed from Landfarm 2 through screening. Screened coarse material was placed in the Waste Rock Storage Facility, as no hydrocarbon stains or odours were present. No soil sampling for removal of fine soil was conducted in 2017, and no soil was removed.

NRC conducted chemical and microbiological analyses of soil samples from the landfarm in October, 2017. Results indicated a moderate level of PHC F2 and F3 contamination (i.e. exceedances of CCME guidelines), with no BTEX nor PAHs detected above the RDL. Soil nitrogen and TOC contents were moderate, and the bacterial numbers, both total heterotrophs and diesel degraders, were typical for a soil of this type. Mineralization results

The majority of material deposited in the Landfarm was generated through the clean-up of spills at the Meadowbank site with additional material generated from spills occurring in Baker Lake locations and along the AWAR. A summary of spills occurring in 2017 including those sent to the landfarm are provided in Table 7.2.

Sewage sludge continues to be used in the landfarm as a soil amendment. Sewage sludge was added to all piles as a nutrient amendment in July for a total of 54 m^3. The sludge was spread across all piles. Landfarm piles were aerated in July and October 2017 by mixing the top half of each windrow with a front-end loader or excavator, and again with the modification work done at both landfarms.

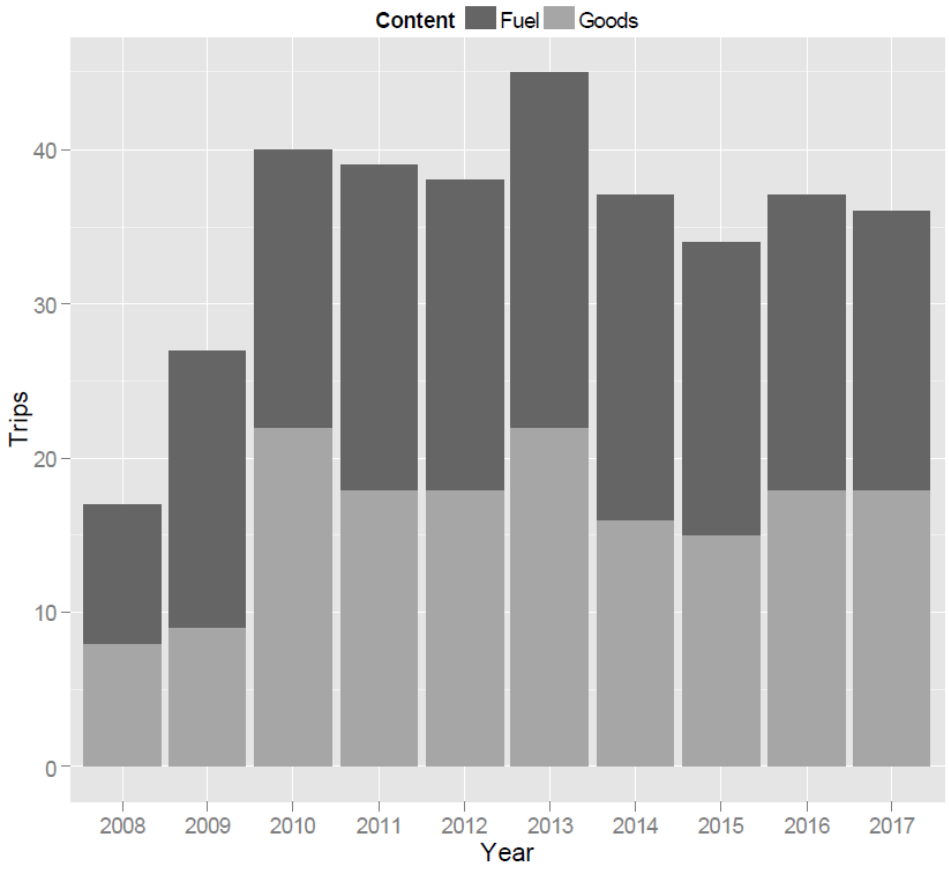
For Landfarm 2, the useful area is 3815 m^2, which is similar to the useful area of the Landfarm 1 before the 2016 extension (3712 m^2). It is considered that contaminated material can be stockpiled up to 4 m high. Accounting for a 25% loss of area due to sloping at that windrow height, the landfarm area will allow for the storage of a maximum of 11,445 m^3. With a current contaminated soil stockpile volume of 2570 m^3 (including remaining soil at Landfarm 1), and conservatively assuming no soil remediation & removal prior to closure, Landfarm 2 will be able to accommodate an additional 8875 m^3 of soil. With an average annual excavated spill volume of 346 m^3 (LDMP), the available landfarm volume will not be exceeded within the expected life of mine. Thus, ample room will be available to accommodate a designated area for spreading of contaminated coarse-grained material that cannot be bioremediated, and to maintain smaller windrow piles to maximize rates of biodegradation and volatilization.

Appendix F3, "2017 Landfarm Report", contains more information on landfarm activities in 2017.

As required by NIRB Project Certificate No.004 Condition 82: ***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.***

In 2016, Agnico monitored the ingress/egress of ship cargo at Baker Lake and the results are summarized in the below Figure 35.

Figure 35. Barge traffic (number of trips/year) arriving in Baker Lake from Chesterfield Inlet since 2008



In 2017, no spills occurred during the ship cargo ingress/egress.

As required by NIRB Project Certificate No.004 Condition 75: ***provide a complete list of possible accidents and malfunctions for the Project; it must consider the all-weather road, shipping spills, cyanide and other hazardous material spills, and pitwall/dikes /dam failure, and include an assessment of the accident risk and mitigation developed in consultation with Elders and potentially affected communities***

A list of possible accidents and malfunctions are included in the following Meadowbank Gold Project management plans provided in Appendix I1 of the 2013, 2016 and 2017 Annual Report:

- *Hazardous Materials Management Plan, v3, October 2013;*
- *Spill Contingency Plan, v6, March 2016;*
- *Emergency Response Plan, v12, January 2018;*
- *Oil Pollution Emergency Plan v8, May 2017;*
- *OMS Manual for TSF v8, March 2018;*
- *OMS Manual for the dewatering dikes v7; March 20187.*

Table 7.2 shows all spills that occurred on site, in Baker Lake and along the AWAR in 2017. Most spills were between 10 and 80L and were due to mechanical issues (e.g. broken hydraulic hoses).

As per NIRB Recommendation 14 found in "*NIRB's 2014-2015 Annual Monitoring Report for the Meadowbank Gold Project and Board's Recommendation*": Condition 75 requires that the Proponent provide a complete list of possible accidents and malfunctions for various Project components which includes an assessment of the accident risk and mitigation developed in consultation with Elders and Meadowbank Gold Project – 2014 Annual Report potentially affected communities. Although it is unclear in the submitted management plans whether and how these were developed in consultation with Elders and potentially affected communities. The Board requests that Agnico provide within its 2014 annual reporting, further discussion as to how various management plans relating to accident risk and mitigation have been developed in consultation with Elders and potentially affected communities.

In the 2014 Annual Report, Agnico complied with most of this condition, including the provision of a list of possible accidents and malfunctions as contained in the Spill Contingency and Emergency Response Plans. These Plans were originally reviewed as part of the NIRB and NWB License application process. As such there was extensive public review which included elders' participation at the associated hearings.

Furthermore, Agnico has consulted, yearly, with Elder representation as part of the Baker Lake Liaison Committee. No significant spills occurred in 2017 and therefore possible accidents and malfunctions were not specifically discussed at the committee meetings in 2017. Although there were no concerns raised regarding this issue, Agnico did reassure the committee that the company would respond adequately to any spills occurring on the road. Agnico holds the yearly meeting with the community at large to discuss the AWAR Safety (December 13th, 2017).

In 2017, as part of the International Cyanide Management Code (ICMC), no specific meeting were held with Baker Lake Community. However, notices have been posted on social media and radio announcements.

To prevent and ensure accidents and malfunctions are dealt appropriately the following activities were held in 2016:

- Crisis management training were held at the Meadowbank site to test Agnico ability to respond to a crisis. Personnel from all departments participated in the crisis scenario. Also, training session regarding the role and responsibility were given to management people in 2017.

- Personnel at the Baker Lake Marshalling facility were given an information/training session on how to react to a major spill at the Baker Lake Bulk Fuel Storage & Marshalling Facility in July

2017. Among these personnel were Marshalling Area Supervisors, Warehouse Technicians, Environmental Technicians, and contractors from Intertek. This training was provided by the Environment Department.

SECTION 8. MONITORING

As required by Water License 2AM-MEA1525 Schedule B, Item 16: ***The results of monitoring under the Aquatic Effects Management Plan (AEMP) including:***

- ***Core Receiving Monitoring Program (CREMP);***
- ***Metal Mining Effluent Regulation (MMER) Monitoring;***
- ***Mine Site Water Quality and Flow Monitoring (and evaluation of NP-2);***
- ***Visual AWAR water quality monitoring;***
- ***Blast Monitoring;***
- ***Groundwater Monitoring.***

8.1 CORE RECEIVING ENVIRONMENT MONITORING PROGRAM (CREMP)*

The CREMP 2017 report can be found in Appendix G1. P. Please take note that the following is just a summary of the CREMP report and Agnico will refer you to the whole report in Appendix G1 for an exhaustive comprehension of the program and results for 2017. The CREMP focuses on identifying changes in limnological parameters, water and sediment chemistry, or changes to primary (phytoplankton) and secondary (benthic invertebrate community) aquatic producers that may be associated with mine development activities. This is accomplished through the application of a temporal/spatial trend assessment that includes application of quantitative decision criteria (i.e., early warning "triggers" and action "thresholds") to facilitate immediate and objective decision-making regarding appropriate management actions. This information is integrated annually into the Aquatic Ecosystem Monitoring Program (AEMP) for holistic environmental management and decision making.

Meadowbank Study Lakes

CREMP monitoring started in 2006 and in-water mine development started in 2008. Key mine development activities that could result in changes to the aquatic receiving environment include: East Dike construction (2008), Bay-Goose Dike construction (2009-10), dewatering of both lakes and impoundments (2009-11, 2013, 2014), effluent discharge (2012 to present), and general site-related mining activities that mostly generate dust (e.g., rock crushing, blasting, ore and waste hauling; 2008 to present). Key findings for 2017:

- Water Chemistry – Statistically significant mine-related changes were detected relative to baseline/reference conditions at one or more near-field (NF) areas for alkalinity (SP); conductivity (TPN, TPE, SP, WAL); hardness (TPN, TPE, SP, WAL); major cations (i.e., calcium, potassium, magnesium, and sodium [TPN, TPE, SP, WAL]); TDS (TPN, TPE, SP, WAL), and TKN (WAL). In the absence of effects-based thresholds (e.g., CCME water quality criteria) for these parameters, their triggers were set at the 95th percentile of baseline data. While these results represent mine-related changes, the observed concentrations are still relatively low and unlikely to adversely affect aquatic life. There were no trigger exceedances in 2017 for any water quality parameters with CCME water quality guidelines, including metals. The trends in water chemistry will be monitored in 2018.

* TSM- Biodiversity Conservation

- Sediment Chemistry – Quantitative trigger analysis was completed on metals data from the sediment core samples (1.5 cm horizon). Grab samples were also submitted for analysis in 2017 for analysis of habitat variables (particle size and TOC), metals, and organics analysis on the top 3-5 cm of sediment. As new data were available, trigger values were updated in 2017 for use in deciding which metals to carry forward in formal BA statistical analysis of changes compared to baseline conditions.

  The core sample results showed that chromium concentrations continue to exceed the trigger value at TPE, and statistically significant changes compared to the baseline period were identified in the BA statistical analysis. While grab sample results showed a reduction in 2016, they also increased in 2017. The increasing trend in chromium concentrations at this location was investigated in detail in 2015, when a targeted bioavailability study was conducted to assess sediment geochemistry and toxicity at TPE; those results indicated that the changes in chromium, likely related to dike construction material, did not pose risks to the benthic community. However, current chromium concentrations are no longer comparable to the results from 2015 upon which the conclusion of no toxicity was based. Recommended management actions for 2018 are to repeat the coring program to verify if the continued increase observed in 2017 was real or if conditions had stabilized and repeat the bioavailability study that was undertaken in 2015 (i.e., to see if the changes are ecologically relevant).

  Wally Lake was the only other NF station with trigger exceedances in the sediment sample collected in 2017. Lead and chromium were only marginally above their respective trigger values, but arsenic was approximately 2.5-times higher in 2017 relative to the baseline and trending higher relative to the last coring cycle in 2014. However, there is some uncertainty regarding whether this trend is due to natural spatial heterogeneity. Notwithstanding, no effects to benthic invertebrate community richness or abundance were identified in the 2017 BACI analysis. Recommended management actions for 2018 are to repeat the coring program to verify the nature of the observed trend (i.e., real or due to spatial heterogeneity) and conduct a targeted bioavailability study (i.e., to see if the changes are ecologically relevant).

- Phytoplankton Community – Phytoplankton biomass was statistically significantly higher at TPE, SP, and WAL in 2017 relative to reference/baseline conditions. The observed increase in the BACI assessment was not linked back to any observable Site-related activities. Higher biomass would be expect to occur if nutrient loading to the areas was identified in the BACI analysis of water chemistry, but nutrient concentrations remain well below levels associated with increased primary productivity. Changes in biomass identified in the BACI assessment appear to be due largely to lower biomass at INUG (the reference area) in 2017 compared to the baseline period, whereas the opposite was true at the NF areas. The divergent patterns of phytoplankton biomass between INUG and the NF areas resulted in a large “perceived” increase in biomass for the NF areas. The absolute biomass values at the NF are in line with their historical values. Taking into consideration all the lines of evidence (BACI and absolute values plotted over time), there is no evidence to suggest mining operations are increasing primary productivity in the NF areas. Phytoplankton richness was similar to previous monitoring cycles. The trends in phytoplankton biomass and richness will be reviewed again in 2018.

- Benthic Invertebrate Community – Benthic invertebrate abundance at TPE in 2017 was lower relative to INUG, consistent with observations from 2015 and 2016. The only statistically significant reduction in abundance was for the expanded 2015-2017 temporal assessment relative to INUG. However, the absolute total abundance at TPE in 2017 is consistent with recent years

and well within the range of natural variability. The "apparent" decrease in abundance at TPE relative to the baseline period is indicative of slightly divergent trends between INUG and TPE. Mean total abundance at INUG has increased slightly in the "after" period relative to the baseline 2006-2008 years, whereas TPE has remained relatively consistent throughout the "after" period, with 2009-2011 being the exception. Richness at TPE has remained consistent throughout the monitoring period, indicating that mining activities are not adversely affecting the structure of the benthic invertebrate community. Taking into consideration all available benthic invertebrate data at TPE, there is little to suggest mining activities are negatively impacting the community. No adverse effects were noted at the other NF areas in 2017. The trends in benthic invertebrate abundance and richness will be reviewed again in 2018.

Baker Lake

CREMP monitoring at Baker Lake started in 2008. Key mine-related activities include barge/shipping traffic and general land-based activities associated with the tank farm area. No spills of fuels, hydrocarbons or any other materials were reported in the vicinity of the barge dock or jetty in 2017. There were no cases where water quality parameters exceeded the triggers in 2016. Overall, no changes in the aquatic receiving environment were observed that were attributable to Agnico's activities in Baker Lake, and as such, no follow-up management actions are required for 2018 beyond routine monitoring.

8.2 MMER AND EEM SAMPLING

This section includes the results of the monitoring programs conducted under the Metal Mining Effluent Regulations (MMER) and its Schedule 5 Environmental Effects Monitoring (EEM) Studies. A list of the sampling location GPS coordinates is provided in Table 8.1.Figures 1, 2, 3 and 4 illustrate the location of sampling stations at the Meadowbank mine site, EEM receiving environment monitoring program, the Vault Site, and Baker Lake marshalling facilities, respectively. Certificates of Analysis are included in Appendix G2.

8.2.1 Portage Attenuation Pond Discharge

On November 19, 2014 tailings deposition commenced in the South Cell (Portage Attenuation Pond) and this represented the end of use of the Portage Attenuation Pond. There has been no further effluent discharge to Third Portage Lake since November, 2014. Therefore sample locations ST-9 (Portage Attenuation Pond effluent discharge point) or ST-MMER-1 are no longer active.

8.2.2 Vault Attenuation Pond Discharge

The Vault Discharge became subject to the Metal Mines Effluent Regulations (MMER) on June 27, 2013 during the dewatering of Vault Lake. Vault Discharge (sampling station ST-10, also named ST-MMER-2) from the Vault Attenuation Pond to Wally Lake occurred from June 19 to October 12, 2017. The total amount discharged in 2017 was 715,606 m^3.

In 2017, the TSS removal water treatment plant was not required as the contact water from the Vault Attenuation Pond was compliant with section 4 (1) of the of the MMER regulation as well as the Type A Water License criteria for TSS. Discharge monitoring samples were collected weekly and acute toxicity was sampled monthly. Agnico Eagle sent a requested to ECCC in February 2016 to reduce the testing

frequency of the Ra226 to once per quarter. On March 15, 2016, the request was approved by ECCC. Results are provided in Table 8.2.. The volume of water discharged to the environment was reported on a weekly basis under the MMER monitoring program and can be found in Table 8.3.

Under the Environmental Effects Monitoring (EEM) program, Agnico was required in 2017 to collect sub-lethal toxicity samples at this discharge point. As per subsection 6(1) *"[…] sub-lethal toxicity test under Section 5 shall be conducted two times each calendar year for three years and once each year after the third year […]*" because the Vault Lake Attenuation Pond Discharge became, in 2015, the mine's final discharge point that has potentially the most adverse environmental impact on the environment. The sub-lethal toxicity samples were collected, for the third year, on August 7th and September 11th, 2017. The water quality samples were taken from the discharge location, the receiving environment exposure area (WLE or ST-MMER-2-EEM-WLE) and reference area (TPS or ST-MMER-1-EEM-TPS). These sampling locations are highlighted on Figures 1,2 and 3. Results of the EEM water quality monitoring program are presented in Table 8.4. The EEM effluent characterization, were collected in June, July, August and September 2017.The water quality from the exposure (WLE) and reference (TPS) monitoring samples were only collected in July and August given the short duration of discharge . This data was previously reported to Environment Canada via the RISS electronic database reporting system.

8.2.3 East Dike Discharge

The East Dike Seepage Discharge became subject to the Metal Mines Effluent Regulations (MMER) on January 6, 2014. In 2017, Agnico continued to pump water from the two collection points, South and North seepage and discharged through a common header through a diffuser into Second Portage Lake. The seepage water was released into the environment, prior to contact with mining activity, without treatment as it is compliant with section 4 (1) of the regulation. Discharge monitoring samples were collected weekly and acute toxicity was sampled monthly. Agnico Eagle sent a request to ECCC in February 2016 to reduce the testing frequency of the Ra226 to once per quarter. On March 15, 2016, the request was approved by ECCC. Agnico sent a second request in August 2016 to ECCC to reduce the sampling frequency of Item 1 to 6 in column 1 of the Schedule 4, reduce acute lethality and Daphnia magna testing to not less than once per quarter. On September 15, 2016, ECCC approved the Agnico Eagle's request. The reduced frequency has started on October 1, 2016. Results are provided in Table 8.5.

East Dike Seepage (sampling station ST-8, also named ST-MMER-3) was discharged into the receiving environment, Second Portage Lake (SPL), from January 1 to May 11th and between September 5th until December 31, 2017. The total volume discharged in 2017 was 99,798 m^3. In 2017,two (2) elevated TSS event were recorded. Water was directed to the Portage Pit sumps and discharge to Portage pit restarted when the analysis results showed compliance with regulatory limits. TSS exceedances are describe in Section 8.3.3.5.

The volume of water discharged to the environment was reported on a weekly basis pursuant to the MMER monitoring program requirements. Table 8.6 provides a daily breakdown of volumes of water pumped.

Under the Environmental Effects Monitoring (EEM) program, Agnico was not required to collect sub-lethal toxicity samples at this discharge point as per subsection 5(2) of MMER regulation. Sub-lethal are collected at the Vault Attenuation Pond discharge as discussed in Section 8.2.2 above. The water quality samples were taken from the discharge location (ST-MMER-3), the receiving environment exposure area

(SPLE or ST-MMER-3-EEM-SPLE) and reference area (TPS or ST-MMER-1-EEM-TPS). These sampling locations are highlighted on Figures 1 and 2. Results of the EEM water quality monitoring program are presented in Tables 8.7. The EEM effluent characterization monitoring samples were collected in January, April, November and December. Samples were also collected from the exposure (SPLE) and reference (TPS) areas in January, April, November and December. This data was previously reported to Environment Canada via the RISS electronic database reporting system.

8.2.4 EEM interpretive Report Cycle 2 and EEM Study Design Cycle 3

The Meadowbank Mine began discharging treated effluent (TSS removal during dewatering activity) during 2009, and was subsequently required under the Metal Mining Effluent Regulations (MMER) to monitor effects of that effluent on fish and fish habitat. The second EEM Interpretive Report was submitted to Environment and Climate Changes Canada on June 26, 2015 (Appendix G3 of the 2015 Annual Report). This report documents the results of the adult fish population survey and the benthic invertebrate community survey completed for the mine`s Cycle 2 EEM biological monitoring studies, as well as the sub-lethal toxicity testing carried out on the Meadowbank Division effluent since the drafting of the Cycle 2 Study Design. Agnico received from the EEM Cycle 2 Interpretative report's comments from ECCC on January 20, 2017. On February 21, 2017 Agnico sent the response to ECCC's comments (Appendix G3 of the 2016 Annual report for ECCC comments and Agnico' s response)

As required by ECCC, a Biological Monitoring Study (EEM Cycle 3 study) was conducted in 2017 to assess the Wally Lake (Vault Discharge). The Vault discharge is currently the effluent which has been determined the greatest potential to have an adverse effect on the receiving environment. While discharge is occurring, plume/effluent mixing in the exposure area has been assessed during the summer of 2017 in support of the Cycle 3 study design. The study design was submitted to ECCC on February 17, 2017 (Appendix G3 of the 2017 Annual Report). On April 10, 2017 Agnico received comments from the TAP regarding our Cycle 3 Study Design. On April 26, 2017 Agnico responded to these comments (Appendix G4). The study design was and subsequently approved. To date, the full data of the study has been processed and results will be presented in the 2018 annual report.

8.3 MINE SITE WATER QUALITY AND FLOW MONITORING (AND EVALUATION OF NP2)

As required by Water License 2AM-MEA1525 Schedule B-15: ***The results and interpretation of the Monitoring Program in accordance with Part I and Schedule I.***

And

As required by DFO Authorizations NU-03-0191.3 Condition 3.1 (Second and Third Portage Lakes), NU-03-0191.4 (Vault Lake) Condition 3.1; NU-03-0190 Condition 5 (AWPAR), NU-14-1046 (Phaser Lake) Condition 3; ***Submit written report summarizing monitoring results and photographic record of works and undertakings.***

This section includes the aquatic monitoring requirements as detailed under the Water Quality and Flow Monitoring Plan (Agnico, 2017). A list of the sampling location GPS coordinates for aquatic monitoring programs conducted by Agnico is provided in Table 8.1. Summaries of associated aquatic monitoring reports are presented in the following section of this report and supporting documents are located in the listed appendices. Figures 1, 2, 3 and 4 illustrate the location of sampling stations at the Meadowbank

mine site, EEM receiving environment monitoring program, Vault Site, and Baker Lake marshalling facilities respectively. Certificates of Analysis are included in Appendix G2.

8.3.1 Construction Activities

As required by DFO Authorization NU-03-0191.3 Condition 3.1: ***The Proponent shall undertake monitoring and report to DFO annually, by March 31st, whether works, undertakings, activities or operations for the mitigation of potential impacts to fish and fish habitat were conducted according to the conditions of this Authorization.***

And

As required by DFO Authorization NU-03-0191.4 Condition 3.1: ***The Proponent shall undertake monitoring and report to DFO annually, by December 31st, whether works, undertakings, activities or operations for the mitigation of potential impacts to fish and fish habitat were conducted according to the conditions of this Authorization.***

In 2017, there were no occurrences where runoff water from any work, undertaking, activity or operation would flow directly or indirectly into a water body. No mitigation action was necessary.

8.3.2 Dewatering Activities

No dewatering activities occurred in 2017.

8.3.3 Mine Site Water Collection System

A water collection system comprised of the Stormwater Management Pond, attenuation ponds, tailings storage facilities, diversion ditches and sumps has been developed to control surface and groundwater at the Meadowbank project. The following section reviews the water quality monitoring conducted around the mine site. Volumes of water transferred around the mine site are also discussed (Table 8.8). Specific details regarding water transfers can be found in the 2017 Water Management Plan and Report (Appendix C2).

8.3.3.1 Stormwater Management Pond

The Stormwater Management Pond collects runoff water as well as the STP treated effluent. A total of 103,894 m^3 of water was transferred from the Stormwater Management Pond. (Table 8.8). No water was released into the environment.

8.3.3.2 Portage Attenuation Pond (ST-9)

As of November 19, 2014 when tailings deposition began in the South Cell TSF, the Portage Attenuation Pond ceased operation as an effluent discharge pond. Water in the South Cell TSF is currently used as reclaim water for the mill. There was no discharge from ST-9 into Third Portage Lake in 2017. The location of sampling station ST-9 is illustrated on Figure 1.

Channel crossing inspections were not undertaken in 2017 as no further discharge occurred from the Portage Attenuation Pond into Third Portage Lake.

8.3.3.3 Vault Attenuation Pond (ST-25)

Surface water was sampled monthly during open water from the Vault Attenuation Pond as per the requirements in the NWB Type A Water License (sampling station ST-25). There are no applicable license limits. The data is presented in Table 8.9 for information purposes only. The location of sampling station ST-25 is illustrated on Figure 3.

8.3.3.4 Vault Discharge (ST-10, ST-MMER-2)

The water collected in the Vault Attenuation Pond was discharged through the diffuser to Wally Lake as effluent from June 19th to October 9th, 2017 for a total of 715,606 m^3. Prior to discharge (June 5th 2017), samples were collected to confirm that no regulatory limits would be exceeded. The water was not treated at the onsite WTP for TSS removal as the water quality was in compliance with Water License Part F, Item 4 and MMER. Samples were collected weekly from the final discharge point (ST-10) as per the requirements of the Water License and MMER. Results are detailed in Table 8.10 and the location of ST-10 is shown on Figure 3. All results were in compliance with the Water License Part F, Item 4 for effluent quality limits as well as MMER criteria (Section 8.2.2 above).

8.3.3.5 East Dike Discharge (ST-8, ST-MMER-3)

As mentioned in Section 3.1.1 c, seepage rates and volumes through the East dike have been stable for the past six years. In 2017, 99,898 m^3 of water collected from the seepage at the East dike was pumped to Second Portage Lake through the diffuser.

Results from samples collected in 2017 at the final discharge point (ST-8) can be found in Table 8.11. Effluent water is analyzed as per NWB Water License Schedule I. The sampling location is illustrated on Figure 1. In 2017, two (2) results were not compliant with Water License Part F, Item 6 for TSS and MMER criteria:

- The effluent of the East Dike Seepage was sampled on May 9th. Laboratory result of the sample was received on May 11th. Result for total suspended solid (TSS) of 34 mg/L exceeded the regulatory limit of 30 mg/L-Maximum Allowable Grab Sample Concentration (mg/L) according to the Water License 2AM-1525 Based on a total flow of 990 m^3 between May 9th 8am and May 11th 6:40pm, the quantity of TSS release is estimated at 33.66 kg. The 2:30 hours delay between receipt of the results and stop of the discharge is only due the operational constraint, i.e. adjustment of piping and valve to permit the discharge of the water back to Portage Pit. All mitigation measures have been done in a timely manner. Discharge to Second Portage Lake has been directed to Portage pit on May 11th. The discharge to Second Portage Lake restarted on September 5th, 2017 as the analysis results showed compliance with regulatory limits. A follow-up report was sent to regulators on June 9th.

- The effluent of the East Dike Seepage was sampled on September 18th, 2017. Laboratory result of the sample was received on September 22nd. Result for total suspended solid (TSS) of 32 mg/L exceeds the regulatory limit of 30 mg/L-Maximum Allowable Grab Sample Concentration (mg/L) according to the Water License 2AM-MEA1525. Based on a total flow of 1,733 m^3 between September 18th and September 22nd, the quantity of TSS is estimated at 55.49 kg. Discharge of the East Dike Seepage to Second Portage Lake was stopped on September 22nd and has been directed to the Portage Pit. The discharge to Second Portage Lake restarted on October 29th as the analysis showed compliance with regulatory limits. A follow-up report was sent to regulators on October 21st .

8.3.3.6 Tailings Storage Facility (ST-21)

The North Cell Tailings Storage Facility became operational in February 2010. On November 17, 2014 the reclaim water intake was transferred from the North Cell TSF to the South Cell TSF. Tailings deposition was also stopped in the North Cell TSF and commenced in the South Cell TSF at that time. As per the NWB Water License, sampling station ST-21 changed location from the North to the South Cell. Sampling was conducted monthly as per the requirements of the NWB Water License. There are no applicable license limits for this station as the water is used as reclaim water at the mill. Sample results are presented in Table 8.12. The location of sampling station ST-21 (South Cell TSF) is illustrated on Figure 1. As per the water license, no more monitoring in the TSF North Cell is required.

8.3.3.7 North Portage Pit Sump (ST-17)

In 2011 a sump was constructed in the North Portage pit in an area of water accumulation. Water from the North Portage Pit sump was sampled monthly during open water as per the requirements in the NWB

water license (sampling station ST-17). There are no applicable license limits. The sampling location is illustrated on Figure 1 and results are presented in Table 8.13.

In 2017, a total of 184,005 m^3 was pumped out. From this amount, 166,268 m^3 of water was transferred from the North Portage Pit Sump to the South Cell TSF and 17,737 m^3 was transferred in Portage Pit B in October and November. See Table 8.8 for a breakdown per month.

8.3.3.8 South Portage Pit Sump (ST-19)

In 2017, water from the South Portage Pit sump was sampled monthly during open water as per the requirements in the NWB Water License (sampling station ST-19 on Figure 1). Results are presented in Table 8.14. There are no applicable license limits.

With limited activity in South Pit, no water was transferred from the South Portage Pit Sump to the South Cell TSF in 2017, as in in previous years.

8.3.3.9 Goose Island Pit Sump/Lake (ST-20)

In 2012 a sump was constructed in the Bay Goose pit in an area of water accumulation. Water that was collected in the Goose Pit sump was transferred to the South Cell TSF from January to June 2015. Mining activities have ceased in the Goose pit in April 2015. Starting in June 2015, no additional water was pumped out of the Bay Goose Pit; instead runoff and groundwater were kept in the pit to contribute to natural re-flooding of the pit. Planned reflooding activities were postponed to a subsequent year. Agnico will provide at least thirty (30) days' notice to the NWB and Inspector prior to the re-flooding as per Water License 2AM-MEA1525 Part E Item 12.

As mentioned in Section 3.1.1 c, seepage rates and volumes through the Bay Goose dike are not significant. No seepage collection system has been implemented because there is no evidence of significant seepage that had affected the mining operation or the dike integrity, and that warrants a collection system.

In 2017, Agnico collected four (4) monthly water quality samples from August to October at the bottom of the pit at station ST-20 Goose Pit Lake. Results of sampling conducted at station ST-20 Goose Island Pit Lake are presented in Table 8.15; the sampling location is illustrated on Figure 1. Three samples were also collected monthly during open water from July to September as per the requirements in the NWB water license at a sump a top of Bay Goose Pit (sampling station ST-20 Goose Pit Sump). The data are presented in Table 8.16; the sampling location is illustrated on Figure 1. There are no applicable license limits for ST-20 Goose Pit Sump and ST-20 Goose Pit Lake as the water was not directly released into the environment; the data is presented for information purposes only. Data analysis for samples collected at ST-20 Goose Island Pit Lake is presented in the 2017 Meadowbank Water Quality Forecasting Update (Appendix C of 2017 Water Management Report and Plan in Appendix C2).

8.3.3.10 Vault Pit Sump (ST-23)

In 2014 a sump was constructed in the Vault pit in an area of water accumulation. Water from the Vault Pit is to be sampled monthly during open water as per the requirements in the NWB water license (Figure 3). However, in 2017 due to safety issues in relation to the depth of the sump (no secure access), no water samples were collected in May and October (Table 8.17). Agnico Eagle will continue to maximize

efforts in ensuring that water sample will be collected in open water season month. The water accumulated in the Vault Pit sump was pumped to the Vault Attenuation Pond. A total volume of 149,876 m^3 was transferred in 2017; the monthly breakdown is provided in Table 8.8. There are no applicable license limits for ST-23.

8.3.3.11 Portage Rock Storage Facility (ST-16)

The Portage Waste Rock Storage Facility (PRSF) has been in operation since 2009. In 2013, ponded water was observed at the south-east base of the PRSF (sampling station ST-16). This was first reported in the 2013 Annual Report (as well as to regulators in July 2013) as a small volume of the seepage, with elevated levels of Cyanide, Nickel and Copper (among other constituents) had migrated, through a rockfill perimeter road, to the near shore area of NP-2 Lake. Agnico determined, in 2013, that the seepage contained reclaim water from the North Cell TSF that had flowed under the PRSF to a sump area designated as sampling station ST-16 (refer to RSF Seepage Golder Report in Appendix G5 of the 2013 Annual Report).

Mitigation measures were implemented in since 2013 and this included daily inspections during the freshet period, the installation of a pumping system in ST-16 to direct accumulated water back to the North Cell TSF, installation of four thermistors to analyse freezing in the PRSF and installation of a filter barrier along RF-1 and 2 to prevent water and tailings egress from the North Cell (tailings water) through the PRSF to ST-16. As part of progressive reclamation capping of the North Cell tailings commenced in winter 2015 and continued in 2016. The North portion on the North Cell was capped in 2015 and a 30m strip was placed in front of RF1 and RF2 in 2016 to eventually connect to the 2015 capping in winter 2017. Capping of the North Cell is continuing in 2018. In 2017, capping of the North Cell with soapstone continued for areas that were located outside the tailings covered areas. Capping was placed on original ground along the Portage RSF western boundary and at the northern boundary of the cell to fill the gaps left during capping from previous years and the existing infrastructures around the cell. The capping was placed in these areas to prevent any tailings and contact water migration outside the North Cell perimeter. The tailings are capped in the area of RF-1 and RF-2 which assist to prevent any seepage migration from the North Cell. Also in 2017, 238 762 m^3 of North Cell water was transferred to the South Cell reclaim pond minimizing the water contained in this cell. Thermistors installed in 2013 indicate that freezeback is occurring along the seepage path. Since 2014, a permanent pumping system has been operating at ST-16, to collect water and pump it to the TSF North Cell. Water volumes pumped from ST-16 and deposited in the North Cell TSF are provided in Table 8.8. Water volumes pumped in 2017 at ST-16 (25,815 m^3) was similar to the pumped volume of 2016 (20,844 m^3) and 2015 (19,236 m^3) and still lower than volume in 2014 (32,169 m^3). The installation of the filters at RF-1 and RF-2, capping of tailings and decreased water volume in the North Cell likely contributed to maintain low the volumes pumped. It is also an indication that mitigation measures have been effective in controlling and minimizing seepage from the North Cell.

In accordance with the 2017 Freshet Action Plan (see Appendix D of the 2017 Water Management Report and Plan (Appendix C2)), Agnico continued in 2017 to monitor water quality and contain the ST-16 Seepage. This is conducted to assess and prevent any impact to the receiving environment (NP2) and to downstream lakes (NP-1, Dogleg and Second Portage). Monitoring stations are illustrated on Figure 1. Water quality results can be found in Table 8.18 for ST-16, Table 8.19 for NP2, Table 8.20 for downstream lakes (NP-1, Dogleg and Second Portage Lake). 2014, 2015, 2016 and 2017 averages for parameters of concern can be found in Tables 8.21, 8.22, 8.23 and 8.24, respectively. Results are presented for information purposes only as there are no applicable license limits at this location.

From 2014 to 2017, average analysis results for applicable parameters confirmed no impacts to downstream lakes (NP-1, Dogleg, Second Portage Lake). The average Nickel, Cyanide Free, Cyanide Total, Ammonia (NH3) and Ammonia Nitrogen results are all below CCME, Water Licence and MMER criteria in NP-2 Lake. Cyanide levels were in any form has been detected in NP-2 or downstream lakes for the past 4 years. Copper is slightly elevated above CCME at NP-2 South, East, West, and NP1-West but has decreased from 2014 results. Under ice samples collected at NP2 show a similar trend. Also, the 2016 results slightly decreased from 2015 analysis results for contaminants of concern at the receiving environment and the downstream lakes monitoring stations. From the results, the action plan implemented by Agnico has been very successful in preventing any further seepage into NP-2 Lake and into the ST-16 sump itself. The MDRB has commented on the success of this action plan. The till plug, pumping system, installation of filters and effective tailings beaches at RF-1 and RF-2, progressive tailings capping at RF-1 and RF-2 and the dewatering of the North Cell in 2015 and 2016 have effectively mitigated this problem. In addition, thermistors installed in the RSF indicate freezing in the former seep path is occurring (which would mean that no water is migrating), as described in Section 5.3.2.

Table 8.21. 2014 Monitoring Results for ST-16, NP2, NP1, Dogleg and Second Portage Lake

Parameters	Regulatory limit			Unit	2014 Average							
	Water License	MMER	CCME		ST-16	NP-2 South	NP-2 East	NP-2 West	NP-1 West	Dogleg North	SPL-RSF Seep	NP-2 Winter
Ammonia (NH3)	NA	NA	2.33 as N	mg N/L	0.62	0.02	0.03	0.03	**0.01**	**0.01**	**0.01**	
Ammonia nitrogen (NH3-NH4)	32	NA	NA	mg N/L	28.85	2.90	2.93	3.19	0.22	0.01	0.02	7.10
CN total	1.00	1.00	NA	mg/L	1.38	0.02	0.01	0.01	0.003	**0.003**	**0.003**	0.03
CN Free (SGS)	NA	NA	0.005	mg/L	0.18	0.004	0.004	0.004	0.004	0.004	0.004	
CN WAD	NA	NA	NA	mg/L	1.12	0.02	0.004	0.01	0.004	0.003	0.003	0.05
Copper	0.2	0.60	0.002	mg/L	0.4871	0.0085	0.0076	0.0107	0.0021	0.0008	0.0006	0.0340
Nickel	0.4	1.00	0.025	mg/L	0.4934	0.0134	0.0126	0.0138	0.0043	0.0010	0.0006	0.0360

Bold values correspond to half detection limits.

Table 8.22. 2015 Monitoring Results for ST-16, NP2, NP1, Dogleg and Second Portage Lake

Parameters	Regulatory limit			Unit	2015 Average							
	Water License	MMER	CCME		ST-16	NP-2 South	NP-2 East	NP-2 West	NP-1 West	Dogleg North	SPL-RSF Seep	NP-2 Winter
Ammonia (NH3)	NA	NA	2.33 as N	mg N/L	0.01	**0.005**	**0.005**	**0.005**	**0.005**	**0.005**	**0.005**	**0.005**
Ammonia nitrogen (NH3-NH4)	32	NA	NA	mg N/L	1.1	**0.005**	0.027	**0.005**	**0.005**	**0.005**	**0.005**	0.007
CN total	1.00	1.00	NA	mg/L	0.02	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**
CN Free (SGS)	NA	NA	0.005	mg/L	**0.0025***	**0.0025***	**0.0025***	**0.0025***	**0.0025***	**0.0025***	**0.0025***	**0.0025**
CN WAD	NA	NA	NA	mg/L	0.007	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**
Copper	0.2	0.60	0.002	mg/L	0.047	0.005	0.006	0.005	0.0025	0.0004	**0.00025**	0.006
Nickel	0.4	1.00	0.025	mg/L	0.05	0.005	0.009	0.005	0.0025	0.0005	**0.00025**	0.006

Bold values correspond to half detection limits.

**Cn Free sample collected on August 18, 2015 was damaged during transportation. Therefore, it was not analysed. When Agnico noticed the situation, it was too late to collect another sample for the month.*

Table 8.23. 2016 Monitoring Results for ST-16, NP2, NP1, Dogleg and Second Portage Lake

Parameters	Regulatory limit			Unit	2016 Average							
	Water License	MMER	CCME		ST-16	NP-2 South	NP-2 East	NP-2 West	NP-1 West	Dogleg North	SPL-RSF Seep	NP-2 Winter
Ammonia (NH3)	NA	NA	2.33 as N	mg N/L	0.0063	**0.0050**	**0.0050**	**0.0050**	**0.0050**	**0.0050**	0.0063	**0.0050**
Ammonia nitrogen (NH3-NH4)	32	NA	NA	mg N/L	0.2775	0.0275	0.0325	0.0700	0.0438	0.0438	0.0250	0.1350
CN total	1.00	1.00	NA	mg/L	0.0020	**0.0015**	**0.0015**	**0.0015**	**0.0015**	**0.0015**	0.0016	**0.0022**
CN Free (SGS)	NA	NA	0.005	mg/L	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	0.0031	**0.0025**
CN WAD	NA	NA	NA	mg/L	**0.0015**	**0.0015**	**0.0015**	**0.0015**	**0.0015**	**0.0015**	0.0016	**0.0022**
Copper	0.2	0.60	0.002	mg/L	0.0259	0.0050	0.0031	0.0034	0.0027	0.0013	0.0011	0.0062
Nickel	0.4	1.00	0.025	mg/L	0.0369	0.0083	0.0056	0.0074	0.0047	0.0027	0.0066	0.0104

Bold values correspond to half detection limits.

Table 8.24. 2017 Monitoring Results for ST-16, NP2, NP1, Dogleg and Second Portage Lake

Parameters	Regulatory limit			Unit	2017 Average							
	Water License	MMER	CCME		ST-16	NP-2 South	NP-2 East	NP-2 West	NP-1 West	Dogleg North	SPL-RSF Seep	NP-2 Winter
Ammonia (NH3)	NA	NA	2.33 as N	mg N/L	**0.0200**	**0.0200**	**0.0020**	**0.0020**	**0.0020**	**0.0015**	**0.0020**	0.0143
Ammonia nitrogen (NH3-NH4)	32	NA	NA	mg N/L	0.3050	0.0338	0.0313	0.0338	0.0650	**0.025**	0.0338	0.0800
CN total	1.00	1.00	NA	mg/L	0.0743	0.0040	0.0045	0.0041	0.0023	0.0050	0.0035	0.0086
CN Free (SGS)	NA	NA	0.005	mg/L	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	0.0033
CN WAD	NA	NA	NA	mg/L	0.0528	0.0029	0.0030	0.0026	0.0020	0.0028	0.0031	0.0016
Copper	0.2	0.60	0.002	mg/L	0.0143	0.0029	0.0024	0.0023	0.0007	0.0004	0.0004	0.0044
Nickel	0.4	1.00	0.025	mg/L	0.0176	0.0044	0.0042	0.0035	0.0021	0.0006	0.0003	0.0086

Bold values correspond to half detection limits.

The KIA requested that Agnico continue monitoring until there is a 5 year period of non-detect cyanide results. To date (previous 4 years) the monitoring has indicated no CN levels in NP-2, NP-1 and downstream lakes, Dogleg and Second Portage. Thus the current program will continue in 2018. In 2018, Agnico will assess the data after the sampling season as required.

8.3.3.12 PRSF – Waste Extension Pool (WEP/ ST-30 and ST-31)

In 2014, as per inspections conducted within the framework of the Freshet Action Plan, run off was noted at the northeast side of the NPAG waste rock extension pile in a natural depression (WEP). Agnico contained this run off and pumped it back to the North Cell TSF as a precaution and to prevent egress to the East Diversion non-contact water ditch. In 2017, 24,738 m^3 of water was pumped from the WEP collection system to the North Cell TSF which includes 14,456 m^3 of water from WEP1 and 10,282 m^3 from WEP2 (Table 8.8). The water from the WEP collection system is pumped to the ST-16 sump system, and the pumped to the North Cell TSF. In 2015 and 2016, respectively 15,569 m^3 and 5,496 m^3 of water was pumped from the WEP collection system to the North Cell TSF. The increased of volume in 2017 being closely related to snow and freshet conditions and overall effectiveness of the WEP sumps in collecting water.

WEP1 and WEP2 sumps were constructed in September 2015 (Appendix G4 of the 2015 Annual Report) to better manage water around the northeast side of the PRSF and to ensure that all water ponding behind the PRSF is transferred back to the North Cell TSF (and eventually transferred to the South Cell). The sumps WEP1 and WEP2 have replaced the natural depression forming the former WEP for the water management in this area. Sumps locations are illustrated on Appendix G4 of the 2015 Annual Report. Sampling have commence in 2016 at sumps WEP1 and WEP2 as per NWB Water License 2AM-MEA1525. There are no applicable license limits. The sampling location is illustrated on Figure 1 and results are presented in Table 8.25 for WEP1 and Table 8.26 for WEP 2.

Results of samples collected in 2016 at station ST-5 (East Diversion ditch discharge point into NP2) are documented in Table 8.27. The results from summer 2017 show that no water coming from the former WEP collection system was in contact with the East Diversion ditch. Agnico will continue to monitor the area and will ensure that water collected in WEP1 and WEP2 sumps are pumped back into the North Cell TSF.

8.3.3.13 Vault Rock Storage Facility (ST-24)

The Vault Waste Rock Storage Facility (VRSF) has been in operation since 2013. As in the past, ponded water was observed at the base of the VRSF (sampling station ST-24). In 2017, water was sampled only in June. As per NWB Water License, samples were collected to assess water quality and the results are presented in Table 8.28. No water was pumped from this location as it is mainly a ponding area without flow and will dry-up during warmer months. There are no applicable license limits at this location as there is no discharge to the environment; the data is presented for information purposes only. The location of this sampling station (ST-24) is illustrated on Figure 3.

8.3.3.14 Saddle Dam 1 (ST-S-2)

Water accumulated at the base of Saddle Dam 1 was pumped into the North Cell TSF (13,102 m^3 in 2017 – Table 8.8). This water originates from non-contact surface runoff from the surrounding terrain because of the topography. Water samples were collected during the open water season to assess water quality. There are no applicable license limits for this location as the water was not being released into the environment; the data is presented in Table 8.29 for information purposes only. The sampling location (ST-S-2) is illustrated on Figure 1. The water accumulation at the toe of Saddle Dam 1 does not have any major consequence on the integrity of the TSF infrastructure, as the water is pumped and properly managed. As said previously, waster was pumped back to the North Cell TSF as a mitigation measure. Inspection continues to be held at this location on a weekly basis to ensure conformity.

8.3.3.15 Central Dike Seepage (ST-S-5)

Sampling was conducted monthly as per the requirements of the NWB water license. There are no applicable license limits for this station as the water is pumped back to the South Cell TSF. Sample results are presented in Table 8.30. See Figure 1 for the location of ST-S-5. As show on Table 8.8, in 2017, 4,699,046 m^3 of water was pumped from this sump. The volume is similar to volume pumped out in 2016 (4,597,688 m^3). In 2017, the totality of the water was transferred from the Central Dike Seepage Sump to the South Cell TSF except from August to October where a part of the water accumulated in the sump was pumped to Goose Pit. A total volume of 332,177 m^3 was transferred to Goose Pit. Refer to Section 8.3.7.2 for details on the Central Dike seepage regarding consequence and mitigation measure in place.

8.3.3.16 Saddle Dam 3 (ST-32)

Water accumulated at the base of Saddle Dam 3 was pumped into the South Cell TSF (16,061 m^3 in 2017 – Table 8.8). This water originates from non-contact surface runoff from the surrounding terrain. Water samples were collected during the open water season to assess water quality. There are no applicable license limits for this location as the water was not being released into the environment; the data is presented in Table 8.31 for information purposes only. The sampling location (ST-32) is illustrated on Figure 1. Water accumulation at the toe of Saddle Dam 3 does not have any consequence on the integrity of the TSF infrastructure. As said previously, water was pumped back to the South Cell TSF as a mitigation measure. Inspections continue to be held at this location on a weekly basis to ensure conformity.

8.3.3.17 Landfarm

Meadowbank's first landfarm (Landfarm 1) is located on the north-west side of the South Tailings Cell (Tailing Storage Facility; TSF). The South Tailings Cell is currently active; tailings are deposited and water is reclaimed from the cell. The tailings and water level in the South Tailings Cell are increasing in elevation over time, and eventually Landfarm 1 will become flooded with reclaim water. For this reason, Agnico decided to find an alternate location for a new landfarm (Landfarm 2), in order to continue the treatment of contaminated soil. Landfarm 2 was constructed in 2016, but no contaminated soil was added until 2017. In 2017, some water runoff was identified at the landfarm in June 2017 but there was not sufficient volume to sample, or to require mitigative action, particularly since the direction of flow was directly towards the adjacent TSF.

8.3.3.18 Landfill

No water quality monitoring was completed at the landfill in 2017 as no leachate was observed. The total volume of waste transferred to the landfill in 2017 was 13,345 m^3. A monthly summary of the solid waste disposed at the landfill is presented in Table 6.2.

8.3.3.19 Sewage Treatment Plant

The Meadowbank mine site has one Seprotech L333 sewage treatment plant (STP) and three Little John 100 units in operation; the equipment operates together with one sewage discharge effluent stream directed to the Stormwater Management Pond (SMP). In 2017, water was pumped from the SMP to the South Cell TSF in May, June and July and to Goose Pit in September. There is no discharge to any receiving waters. The SMP also collects spring runoff from the surrounding area.

Samples are taken in accordance with Operation & Maintenance Manual – Sewage Treatment Plan for the purpose of determining operating efficiency of the units. Sample results are available in Table 8.32. Results of the sample analysis are submitted to the NWB in the monthly monitoring reports.

The total volume of treated sewage discharged in 2017 was 33,118 m^3. In addition, 744 m^3 of sewage sludge was collected and disposed of in the Tailings Storage Facility. A monthly summary of the volume of STP waste is presented in Table 8.33.

8.3.3.20 Meadowbank Bulk Fuel Storage Facility

Water collected in the secondary containment area of the bulk fuel storage tank at the Meadowbank mine site was sampled only one time on May 29th, 2017. Results are presented in Table 8.34 and the sampling location (ST-37) is illustrated on Figure 1. No water quality parameters exceeded the water quality limit stipulated in Part F, Item 8 of the 2AM-MEA1525 Water License. Notifications to the INAC Inspector, made in accordance with Part F, Item 12 of NWB License 2AM-MEA1525, were sent June 5th , 2017. As a result, 240 m^3 of water was discharged to the Stormwater Management Pond via a temporary pipe from the secondary containment area of the Meadowbank bulk fuel storage tank.

8.3.3.21 East and West Diversion Ditches

The East and West Diversion ditches were constructed in 2012 around the North Cell TSF and the Portage RSF. The diversion ditches are designed to redirect the fresh water from the northern area watershed away from the tailings pond and RSF and direct it to Second (via NP2) and Third Portage Lakes. Water from the East diversion ditch (sampling station ST-5) and the West diversion ditch (sampling station ST-6) were sampled monthly during open water as per the requirements in the NWB Water License. Results are presented in Table 8.27 and Table 8.35 respectively; the sampling location is illustrated on Figure 1. Results complied with the Water License criteria - stated in Part E Item 6.

8.3.3.22 NP1 Lake

As part of the Freshet Action Plan, the Meadowbank mine site is subject to regular monitoring, in particular, NP1 Lake is inspected daily during freshet season and measures deployed to ensure surface runoff within the Vault road and overall erosion of the area are limited within the receiving areas. NP-1 is a shallow pond - ~ 3.8 m at deepest and was noted as being non-fish bearing in the EIS for the Meadowbank Project. On June 6th early morning inspection, visual evidence was noted within the banks and shore of NP1 lake of colored water flowing downstream to the lake. Samples were collected for TSS analysis. Upon visual observation and reception of internal results the elevated TSS measured at NP1 lake was reported at the GN Spill line, KIA, GN and DFO at 12:26 on June 6th 2017. Results from the external laboratory was received on June 9th and confirmed exceedance of TSS in the receiving water body. Agnico Eagle has put in place a daily TSS monitoring program to follow the water quality until results are satisfying for Agnico Eagle and compliant with regulation for a period judged acceptable for confirmation that the runoff water will not impact the receiving body further.

8.3.4 Baker Lake Marshalling Facilities

Water collected in the secondary containment areas of the main (Tanks 1 – 4; ST-40.1) and additional (Tanks 5 - 6; ST-40.2) diesel bulk fuel storage facilities at the Baker Lake Marshalling Facility were sampled on May and June 2017. Notification to the INAC Inspector, made in accordance with Part F, Item 12 of NWB License 2AM-MEA1525, was sent on June 5th , 2017 for ST-40.2 and June 19th for ST-40.1. Approximately 13,600 m^3 of water was discharged from secondary containment Tank 1 to 4 (ST-40.2) to the tundra in June and 4,200 m^3 was discharged from ST-40.1 in July. In fact, Agnico used silt bags and transfer water from Tank 5-6 to containment of Tank 1-4. . The locations of these sampling stations (ST-40.1 and ST-40.2) are illustrated on Figure 4 and results are presented in Table 8.36.

In 2017, the Jet A secondary containment water (ST-38) was sampled internally for TSS levels as visual inspections noted coloration and sediment in the water contained within the Jet A tanks area. TSS levels

always exceeded the regulatory limit of 30 mg/L. For this reason, no water from the secondary containment of the Jet-A was discharged to the receiving environment in 2017. The water was either pumped in a water truck and discharged to the Meadowbank Stormwater Pond or thru a silt bag into secondary containment of diesel tank 5-6 (an estimated 1,030 m^3 of water was removed). This way, Agnico eliminated TSS and water quality became acceptable for discharge. Following this transfer, no water was discharge to the receiving environment without another regulatory sampling being completed. The sampling location is illustrated in Figure 4

As part of the Core Receiving Environment Monitoring Program (CREMP), water quality samples are collected at stations on Baker Lake during the open water season. Four monitoring stations are sampled; one at the Baker Lake community barge dock, one at the Baker Lake marshalling area, and two at upstream reference locations. For more details, please refer to the report entitled ‘’Core Receiving Environment Monitoring Program 2017” prepared for Agnico by Azimuth Consulting Group, attached as Appendix G1. The results indicate no effects from mine related activities.

8.3.5 All Weather Access Road (AWAR) and Quarries*

As required by DFO Authorizations NU-03-0190 Condition 5.3 (AWPAR); ***A photographic record of before, during and after construction, during decommissioning and after restoration, showing that all works and undertakings have been completed according to the approved Plan and conditions of this authorization […]***

A geotechnical structural inspection of the AWAR, including all culverts, bridges and quarries, was conducted by Golder Associates in 2017. This annual inspection is a requirement of the Water License. The findings are presented in the report entitled ‘2017 Annual Geotechnical Inspection, Meadowbank Gold Mine, Nunavut’, attached in Appendix B1. Agnico responses to the recommendations from the inspection are also included in Appendix B1.

In relation to Fisheries and Oceans Canada (DFO) Authorizations NU-03-0190, NU-03-0191.3, NU-03-0191.4, NU-08-0013 and NU-14-1046 Agnico maintains a Habitat Compensation Monitoring Plan (Agnico, 2017) to ensure that fish habitat compensation features are constructed and functioning as intended. Based on the schedule described in the HCMP, monitoring of compensation features currently occurs every 2 years. Monitoring was conducted in 2017 for the constructed spawning pad, located at stream crossing R02 along the all-weather access road. The constructed spawning pads were visually confirmed to be stable as designed. The next monitoring in planned for the summer of 2019.. Complete details can be found in the 2017 HCMP report found at Appendix G5.

8.3.6 QAQC Sampling

As required by NIRB Project Certificate No.004, Condition 23: ***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, on a type and frequency basis as determined by the NWB; results of analysis shall be provided to the NWB and NIRB’s Monitoring Officer.***

* TSM- Biodiversity and Conservation Management

The objective of quality assurance and quality control (QA/QC) is to assure that the chemical data collected are representative of the material being sampled, are of known quality, are properly documented, and are scientifically defensible. Data quality was assured throughout the collection and analysis of samples using specified standardized procedures, by the employment of accredited laboratories, and by staffing the program with experienced technicians.

All chemical analyses were performed by H2Lab (previously Multi-Lab Direct) in Val d'Or, Quebec, an accredited facility. All data from H2Lab underwent a vigorous internal QA/QC process, including the use of spiked samples and duplicate samples. All QA/QC data passed the laboratories acceptable limits. The laboratory certificates of quality control are presented in Appendix G2, following the corresponding certificates of analysis.

All toxicity tests were performed by Aquatox in Ontario. Testing was conducted as stipulated in the corresponding Environment Canada Biological Test Methods. QA/QC measures implemented by the lab, including the use of reference toxicants, met the acceptable limits. QA/QC data is presented with the toxicity reports in Appendix G2.

Field blanks are laboratory bottles filled with deionized water in the field, and then treated as a normal sample. They are used to identify errors or contamination in sample collection and analysis. Duplicate field water quality samples are collected simultaneously in the field and used to assess sampling variability and sample homogeneity. The following presents the percentage of duplicate and field samples collected from each of the monitoring programs:

- MMER and EEM monitoring programs: 12 duplicate samples and 12 field blanks were collected from a total of 64 samples, representing 18.8%;
- STP monitoring program: 6 duplicate samples were collected from a total of 36 samples, representing 16.7%;
- Surface water monitoring programs: 32 duplicate samples and 16 field blanks were collected from a total of 158 samples, representing 20.3%; and
- Bulk fuel storage facilities monitoring program: 2 duplicate samples and 2 field blank were collected from a total of 4 samples, representing 50.0%.

This represents approximately 19.8% of the samples collected, which is higher than the QA/QC duplicate program objective of 10%.

Analytical precision is a measurement of the variability associated with duplicate analyses of the same sample in the laboratory. Duplicate results were assessed using the relative percent difference (RPD) between measurements. The equation used to calculate a RPD is:

RPD = (A-B)/ ((A+B)/2)*100; where: A = field sample; B = duplicate sample.

Large variations in RPD values are often observed between duplicate samples when the concentrations of analytes are low and approaching the detection limit. Consequently, a RPD of 20% for concentrations of field and duplicates samples that both exceed 10x the method detection limit (MDL) is considered notable. The analytical precision of one QAQC sampling event is characterized as:

- High, when less than 10% of the parameters have variations that are notable;
- Medium, when 10 to 30% of the parameters have variations that are notable;
- Low, when more than 30% of the parameters have variations that are notable.

Results of the QA/QC data are presented in Tables 8.37 to 8.54 for the MMER and EEM, STP, Surface Water, and Bulk Fuel Storage Facility monitoring programs, respectively. The following is a brief summary of the QA/QC results, per sampling program:

- MMER and EEM (Tables 8.37 and 8.38): All the duplicate samples collected were considered as having high analytical precision. Only one duplicate sample shows a relative percent difference of 15%.

- STP (Table 8.39): Analytical precision is rated high for four sampling event and medium for 2 sampling event. However, as the number of parameters analysed is low, one sample with notable variation between field and duplicate samples will trigger a medium analytical precision.

- Surface Water (Tables 8.40-8.53): All QAQC sampling events conducted within the surface water quality program are rated as having high analytical precision except for 4 samples having a medium analytical precision between 11% and 25%.

- Bulk Fuel Storage Facility (Table 8.54): Analytical precision is rated high for the duplicate sampling event conducted at the Bulk Storage Facility.

The QA/QC plan was followed and samples were collected by qualified technicians. Given the high number of samples collected in 2017, it is common to have some RPD exceedances as a result of the discrete differences in the original and field duplicates. 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 is evident that field QA/QC standards during water sampling were maintained during sampling in 2017. Agnico technicians will continue to follow standard QA/QC procedures (Agnico, 2014) 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 sample water prior to sample collection.

For field measurements, the following equipment is used:

- Analite NEP 160 Meter (turbidity);
- Hach Meter (turbidity);
- Oakton PCS35 Meter (pH and conductivity);
- Hoskin Scientific (pH and conductivity);
- Hanna DO Probe (dissolved oxygen); and
- Hanna Multi-Parameter Meter (pH, dissolved oxygen and conductivity)
- Eureka Mantha 20+ Meter (pH, dissolved oxygen and conductivity)

The calibration data regarding these instruments is presented in Tables 8.55 to 8.62 for Analite Meters, GMW Turbidity meter, Hach meter, the Oakton PCS35, Eureka Mantra+ meter, Hoskin Scientific meter, Hanna Meters #1 and DO Probe, respectively.

QA/QC methods and results for specific field programs are discussed separately in their respective reports; these field programs are presented in the Appendices listed below:

- Appendix G1: *Core Receiving Environment Monitoring Program 2017* – Sections 2.3 and 3.1;
- Appendix G8: *2017 Groundwater factual report* – Sections 2.5.
- Appendix G10: *Air Quality and Dustfall Monitoring Report 2014*– Section 4.4;

8.3.7 Seepage

As required by Water License 2AM-MEA1525 Part I, Item 14: ***The results and interpretation of the Seepage Monitoring program in accordance with Part I, Item 13***
The Seepage Monitoring program includes the following locations:

Lake water Seepage Through Dewatering Dikes;
Seepage (of any kind) Through Central Dike;
Seepage and Runoff from the Landfill(s);
Subsurface Seepage and Surface Runoff from Waste Rock Piles;
Seepage at Pit Wall and Pit Wall Freeze/Thaw;
Permafrost Aggradation;
Mill Seepage.

8.3.7.1 Lake water seepage through dewatering dikes

As discussed previously, see Sections 3.1.1 and 8.3.3.5 regarding East Dike seepage interpretation and monitoring.

8.3.7.2 Seepage (of any kind) through Central Dike

As mentioned in Section 3.1.1c of this report, seepage was observed at the downstream toe of Central Dike during the fall period of 2014. The seepage appeared to be of low magnitude and of small volume. Once tailings deposition started in the South Cell in November 2014, daily inspections of the downstream toe of Central Dike were undertaken as part of the geotechnical inspection program. A small volume of water located against the downstream toe of Central Dike was noticed at that time. This water was contained between the West road and the Central Dike downstream toe. Agnico utilized piezometers, thermistors and a ground water well to monitor the dike integrity, the foundation temperatures and the piezometric levels within the structure and its foundation. The seepage is located within the mining footprint, away from the receiving environment and is confined directly downstream.

On April 14 2015, Agnico started pumping at the D/S toe of the dike to lower the water level. The water was pumped back to the South Cell TSF. Water quality was closely monitored to foresee any changes from initial conditions in terms of turbidity and clarity. A flowmeter was also installed to monitor the volume of water pumped. By July 7, 2015 pumping was still on going with a larger pump, and continued through 2016 and 2017. The water quality (clarity/turbidity) at the D/S toe is also visually assessed by the Engineering and Environment technical personnel during their daily inspection. In 2017, 4,366,869 m^3 of

water was pumped back into the South Cell TSF from the downstream area. In 2017, a total of 332,177 m^3 of water was pumped from the downstream area to Goose Pit.

A series of pumping tests were also performed by Agnico during the summer 2015 to measure the seepage flow according to the head pressure difference between the South Cell and the Central Dike downstream pond (sampling location ST-S-5). In September 2015, mitigation measures were defined with the support of Golder and it was confirmed that the Central Dike could be operated safely under certain conditions. In early November 2015, the downstream pond operational level was to be set at 115masl following Golder's recommendations (Golder, 2015). At the same time, a permanent and winterized pumping system was put in place to manage and track the water volumes through the winter. The deposition in South Cell TSF restarted on October 28th, 2015. Within the first two weeks of deposition, the seepage flow dropped from 800m^3/h to 400m^3/h and then has been hovering between 315 to 600 m^3/h since that time. These flows closely follow the ones predicted by Golder in the seepage modelling performed in 2017 and the 14 days moving average of the seepage flow is currently at the lowest it has ever been since it's discovery.

In fall 2016 a new electric pumping system was installed to replace the diesel unit previously installed the prior year, mainly to reduce fuel consumption. Pumping has continued until present day and will continue until pit flooding occurs. The figure below shows the general installation related to Central Dike seepage management.

In November 2016, Golder started a revision of the Central Dike seepage model (Central Dike Seepage and Performance Assessment Update, August 2017) to integrate new information following field investigation campaigns realized in 2015. The findings of the model were presented to the Meadowbank Dike Review Board (MDRB) in March 2017. The Board was pleased by the work done and recommended to proceed with a new field investigation campaign, completed in June 2017, to confirm the assumption of the new model.

On July 15th, 2017 a sudden rise in turbidity was observed at the Central Dike downstream seepage pond. In the following days, turbidity readings continued to be elevated. An increase in turbidity was observed on the field and a sludgy orange deposit was identified on shoreline rock of the downstream pond. A review of all instrumentation data was conducted following the July 18th inspection and only one instrument was showing unexpected behavior; a piezometer directly in the seepage pond showing temperature spikes. On July 22nd, Agnico sampled the orange precipitate at the bottom of the pond for mineralogy and chemical analysis. Aerial investigation of the South Cell TSF was performed during the morning of July 23rd. A large deformation in the tailings beach was identified in front of SD4 with smaller depressions surrounding this deformation. The Portage Pit was inspected and no seepage reporting to the pit wall or change in coloration or turbidity inside pit sumps was observed. The average seepage flow measured was around 575m^3/h in July 2017 compared to 450m^3/h predicted by the Central Dike seepage model updated by Golder in 2017. Agnico organized a meeting with the MDRB to revaluate the alert level of the Central Dike in accordance with the Tailings Storage Facility Operation Maintenance and Surveillance Manual (TSF OMS) and the Central Dike Trigger Action Response Plan (TARP). The alert level was raised from yellow to orange during this meeting and an action plan was developed to address the situation. The communication plan set in the TSF Operation, Maintenance and Operation Manual (OMS) has also been respected to notify applicable stakeholders.

Agnico identified the risk of tailings migration out of the South Cell TSF and established a sampling monitoring program to evaluate the nature of the Central Dike D/S pond orange precipitate. This program consisted of:

- Sampling, on a weekly basis, the South Cell reclaim water, Central Dike D/S pond and Portage Pit A sump;
- Sampling the orange precipitate in the Central Dike D/S pond and perform mineralogy and chemical analysis, and;

- Sampling of the tailings in front of SD4 and compare it to the grey sediment in the Central Dike D/S pond in order to evaluate the nature of the sediment.

Visual inspections were done on a daily basis coupled with daily instrumentation interpretation. Agnico also performed a bathymetry of the depressions in front of SD4 to evaluate its size and proliferation. This major depression was aerially inspected on a weekly basis.

Following the recommendation of the MDRB, Agnico initiated the evaluation of changing the global water and tailings management strategy of the South Cell TSF. The Board was pleased with the short term action plan developed by Agnico and recommended promoting tailings deposition in front of SD4 as soon as possible.

The bathymetry of the tailings depression by Saddle Dam 4 was completed on July 28th 2017 The depression has dimensions of 30x36x1m for an estimated volume of 1,080 m^3. Tailings deposition in the deformation area was successfully completed around mid-August 2017. It was observed during an helicopter inspection of August 14th that a significant tailings beach covered the toe of SD4 and the depression area.

An update on the Central Dike dike seepage situation was done during the MDRB annual meeting #22 held in Meadowbank from September 4th to 7th. The Board agreed with the approach to reduce the volume of water inside the South Cell TSF in order to reduce the hydraulic gradient towards the Central Dike downstream pond and consequently the seepage flow rate by transferring water from the seepage downstream pond to Goose Pit. It is worth mentioning that given the 1:1 ratio, it has the same effect as transferring directly from the South Cell.

Agnico moved forward with a water transfer from the Central Dike downstream pond towards Goose Pit, the water volume was maximized by Agnico and was constrained so a minimal operational freewater volume is kept in the South Cell for the critical winter months. As mentioned previously, a total of 332,177 m^3 was pumped from August 29th to September 19th and from October 3rd to October 8th. The Central Dike seepage flow rate reduced from 525 m^3/h to 367m^3/h in the week following the second phase of water transfers. Agnico is not considering additional water transfers from the South Cell or downstream seepage area to Goose Pit during the mine operations.

On September 28th, the analysis of the data collected during the sampling program revealed that the orange precipitate was the result of a biological process leading to the production of a ferric precipitate. Rises in turbidity and new ferric precipitate events will likely continue to happen in future years until pit flooding is completed.

The Central Dike seepage situation is considered under control as Agnico has the pumping capacity to deal with the seepage flow rate, the integrity of the infrastructure has not been compromised, no tailings were found outside the perimeter of the South Cell TSF and the nature of the orange precipitate was identified as a biological iron precipitate. The filling of the depression by sustained the tailings beach in front of SD4 shown that the depression was a localized and non-sustained event.

Daily visual inspections will continue to be completed. The monitoring of the Central Dike will continue throughout the operating life of the dike, with analysis of the instrumentation results and water quality monitoring, as required by the Water License. Constant pumping of the downstream pond to the South Cell TSF will continue until required in order to manage the water and ensure that the seepage water do not reach the receiving environment.

As mentioned previously, the Central Dike seepage is also included in the OMS Tailings Storage Facility, available in Appendix I1. The OMS described the specific mitigation actions in response to different scenarios related to Central Dike. Mitigation actions are indicated in order to prevent potential risks

related to the environment, water contamination and worker safety. The Central Dike Trigger Action Response Plan (TARP) is also included in the OMS Tailings Storage Facility.

8.3.7.3 Seepage and runoff from the landfill

Results and interpretation of this monitoring program are discussed in Section 8.3.3.17 above.

8.3.7.4 Subsurface seepage and surface runoff from waste rock piles

Sections 8.3.3.11 to 8.3.3.13 provide details regarding seepage monitoring at the Portage and Vault Rock Storage Facilities.

8.3.7.1 Seepage at pit wall and pit wall freeze/thaw and permafrost aggradation

No significant seepage was observed in 2017 in Portage Pit A. Some seepage along the faces were noted along the south/west wall of Portage pit E3. Seepage forces are observed along fracture planes exposed in the bench faces, particularly near the south end of the west wall as this area was originally talik, beneath the previously existing Third Portage Lake. Seepage faces can be expected to contribute to instability of the ultramafic and other rock types during cyclic freeze-thaw.

The Goose pit mining activities were completed in April 2015 prior to any melting or spring shifting. Therefore, the seepage in Goose Pit did not jeopardize any mining activity and now contributes to the re-flooding of the pit.

Water inflows and seepage were noted in a number of areas of the Vault pit in 2017. The locations for water inflows and seepage noted during the 2017 inspection remain the same as for the 2016 inspection. There are three main areas of the pit where water inflow or seepage are noted. These are generally related to the dewatering of Vault Lake, to the current lake level, and to release of water stored in the talik beneath the former lakes.

The “Annual Review of Portage and Goose Pit Slope Performance (2017) - Meadowbank Mine” provides more details regarding seepage at pit walls (Appendix B3).

8.3.7.2 Mill Seepage

On November 4, 2013, it was observed that water was seeping through the road in front of the Assay Lab Road. In December 2013, Agnico requested Tetra Tech (formerly EBA) to perform an assessment, drilling delineation program and provide a report with recommendations in early 2014. All recommendations made in this report will be completed, prior to closure. Construction of an interception trench was completed in April-May 2014 and repairs and sealing of containment structures within the mill were completed during the summer of 2014. In November 2015 work was conducted to repair portions of the mill floor and ensure its watertight integrity. Additional elastomeric sealant was applied in the floor joints. Agnico also put in place an internal action plan and monitoring program for this seep in 2014. The monitoring is part of the Freshet Action Plan (2018). Refer to Appendix D of the 2017 Water Management Report and Plan (Appendix C2) for more details regarding the monitoring and action taken by Agnico before, during and after the freshet at this seepage area.

The pumping occurs in the warmer months beginning when freshet commences. The recovery well MW 203 is pumped year round when water available. No flow of water has been pumped during winter months in 2017 in the trench because of frozen conditions. Table 8.63 below presents the volumes of water pumped back to the mill from the seepage from 2014 to 2017. Agnico observed that the flow to the trench increased in 2017 (22,977 m^3) compared to 2016 (11,078 m^3) but is still below 2015 (30,543 m^3) which was required to pump year round, in both the trench and the well. The increase in flow measured in 2017 may be attributable to increased freshet run offs since no pumping is required in the well or the trench in winter. This is aligned with the observations for other locations such the 2017 Goose Pit inflows and RSF seepage area (ST-16).

Table 8.63. Assay Road Seepage pumped volume – 2014-2017

Month	Pumped Volume (m^3)			
	2014	2015	2016	2017
January	0	871	0	0
February	0	306	0	0
March	0	500	0	0
April	0	680	0	0
May	2,450	347	0	3,025
June	1,935	10,803	2,588	3,973
July	1,158	6,633	2,270	4,961
August	3,979	4,467	3,599	3,782
September	2,420	4,584	2,109	6,687
October	1,043	1,188	512	549
November	842	164	0	0
December	871	0	0	0
Total	**14,698**	**30,543**	**11,078**	**22,977**

Daily visual inspections were conducted during freshet. Prior and after freshet, inspection were conducted weekly and after rain events.

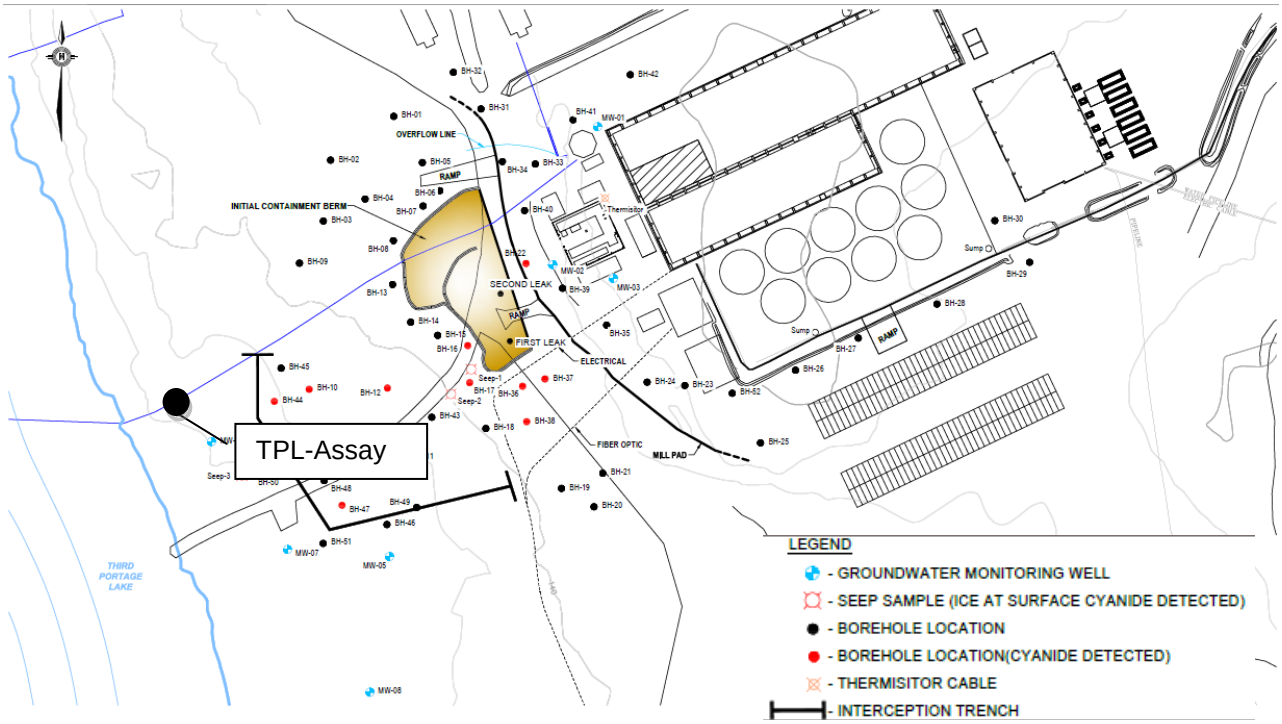
Weekly water samples were collected for CN WAD in well and trench. In addition, as per the Freshet Action Plan, monthly CN Free, CN total, copper and iron samples were collected when water was present at the interception trench and Third Portage Lake as well as Monitoring Wells 4, 5, 6, 7 and 8 (presented on Figure 36 below). At KIA's request, additional monitoring was also conducted monthly during open water at TPL. Table 8.64, 8.65 and 8.66 contain regulatory guidelines, and monitoring results from the seepage and Third Portage Lake (TPL-Assay), respectively. It should be noted that wells MW-04 and MW-06 were dry in 2016 and 2017.

Samples were taken in 2017 at the trench, MW-05, MW-07, MW-08 and MW-203. CN Free results in 2017 were all below or near the detection limit of the CCME guideline for the Protection of Aquatic Life. Concentrations of CN total are below regulatory water license and MMER guidelines. Concentrations of copper are below MMER and/or water licence guidelines at the trench and monitoring wells but all higher than the CCME guideline. Iron concentrations are higher than the CCME guideline at monitoring wells MW-203, and MW-07. Agnico observed an increase in concentration of elements 2017 comparatively to 2016 and 2015. Monitoring will be continued in 2018 as per the Freshet Action Plan in 2018 to identify if trending if maintained. While concentrations in well downstream of the trench have increase since 2015,

impacts to the environments have been limited by pumping collected water back to the milling process with no water being discharged to the environment. As well, concentrations at TPL are all below the CCME guideline for the Protection of Aquatic Life.

In summary, monitoring in TPL indicates that there has been no impact to the near shore receiving waters. The seepage appears to be effectively contained and the source area has been repaired. Follow up monitoring will continue in 2018 in accordance with the 2018 Freshet Action Plan which includes requests made by KIA in 2014 at the Water Licence renewal hearing.

Figure 36. General Layout of the Assay Road Seepage



8.4 VISUAL AWAR WATER QUALITY MONITORING

Pre-freshet and freshet inspections were conducted at crossings along the AWAR in 2017. These inspections are conducted to document the presence/absence of flow, erosional concerns and turbidity plumes. No flow was observed during the three (3) pre-freshet inspections conducted on May 12th, 16th and 19th, 2017. Flow was observed, but no erosional concern or visual turbidity plumes were observed during the freshet inspections conducted on May 26th, June 2nd, July 2nd and July 28th. Inspection reports can be found in Appendix G6.

Weekly inspections are also conducted along the AWAR on a year round basis. During the freshet and open water season, any visual turbidity plumes or erosion along the AWAR, culverts or HADD crossings are documented by Environmental Technicians. In 2017, no visual turbidity plumes or erosion was observed.

8.5 BLAST MONITORING*

As required by NIRB Project Certificate No.004, Condition 85*: develop a detailed blasting program to minimize the effects of blasting on fish and fish habitat, water quality, and wildlife and terrestrial VECs.*

In accordance with NIRB Project Certificate No.004, Condition 85, Agnico Meadowbank Division developed a blasting program which complies with The Guidelines for the Use of Explosives In or Near Canadian Fisheries Water (Wright and Hopky, 1998) as modified by the DFO for use in the North. As a result, Agnico conducts monitoring to evaluate blast related peak particle velocity and overpressure to protect nearby fish bearing waters.

The results of the 2017 blast monitoring program are available in the report entitled "2017 Blast Monitoring Report for the Protection of Nearby Fish Habitat" prepared by Agnico, attached as Appendix G7.

Peak particle velocity (PPV) and overpressure monitoring data was recorded throughout 2017 during blasting activities at the North Portage Pit, South Portage Pit, and Vault Pit. The locations of the blast monitoring stations are illustrated in Figure 1 and Figure 2 of the report Blast monitoring Report found in Appendix G6. The Portage stations are located near the shoreline of Second Portage Lake. The Vault Pit station #2 is located near Wally Lake.

No more blast monitoring was conducted at Goose Pit in 2017 as mining has ceased in this pit since April 2015. Vault Pit station #1, located between the Vault Attenuation Pond (dewatered Vault Lake) and the Vault Pit, was also not monitored in 2016 as the nearest potential fish habitat is in Wally Lake and the Vault Pit station #2 is used to monitored the potential impact. These monitoring stations are also illustrated in Figure 1 and Figure 2 of the report Blast monitoring Report found in Appendix G7.

In 2017, the average PPV was 0.78 (CI +/- 0.20) with a maximum of , 11.2 (maximum in 2016, 2015, 2014 and 2013 were 9.54, 16.5, 23.8 and 32.7 mm/s respectively). The average in 2017 was lower than 2016 (1.18),2015 (2.38 mm/s), 2014 (3.93 mm/s) and 2013 (5.39 mm/s) averages. This difference can be explained by the fact that mining ceased at Goose Pit in April 2015. Goose Pit was the closest pit to blast monitoring stations. As there were less blasts occurring in this area, the probability of exceeding the DFO guidelines was reduced. Also, blasting activities at Portage Pit and Vault Pit were conducted deeper this year reducing vibrations recorded at the monitoring station. The upper 95% confidence limit for all of the annual data was 3.81 mm/s.

8.6 GROUNDWATER

As required by NIRB Project Certificate No.004 Condition 8: Continue to undertake semi-annual groundwater samples and re-evaluate the groundwater quality after each sample collection; report the results of each re-evaluation to NIRB's Monitoring Officer, INAC and EC.

The full results of the 2017 groundwater monitoring program are available in the report entitled 'MEADOWBANK SITE VISIT AND GROUNDWATER SAMPLING – FACTUAL REPORT' prepared by SNC, attached as Appendix G8

* TSM – Biodiversity and Conservation Management

The 2017 groundwater monitoring program at Meadowbank was conducted in accordance with the Groundwater Monitoring Plan (Agnico Eagle, 2017). The objective of this program is to document any effects of mining on groundwater quality, particularly with respect to tailings deposition. This is done by monitoring the salinity of shallow and deep groundwater. The recorded data is also used to update water quality predictions at the site.

In 2017, only wells MW-08-02 and well, MW-16-01, were operable. Formation of thick ice bridges challenged the sampling of wells MW-08-02 again this year. Therefore, sampling protocols were different for the two wells. Attempts were also made to supplement the groundwater sampling program using alternative sources such as :

- Geotechnical boreholes
- Deep lakes
- Pit sumps
- Dike Seepage
- Wall seepage

In 2017, efforts were made to collect data to enable comparison of groundwater samples collected to other site water to ensure full comprehension of results and patterns. Therefore , an extensive groundwater sampling program took place. The program aimed at better characterizing natural groundwater chemistry, potential sources of contaminants at the mine site, and potential link between surface and groundwater.

A total of seventeen (17) groundwater samples and twelve (12) surface water samples were collected at the nineteen (19) sampling locations. Those sampling stations name and type, general location and sampling period are provided in Appendix G8. Sampling stations include two (2) monitoring wells sampled at two (2) levels, two (2) lakes, seven (7) wall seepages, three (3) dike seepages, two (2) sump and one (1) reclaim water pond. Methodologies and locations are discussed in the 2017 Factual report.

Concentrations of all parameters measured in groundwater related samples in 2017 are provided in the 2017 Factual report (Appendix G8)

As in 2016, any pit water is pumped to the South Cell and the water quality considered for predictions and modeling is that of the South Cell. Pit sumps are sampled during open water periods as a component of the Water Quality and Flow Monitoring Plan, and could contain groundwater. These results are also used as input parameters for overall South Cell water quality modelling (SNC, 2018).

For the 2017 groundwater campaign, emphasis was put on understanding groundwater water quality and establish comparatives within onsite water management. With the understanding that each groundwater sample has a distinctive signature defined by its dissolved concentrations of chemical constituents, the interpretation of groundwater chemistry data contributes to a better understanding of groundwater flow. Thus contaminants migration and transformation processes along pathways as water composition varies. This strategy can also help identifying zones where surface water and groundwater interact and defining if the interaction is continuous or only during permafrost thawing.

Water analytical results are compared to criteria listed in AEM Groundwater Report 2016, considering parameter exceeding when they are three time the concentrations of Third Portage Lake (TPL) fresh water. Analytical results are found in Appendix C of the Factual Report (Appendix G8) and concentrations exceeding these criteria are in bold format. Table 2 (Appendix G8) also shows the sampling stations and

parameters that are exceeding criteria. Note that some samples are not or may not be representative based on the mass balance calculations which is discussed in the Factual Report.

Alkalinity and TSS are higher in groundwater than in TPL surface water for most samples. Most of the exceeding parameters (copper, total mercury, total ammonia nitrogen and total cyanide) are related to the reclaim water signature. Aside from reclaim water sample, high concentrations above 3PL background are found at monitoring station ST-S-5 for ammonia nitrogen and at Pit-A-seep and Pit-E-seep for nitrates. Nitrogen is one the few parameters that could help trace contaminant source across the site. Moreover, Stormwater Lake was not sampled and could represent a source of contaminants on site and therefore should be investigated. All measured concentrations of other metals were below NWB license limits for discharge to surface water for all locations, and were within the range of historical results

Groundwater samples were also assessed as per their geochemical composition. Defined by dissolved main anions (HCO_3^-, SO_4^{2-}, Cl^-) and main cations (Ca_2^+, Na^+, Mg_2^+, K^+). Mass balance calculation (expressed in meq/L) is the difference between main anions and cations dissolved in groundwater and is a represents a reliability check for any geochemical analysis. Mass balance calculations are useful to gain a first insight into water chemistry. From these calculations, a chemical composition can be represented by a Stiff diagram which is a visual tool facilitating .groundwater interpretation.

After determining representative samples through the aforementioned systems, samples were plotted on graphs to show some major chemical components and to demonstrate the chemical signature and evolution of reclaim water. Reclaim water source was sampled at ST-21-South, illustrated by black cross on both graphs. On the mine site, reclaim water is a main source of sulfate and calcium in water. Samples having a calcium concentration above 50 mg/L show a general decreasing trend of pH and calcium along flow paths. Furthermore, the same dilution effect on main reclaim water components along flowpaths. Three (3) potential groups could be interpreted:

1) the samples containing reclaim water signature,
2) the sample containing a potential signature from waste rock PAG stockpiles (further investigation would be required), and
3) the natural surface water and groundwater signature.

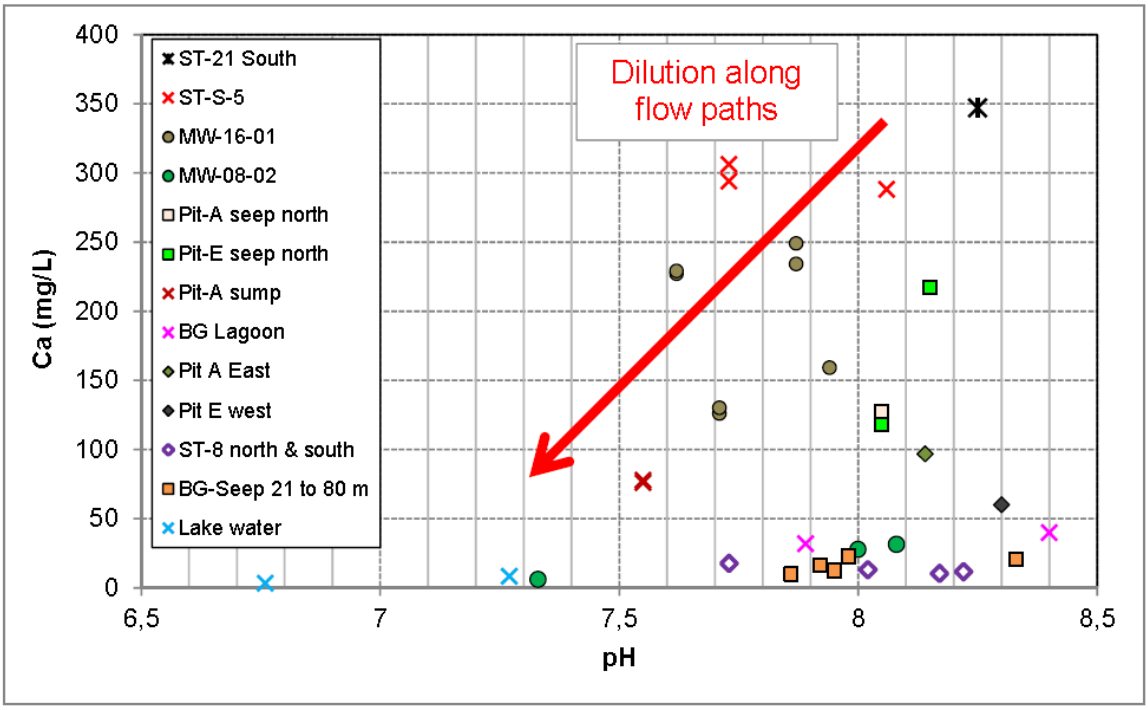


Figure 37: Dissolved Calcium concentration vs pH

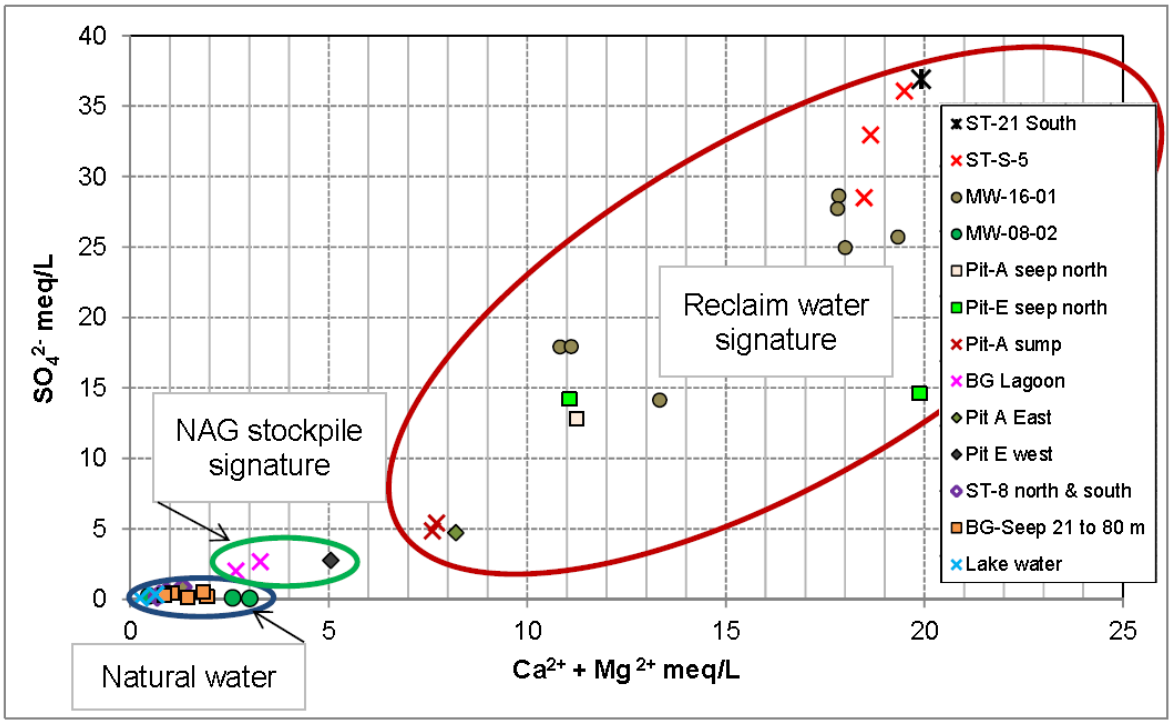


Figure 38, Sulfate concentration vs dissolved Calcium and Magnesium concentrations

The 2017 groundwater program was the focus of a detailed and consistent approach that will need consistency (same station need to be sample through time) moving forward. Future groundwater monitoring program will be adapted at Meadowbank. The installation of three (3) new possible groundwater monitoring wells is proposed at strategic locations based on groundwater numerical simulation results and 2017. Well screen interval would be defined based in 2017 borehole data related to permeable fractures. Moreover, methods to obtain representative groundwater samples and improve well designs under arctic climate continue to be investigated. The groundwater monitoring program will be updated as the project progresses. New information from the hydrogeological numerical model and from hydrogeological field data will be integrated throughout. Moreover, methods to obtain representative groundwater samples and improve well designs under artic climate continue to be investigated.

8.7 HABITAT COMPENSATION MONITORING PROGRAM

As required by DFO Authorizations NU-03-0191.3 Condition 3 and 6 (Second and Third Portage Lakes), NU-03-0191.4 (Vault Lake) Condition 3 and 6; NU-03-0190 Condition 5 (AWPAR), NU-14-1046 (Phaser Lake) Condition 3 and 5; ***Submit written report summarizing monitoring results and photographic record of works and undertakings.***

According to Fisheries and Oceans Canada (DFO) Authorizations NU-03-0191.2, NU-03-0191.3, NU-03-0191.4 and 14-HCAA-01046, Agnico Eagle maintains a Habitat Compensation Monitoring Plan (HCMP; February, 2017) to ensure that fish habitat compensation features at the Meadowbank site are constructed and functioning as intended. Based on the schedule described in the HCMP, monitoring of compensation features generally occurs every 2 years.

In 2017, monitoring was conducted for the constructed spawning pad, located at stream crossing R02 along the all-weather access road (AWAR) to Baker Lake, as well as for several onsite habitat compensation features (East Dike, Bay-Goose Dike, Dogleg Ponds). As described in the HCMP, the AWAR study included a visual assessment of stability, as well biological monitoring to confirm use by Arctic grayling. The onsite monitoring included an assessment of interstitial water quality, periphyton growth, and fish use. The full report is attached as Appendix G5.

Onsite, interstitial water quality within the dike faces met CCME guidelines for aquatic life with the exception of TSS in one sample, and healthy periphyton community growth with increasing biomass was observed. Angling and underwater motion camera monitoring demonstrated continued fish use of the dikes as habitat. A total of 120 fish were caught through angling and there were no mortalities. A total of 36 fish sightings were captured on camera during the underwater motion camera program. Fish use of NP-1 was confirmed in through underwater motion camera surveys (though only 1 fish was observed). Angling also indicated presence of Arctic char in Dogleg Pond, suggesting this system may now be accessible from Second Portage Lake. Bathymetric surveys were completed, but a further analysis of results is required to understand reductions in pond areas compared to baseline surveys, as many factors suggest this is an artifact of different mapping methods.

8.8 FISH-OUT PROGRAM SUMMARY*

As required by NIRB Project Certificate No.004 Condition 49: ***develop, implement and report on the fish-out programs for the dewatering of Second Portage Lake, Third Portage Lake and Vault Lake.***

And

As required by DFO Authorizations NU-14-1046 (Phaser Lake) Condition 3.2.2; ***Submit a fish-out report written report summarizing monitoring results and photographic record of works and undertakings. […] As per the NIRB #49, the reporting of the fish-out data shall be done in consultation with elders and the Baker Lake Hunter's and Trapper's Organization***

No fishout program occurred in 2017.

8.9 AEMP

8.9.1 Introduction

The Aquatic Effects Management Program (AEMP) for the Meadowbank site was developed in 2005 as part of the project's Final Environmental Impact Statement (FEIS) (AEMP 2005), and has been formally implemented since 2006. In December 2012, the AEMP was restructured to serve as an overarching "umbrella" program that conceptually provides an opportunity to integrate results of individual, but related, monitoring programs in accordance with NWB Type A water license requirements (as described in Azimuth, 2012). The scope of the 2005 AEMP is now included as one of the monitoring programs that are integrated under the restructured AEMP, and has been renamed the Core Receiving Environment Monitoring Program (CREMP).

The 2017 AEMP synthesis report aims to:

- Identify potential sources of impact to the receiving environment and develop a conceptual site model;
- Summarize the results of each of the underlying monitoring programs, including the CREMP (the cornerstone broad-level receiving environment monitoring program);
- Review the inter-linkages among the monitoring programs;
- Integrate the results for each component program;
- Identify potential risks to the receiving aquatic ecosystem; and
- Provide conclusions and recommend additional management actions that should be considered in future monitoring.

8.9.2 Potential Sources of Impacts and the Conceptual Site Model (CSM)

The AEMP is founded on a conceptual site model, which is used in ecological risk assessment to help understand potential relationships between site activities and the environment (e.g., water quality or certain ecological receptors). The conceptual site model (CSM) is presented in Table 8.67 and consists of the following elements (Azimuth, 2012):

- Stressor sources –the sources of chemical (e.g., metals) or physical (e.g., total suspended solids) stressors that can potentially impact the environment.
- Stressors –the actual agents that have the potential to cause adverse effects to the receiving environment.
- Transport pathways –the ways in which a stressor is released from the source to the receiving environment.
- Exposure media –the media where a stressor occurs in the receiving environment. A single stressor might actually end up in multiple exposure media, with different ones being most

important at different times. For example, if an effluent contained mercury, it would initially be found in the water column, and then most likely would settle to sediments where it would then enter the food chain (i.e., biota tissue).

- Receptors of concern –ecological entities selected for a variety of reasons, usually including sensitivity to relevant stressors and perceived ecological importance (i.e. could be determined to be valued ecosystem components).

In 2017, all of the potential pathways, exposure media and receptors of concern listed in Table 8.67 were relevant to the AEMP analysis and were evaluated, with the exception of tissue. Although the Cycle 3 EEM Biological Monitoring took place in 2017, results have not yet been reported.

Table 8.67. Primary transport pathways, exposure media, and receptors of concern for the AEMP.

Transport Pathways	Exposure Media	Receptors of Concern
g,i Effluent	a,d,f,g,h,i,k,m Water	a, g Phytoplankton
f Groundwater	a Sediments	g Zooplankton
i,k Surface water	~~Tissue~~	d,g,h Fish
m Air		a,h Benthic community
NA Direct		d Periphyton
		a,d,k Fish habitat

Notes:

a	Core Receiving Environment Monitoring Program
~~b~~	~~Effects Assessment Studies~~
~~c~~	~~Dike Construction Monitoring~~
d	Habitat Compensation Monitoring Program
e	~~Dewatering Monitoring~~
f	Groundwater Monitoring
g	MMER Monitoring
h	~~EEM Biological Monitoring Studies~~
i	Water Quality and Flow Monitoring
j	~~Fish-Out Studies~~
k	AWAR and Quarry Water Quality Monitoring
l	Blast Monitoring
m	Air Quality Monitoring
NA	Direct, so measured in exposure medium.

Note: ~~strikethrough~~ text is an "AEMP" monitoring program that was not required to be completed in 2017

8.9.3 Summary of Results of AEMP- Related Monitoring Programs

In 2017, in accordance with the NWB Type A Water License, AEMP-related monitoring programs included:

- the Core Receiving Environment Monitoring Program (CREMP);
- Metal Mining Effluent Regulation (MMER) Monitoring;
- Minesite Water Quality and Flow Monitoring (and evaluation of NP-2);
- Visual AWAR Water Quality Monitoring;
- Air Quality Monitoring;
- Blast Monitoring; and
- Groundwater Monitoring.

The results of these monitoring programs are integrated in the AEMP, and assist in the evaluation of potential effects of mining activities on the aquatic environment.

Air quality, the EEM Biological Studies and the Habitat Compensation Monitoring Program were considered as part of the conceptual site model and are included in the AEMP discussion to inform the process, but these programs are not a requirement of the Type A Water License; Part I-1. In 2017, EEM Biological Studies were conducted but results have not yet been reported.

Table 8.68 summarizes the results of the AEMP programs in 2017. Summaries of the monitoring programs are provided in Sections 8.1 to 8.7 of this annual report. For detailed results on individual monitoring programs, refer to the appended reports.

Table 8.68. Summary of aquatic effect monitoring program results in 2017.

		Core Receiving Environment Monitoring Program	Effects Assessment Studies	Dike Construction Monitoring	Habitat Compensation Monitoring Program	Dewatering Monitoring	MMER Monitoring	EEM Biological Monitoring Studies	Water Quality and Flow Monitoring	Fish-Out Studies	Visual AWAR and Quarry Water Quality Montoring	Blast Monitoring	Groundwater Monitoring
Completed in 2017?		**Yes**	**No**	**NA**	**Yes**	**No**	**Yes**	**Yes***	**Yes**	**No**	**Yes**	**Yes**	**Yes**
Stressor Variables													
	suspended solids	○			○		●		●		○	NA	●
	sediment deposition	NA			NA		NA		NA		○	NA	NA
	water-borne toxicants	○			○		○		○		NA	NA	○
	sediment toxicants	●			NA		NA		NA		NA	NA	NA
	nutrients	●			○		○		○		NA	NA	●
	other physical stressors	○			NA		NA		○		NA	○	●
Effects Variables													
	Phytoplankton	○			NA		NA		NA		NA	NA	NA
	Zooplankton	NA			NA		○		NA		NA	NA	NA
	Fish	NA			○		○		NA		NA	NA	NA
	Benthic invertebrate community	○			NA		NA		NA		NA	NA	NA
	Periphyton	NA			○		NA		NA		NA	NA	NA
	Fish habitat	NA			○		NA		NA		NA	NA	NA
Notes:													
	*EEM Biological Study completed but results not yet reported.												
○	No observed effects												
●	Trigger or guideline exceedance - early warning explained in report												
●	Observed effects explained in report												

The following section discusses the stressor- and effects-based results of the monitoring programs presented in Table 8.68.

Overall, while some additional monitoring activities are recommended for subsequent years, none of the site specific stressors, effects-based triggers or guideline exceedances observed through these programs had the potential to cause significant risks to the aquatic receiving environment requiring immediate changes in management actions.

CREMP

Water Quality

The CREMP determined that, as in the past, there were some statistically significant mine-related changes relative to baseline/reference conditions identified in 2017 at one or more near-field (NF) areas that exceeded their respective triggers: alkalinity (SP); conductivity (TPN, TPE, SP, WAL); hardness (TPN, TPE, SP, WAL); major cations (i.e., calcium, potassium, magnesium, and sodium [TPN, TPE, SP,

WAL]); TDS (TPN, TPE, SP, WAL), and TKN (WAL). In the absence of effects-based thresholds (e.g., CCME water quality criteria) for these parameters, their triggers were set at the 95th percentile of baseline data. While these results represent mine-related changes, the observed concentrations are still relatively low and unlikely to adversely affect aquatic life. These trends will be reviewed again in 2018.

Sediment

Quantitative trigger analysis was completed on metals data from the sediment core samples (1.5 cm horizon). Grab samples were also submitted for in 2017 for analysis of benthic habitat variables (particle size and TOC), metals, and organics analysis on the top 3-5 cm of sediment. The core sample results showed that chromium concentrations continue to exceed the trigger value at TPE, and statistically significant changes compared to the baseline period were identified. While grab sample results showed a reduction in 2016, they increased in 2017. The increasing trend in chromium concentrations at this location was investigated in detail in 2015, when a targeted bioavailability study was conducted to assess sediment geochemistry and toxicity at TPE; those results indicated that the changes in chromium, likely related to dike construction material, did not pose risks to the benthic community. However, current chromium concentrations are no longer comparable to the results from 2015 upon which the conclusion of no toxicity was based. Recommended management actions for 2018 are to repeat the coring program to verify if the continued increase observed in 2017 was real or if conditions had stabilized, and to repeat the bioavailability study that was undertaken in 2015 (i.e., to see if the changes are ecologically relevant).

Wally Lake was the only other NF station with trigger exceedances in the sediment samples collected in 2017. Lead and chromium were marginally above their respective trigger values, but arsenic was approximately 2.5-times higher in 2017 relative to baseline, and trending higher relative to the last coring cycle in 2014. However, there is some uncertainty regarding whether this trend to real or due to natural spatial heterogeneity. Recommended management actions for 2018 are to repeat the coring program to verify the nature of the observed trend (i.e., real or due to spatial heterogeneity) and conduct a targeted bioavailability study (i.e., to see if the changes are ecologically relevant).

Phytoplankton and Invertebrate Communities

Notwithstanding the above trigger exceedances, no effects to phytoplankton or benthic invertebrate community richness or abundance were identified in the 2017 BACI analysis (differences were either not statistically significant or could not be identified as mine-related).

Results of the CREMP are further summarized in Tables 8.69 – 8.71.

Dewatering Monitoring

No lake dewatering occurred in 2017.

Water Quality Monitoring under MMER/Water Quality and Flow Monitoring Plan (including NP-2 and mill seepage)

This section includes discussion of results from water quality monitoring under MMER or the Water Quality and Flow Monitoring Plan for managed non-contact water or water discharged to the receiving environment.

All sampling events conducted for Vault Attenuation Pond discharge (final discharge point) complied with NWB license limits and MMER criteria, including water quality and monthly acute toxicity testing. EEM water quality monitoring also occurred and was reported to ECCC. Results are not subject to specific

criteria but are used as necessary in interpretation of biological monitoring results (not yet reported). Monthly sub-lethal toxicity testing (Fathead minnow, *Ceriodaphnia*, freshwater algae, *Lemna minor*) were conducted and results do not require further interpretation under EEM guidelines (i.e. all IC25s exceeded 30%v/v).

Discharge of East Dike seepage water to the receiving environment (Second Portage Lake) was also monitored under MMER/NWB, and throughout the year, 2 exceedances of MMER/NWB criteria for TSS occurred. In each case, discharge was immediately redirected to the Portage Pit upon receipt of the results, and is thus not expected to have a significant impact on receiving environment water quality. Furthermore, no exceedances of TSS triggers were observed in Second Portage Lake through CREMP sampling. EEM water quality monitoring occurred and was reported to ECCC. Results are not subject to specific criteria but are used as necessary in interpretation of biological monitoring results (not yet reported). No sub-lethal toxicity testing was required for this discharge point.

All results of sampling for non-contact water diversion ditches (East and West) complied with NWB license limits.

In 2013, seepage from the TSF through the WRSF was identified at ST-16, and as a result Agnico initiated a targeted monitoring program for the potential receiving environment in that area (closest receptor being NP-2). In 2017, monitoring continued at NP-2 and at stations requested by the KIA (NP-1, Dogleg and Second Portage Lake). The 2014 – 2017 average analysis results for applicable parameters confirmed no impacts to downstream lakes (NP-1, Dogleg, Second Portage Lake). A valid case can be made that the action plan implemented by Agnico has been very successful in preventing any further seepage into NP-2 Lake and the further receiving environment. In accordance with KIA requests, monitoring will continue in 2018 (5 years), and then the program will be evaluated.

Monitoring in Third Portage Lake in response to the mill seepage through the assay road (identified in 2013) continues to indicate that there has been no impact to the near shore receiving waters of Third Portage Lake. The seepage appears to be effectively contained through construction of an interception trench (2014) and the source area within the mill has been repaired (2015). Follow up monitoring will continue in 2018.

Fish-out Studies

No fishout studies occurred in 2017.

AWAR and Quarries Water Quality Monitoring

Pre-freshet and freshet inspections were conducted at crossings along the AWAR in 2017. These inspections are conducted to document the presence/absence of flow, erosional concerns and turbidity plumes. No flow was observed during the three (3) pre-freshet inspections conducted on May 12th , 16th and 19th , 2017. Flow was observed, but no erosional concern or visual turbidity plumes were observed during the freshet inspections conducted on May 26th, June 2nd , July 2nd and July 28th. Weekly inspections are also conducted along the AWAR on a year round basis. During the freshet and open water season, any visual turbidity plumes or erosion along the AWAR, culverts or HADD crossings are documented by Environmental Technicians. In 2017, no visual turbidity plumes or erosion was observed.

Blast Monitoring

In 2017, 337 blasts were monitored and no peak particle velocity (PPV) measurements exceeded the DFO limit of 13 mm/s and instantaneous pressure change (IPC) measurements were all below the DFO limit of 50 kpa.

Groundwater Monitoring

Groundwater well installation and sample collection have been a major challenge in the Arctic conditions at Meadowbank. In 2017, an outside consultant (SNC Lavalin) was contracted to review, expand, and conduct the groundwater sampling program. The resulting program aimed to better characterize natural groundwater chemistry, potential sources of contaminants at the mine site, and potential links between surface and groundwater. Two site visits and sets of samples were collected (July and September, 2017). In total, seventeen (17) groundwater samples and twelve (12) surface water samples were collected at nineteen (19) sampling locations. Sampling stations included two (2) monitoring wells sampled at two (2) levels, two (2) lakes, seven (7) wall seepages, three (3) dike seepages, two (2) sumps and one (1) reclaim water pond. Analytical measurements included all Group 2 parameters in the Meadowbank NWB Water License: total and dissolved metals, nutrients, conventional parameters, total and free cyanide.

No regulatory guidelines or limits apply to groundwater quality in this monitoring program; rather, results are used to support development of site-wide water models. For illustrative purposes, results were compared to values representing 3x the concentration of each parameter as measured in Third Portage Lake. This comparison provides a conservative estimate of any potential for effects on biota, since the pit area will eventually be returned to aquatic habitat.

Among samples considered to be adequately representative of groundwater (certain locations in monitoring wells, pit wall seepage, dike seepage), only some alkalinity and TSS results exceeded 3x Third Portage Lake values, as well as nitrogen-related parameters in one pit seep and one dike seep sample. All lake samples (receiving environment) were interpreted as having natural surface water signatures, and were not influenced by reclaim water or waste rock run-off.

Table 8.69. Summary of 2017 CREMP results for limnology and water chemistry (Appendix G1: 2017 CREMP Report, Table ES-1).

Variable Type & Variable	Magnitude[1]	Spatial Scale[2]	Causation[3]	Permanence[4]	Uncertainty[5]	Comments	Management Action[6]
Exposure - Limnology							
Oxygen	0	n/a	n/a	n/a	?	All stations - consistent with previous years	0
Temperature	0	n/a	n/a	n/a	?	All stations - consistent with previous years	0
Conductivity	0	Moderate	High	Low	?	Specific conductivity readings at WAL in 2017 were at the upper end of the range reported for previous monitoring cycles for most months, particularly for sample collected near the diffuser. Plume investigations in 2016 and 2017 by C. Portt and Associates confirm effluent concentrations to 1% are confined to within approximately 700 m of the diffuser. No action beyond routine monitoring is recommended for 2018.	1
Exposure - Water Chemistry							
Conventionals	1	Large	High	Low	?	The following parameters were elevated relative to reference/baseline conditions. However, concentrations suggest low potential for adverse effects: **Alkalinity** (SP); **Conductivity** (TPN, TPE, SP, WAL); **Hardness** (TPN, TPE, SP, WAL); **Ca/K/Mg/Na** (TPN, TPE, SP, WAL); **TDS** (TPN, TPE, SP, WAL)	1
Nutrients	1	Small	Low	Low	??	The following parameters were elevated relative to reference/baseline conditions: **TKN** (WAL) Exceedance were sporadic (not all months) and the absolute concentrations were low. Low likelihood of adverse effects.	1
Total Metals	0	n/a	n/a	n/a	?	No trigger exceedances.	0
Dissolved Metals	0	n/a	n/a	n/a	?	No trigger exceedances.	0
Total Suspended Solids	0	n/a	n/a	n/a	?	No trigger exceedances.	0

Notes:

[1] **Magnitude Ratings (narrative in brackets used in the absence of specific triggers/thresholds):**
- 0 – 'no exceedances of triggers or thresholds (or no apparent changes from baseline of concern)
- 1 – 'early warning trigger exceeded (or change from baseline warranting concern)
- 2 – threshold exceeded (or change from baseline exceeding magnitude of concern)

[2] **Spatial Scale Ratings:**
- n/a – no magnitude of effect, therefore not evaluated
- Small – localized
- Moderate – sub-basin to basin
- Large – basin to whole lake

[3] **Causation Ratings:**
- n/a – no magnitude of effect, therefore not evaluated
- Low – no evidence for a mine-related source
- Moderate – some likelihood of a mine-related source
- High – the source of the problem is very likely to be mine-related

[4] **Permanence Ratings:**
- n/a –no magnitude of effect, therefore not evaluated
- Low – rapidly reversible (e.g., months to years)
- Moderate – slowly reversible (e.g., years to decades)
- High – largely irreversible (e.g., decades +)

[5] **Uncertainty Ratings:**
- ? – low uncertainty
- ?? – moderate uncertainty
- ??? – high uncertainty

[6] **Management Actions:**
- 0 – 'no action beyond routine CREMP monitoring
- 1 – continued trend monitoring in 2017
- 2 – active follow-up with more detailed quantitative assessment in 2018

Table 8.70. Summary of 2017 CREMP results for sediment chemistry (Appendix G1: 2017 CREMP Report, Table ES-1).

Variable Type & Variable	Magnitude[1]	Spatial Scale[2]	Causation[3]	Permanence[4]	Uncertainty[5]	Comments	Management Action[6]
Exposure - Sediment Chemistry							
Physical	0	n/a	n/a	n/a	?		0
Total Metals	2	Moderate (TPE Cr) Unknown (WAL As, Cr, Pb)	High (TPE Cr) Unknown (WAL As, Cr, Pb)	Moderate (TPE Cr) Unknown (WAL As, Cr, Pb)	? (TPE) ??? (WAL As, Cr, Pb)	The following parameters were elevated relative to reference/baseline conditions: *Meadowbank* - **Arsenic** (WAL); **Chromium** (TPE, WAL); **Lead** (WAL) *Baker Lake* - **Arsenic** (BPJ) **TPE** - Chromium concentrations continue to exceed the trigger at TPE. 2017 results indicate concentrations are increasing. Targeted study in 2015 showed lack of bioavailability and toxicity to benthic invertebrates. **WAL** - Arsenic concentrations in core samples collected in 2017 were elevated relative to baseline and compared to the 2014 coring cycle results. Chromium and lead exceedances were marginal. Coring is recommended in 2018 to verify the nature of the trend observed (i.e., related to mining or natural spatial heterogeneity). **BPJ** - Arsenic continues to exceed the trigger. No evidence of increasing concentrations over time.	0 = SP, TPN, and BL 2 = WAL (As) and TPE (Cr)
Organics	0	n/a	n/a	n/a	?	No trigger exceedances.	0

Notes:

[1] **Magnitude Ratings (narrative in brackets used in the absence of specific triggers/thresholds):**
- 0 – 'no exceedances of triggers or thresholds (or no apparent changes from baseline of concern)
- 1 – 'early warning trigger exceeded (or change from baseline warranting concern)
- 2 – threshold exceeded (or change from baseline exceeding magnitude of concern)

[2] **Spatial Scale Ratings:**
- n/a – no magnitude of effect, therefore not evaluated
- Small – localized
- Moderate – sub-basin to basin
- Large – basin to whole lake

[3] **Causation Ratings:**
- n/a – no magnitude of effect, therefore not evaluated
- Low – no evidence for a mine-related source
- Moderate – some likelihood of a mine-related source
- High – the source of the problem is very likely to be mine-related

[4] **Permanence Ratings:**
- n/a –no magnitude of effect, therefore not evaluated
- Low – rapidly reversible (e.g., months to years)
- Moderate – slowly reversible (e.g., years to decades)
- High – largely irreversible (e.g., decades +)

[5] **Uncertainty Ratings:**
- ? – low uncertainty
- ?? – moderate uncertainty
- ??? – high uncertainty

[6] **Management Actions:**
- 0 – 'no action beyond routine CREMP monitoring
- 1 – continued trend monitoring in 2017
- 2 – active follow-up with more detailed quantitative assessment in 2018

Table 8.71. Summary of 2017 CREMP results for sediment chemistry (Appendix G1: 2017 CREMP Report, Table ES-1).

Variable Type & Variable	Magnitude[1]	Spatial Scale[2]	Causation[3]	Permanence[4]	Uncertainty[5]	Comments	Management Action[6]
Effects - Phytoplankton							
Chlorophyll-a	0	n/a	n/a	n/a	?	No evidence of increased phytoplankton productivity based on chlorophyll-a data.	0
Total Biomass	2	Large	Low	Low	???	Statistically significant increases in phytoplankton biomass were detected for the NF stations in the BACI analysis of 2017 data relative to reference/baseline conditions. Effect sizes of biomass increases ranged between 46% (SP) to 87% (WAL). There was no plausible linkage between increased biomass in 2017 and site-related activities (see **Section 3.2.4.2** for details).	0
Taxa Richness	0	n/a	n/a	n/a	?	Taxa richness increased 12% (p=0.09) at WAL relative to reference/baseline conditions. The slight increase in diversity is not above the trigger value of 20%.	0
Effects - Benthic Invertebrates							
Total Abundance	0	n/a	n/a	n/a	?	Decreased abundance at TPE relative to INUG in the past four years relative to reference/baseline conditions. The only statistically significant difference was for 3 after years (2015-2017). The differences are primarily driven by increased abundance at INUG while abundance at TPE has been relatively stable and consistent with baseline sampling results (**Figure 3.2-67** and **Figure 3.2-68**).	0
Total Richness	0	n/a	n/a	n/a	?	Richness continues to track higher for most stations. The benthic communities are dominated by chironomids, and the relative proportion of major taxa remains stable at all stations.	0

Notes:

[1] **Magnitude Ratings (narrative in brackets used in the absence of specific triggers/thresholds):**
- 0 – 'no exceedances of triggers or thresholds (or no apparent changes from baseline of concern)
- 1 – 'early warning trigger exceeded (or change from baseline warranting concern)
- 2 – threshold exceeded (or change from baseline exceeding magnitude of concern)

[2] **Spatial Scale Ratings:**
- n/a – no magnitude of effect, therefore not evaluated
- Small – localized
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- n/a – no magnitude of effect, therefore not evaluated
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- Moderate – slowly reversible (e.g., years to decades)
- High – largely irreversible (e.g., decades +)

[5] **Uncertainty Ratings:**
- ? – low uncertainty
- ?? – moderate uncertainty
- ??? – high uncertainty

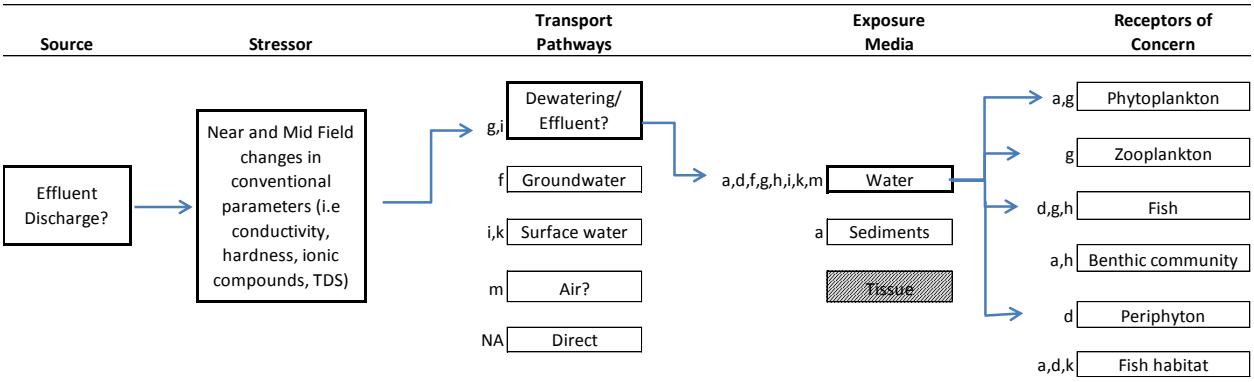
[6] **Management Actions:**
- 0 – 'no action beyond routine CREMP monitoring
- 1 – continued trend monitoring in 2017
- 2 – active follow-up with more detailed quantitative assessment in 2018

8.9.4 Integration of Monitoring Results

The 2017 AEMP monitoring programs were integrated using the conceptual site model which assists in the evaluation of the transport pathways, provides information on specific media (identifies stressors) and evaluates receptors of concern (effects variables). As previously discussed, fish tissue data were not reported in 2017 in the mine site area and therefore are not included in the conceptual model (shaded grey in the table).

As per Azimuth (2012), the results of the monitoring programs were integrated in a mechanistic fashion that required a thorough review of the results to identify any patterns among the relevant receiving water monitoring programs. Although most water quality changes at TPN, TPE, SP and WAL in 2017 were similar to findings in previous years and are considered unlikely to cause any adverse environmental effects, conceptual site models were developed to assist in linking possible incremental changes in the receiving environment that are evaluated in separate monitoring reports. Review of the conceptual models ensures all mine activities and sources are accounted for and are not resulting in receiving environment impacts. As per Azimuth (2012), the potential source, stressor, transport pathways, exposure media, and effects measures were evaluated for exceedances with potential for mine-related impacts to the receiving environment in 2017 (see Figure 39 – evaluation of TDS, conductivity, ionic and nutrient parameters; Figure 40 – evaluation of elevated chromium in TPE sediment).

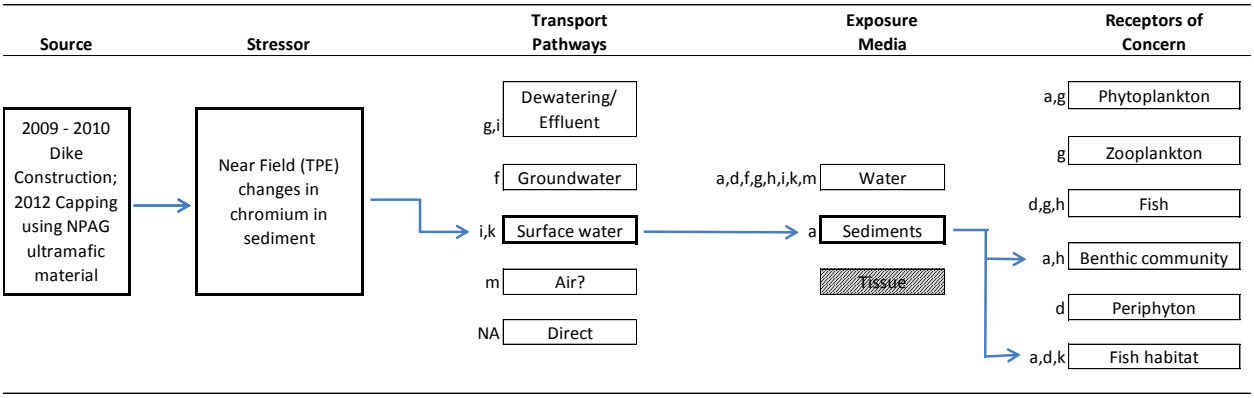
Figure 5. Integrated conceptual site model for 2017 AEMP – Near Field changes in conventional parameters



Notes:

a	Core Receiving Environment Monitoring Program
~~b~~	Effects Assessment Studies
c	Dike Construction Monitoring
d	Habitat Compensation Monitoring Program
e	Dewatering Monitoring
f	Groundwater Monitoring
g	MMER Monitoring
h	EEM Biological Monitoring Studies
i	Water Quality and Flow Monitoring
j	Fish-Out Studies
k	AWPAR and Quarry Water Quality Montoring
l	Blasting
m	Air quality monitoring
NA	Direct, so measured in exposure medium.

Figure 6. Integrated conceptual site model for 2017 AEMP – Elevated Chromium in TPE sediment



Notes:

a	Core Receiving Environment Monitoring Program
~~b~~	Effects Assessment Studies
c	Dike Construction Monitoring
d	Habitat Compensation Monitoring Program
e	Dewatering Monitoring
f	Groundwater Monitoring
g	MMER Monitoring
h	EEM Biological Monitoring Studies
i	Water Quality and Flow Monitoring
j	Fish-Out Studies
k	AWPAR and Quarry Water Quality Montoring
l	Blasting
m	Air quality monitoring
NA	Direct, so measured in exposure medium.

8.9.5 Identification of Potential Risks and Discussion

Assessment of Changes in Water Quality Due to Effluent Discharge

The mine-related activities undertaken in 2017 with point-source discharges were effluent discharges to Second Portage (SP) and Wally (WAL). In addition, the Waste Rock seepage event in July 2013 from the Waste Rock Storage Facility which migrated through the perimeter rockfill road at sample station ST-16 into NP-2 Lake was considered a potential source of impacts to NP-2 and ultimately Second Portage Lake. Similarly, seepage from the mill migrating under the Assay Lab road (identified in 2013/2014) could be considered a potential source of impacts to Third Portage Lake.

In 2017, as reported in the CREMP, statistically significant mine-related changes were detected relative to baseline/reference conditions at one or more near-field (NF) areas for alkalinity (SP); conductivity (TPN, TPE, SP, WAL); hardness (TPN, TPE, SP, WAL); major cations (i.e., calcium, potassium, magnesium, and sodium [TPN, TPE, SP, WAL]); TDS (TPN, TPE, SP, WAL), and TKN (WAL).

However, these results do not suggest any risk to aquatic life. Notwithstanding, consideration was taken in the AEMP for all of the potential mine-related sources (effluent release, fugitive dust, and seepage) that may contribute to changes in general water quality parameters. The conceptual site model presented in Figure 39 assisted in understanding the possible linkages (i.e., effect to stressor from the source). Based on the monitoring results for 2017, it was determined that the most likely source of changes to

conventional parameters is effluent discharge (potentially, current and historical). Another possible contributer, albeit not likely based on air monitoring results to date, could be fugitive dust migration. Based on receiving water quality monitoring in nearshore TPL and NP-2, historical seepage events were not considered as a source of changes to the surface water quality observed in the CREMP.

Review of historical air quality monitoring results indicated that dustfall, total suspended particulates (TSP), PM10, and PM2.5 (potential sources of changes to conventional parameters) rarely exceed available standards or guidelines at minesite monitoring stations. Therefore it is unlikely that dust generation has been great enough to cause the observed changes in water quality parameters.

Although the observed changes in water chemistry may be a result of effluent discharge, the weight of evidence does not suggest impacts to higher trophic levels:

- All water quality samples collected in 2017 at final discharge points complied with MMER criteria and water license limits with the exception of two TSS samples at the Second Portage Lake discharge point (however, no exceedances of TSS trigger values at Second Portage Lake CREMP stations were observed).

- Final discharge from the Vault Attenuation Pond to Wally Lake in 2017 was not acutely toxic to fish (rainbow trout) or invertebrates (*Daphnia magna*) (LC50s >100%v/v).

- Although EEM biological results have not yet been reported, analyses of sub-lethal toxicity samples collected at the Vault final discharge point in 2017 for fish (fathead minnow), invertebrates (*Cerodaphnia dubia*), algae (*Pseudokirchneriella subcapitata*) and macrophytes (*Lemna minor*) were reported to Environment Canada, and results do not require further interpretation (i.e. IC25s >30%v/v).

- CREMP results did not detect significant changes in phytoplankton or benthic invertebrates in these basins.

- Effects of effluent on lake trout will be assessed in the EEM Cycle 3 Interpretive Report (sampling conducted in 2017 and will be reported in 2018).

Thus, effluent effects on receiving lake water quality, sediment, fish and benthos will continue to be assessed through the scheduled monitoring programs.

Assessment of the Changes in Chromium in TPE Sediment

The trigger exceedance for chromium in sediment at TPE was identified in 2013 and coring samples in 2014 determined that there was a temporal trend in chromium concentration increases within a localized area of TPE. Although elevated chromium levels have also been found in reference areas of PDL and TPS, the TPE chromium exceedance is likely related to mine activities, more specifically due to Bay-Goose dike capping and construction activity. This may be explained by the fact that ultramafic rock, which is commonly found in the region and was used to construct the Bay-Goose dike, is generally known to contain elevated concentrations of chromium (e.g., on the order of 2000 mg/kg) relative to other rock types (Motzer and Engineers, 2004).

Figure 40 provides the conceptual site model of impacts due to capping and construction of the Bay-Goose dike. Upon review of the sediment data and historical water quality data, effluent and dust were

ruled out from the most likely sources of change, as the effluent discharge point is nearest to TPN, where water quality changes in chromium have not been found. Furthermore, review of the construction monitoring data in the historical CREMP reports indicated elevated chromium in water and sediment. Sequential extraction tests conducted in 2015 demonstrated that the majority of sediment chromium is sequestered in the non-bioavailable sediment matrix. Furthermore, the fractions that are bioavailable occured at concentrations below effects-based threshold concentrations. This was further demonstrated by toxicity tests conducted on benthic invertebrates; no evidence of contaminant-related effects was noted. In 2016, only sediment grab samples were collected so no formal statistical analysis of data was conducted. Although 2016 grab sample results suggested that concentrations were stabilizing, the full analysis of grab samples and coring completed in 2017 again identified an exceedance of trigger levels, and another full coring and bio-availability study is recommended to determine the potential for impacts.

It should be noted that CREMP results to date have shown no evidence of mine-related changes in lower trophic levels (phytoplankton, benthic community) in TPE (no statistically significant difference or decline in total abundance, taxa richness). The 2015 HCMP showed fish use of dike faces at rates no lower than reference, and continued development of periphyton growth. Although the 2017 HCMP did not conduct fish studies in reference areas for comparison, periphyton growth continued to develop and concentrations of chromium were not elevated in interstitial water quality samples from the dike face.

Assessment of Changes in Arsenic in Wally Lake Sediment

This was the first year of an exceedance in sediment trigger values for Wally Lake. Lead and chromium were only marginally above their respective trigger values, but arsenic was approximately 2.5-times higher in 2017 relative to the baseline and trending higher relative to the last coring cycle in 2014. However, there is some uncertainty regarding whether this trend to real or due to natural spatial heterogeneity. No effects to benthic invertebrate community richness or abundance were identified, and whether or not this trend is mine-related will be confirmed in 2018.

8.9.6 Recommended Management Actions

Overall, based on the integration of results from the monitoring programs, the AEMP evaluation did not find an apparent excess risk to the aquatic environment due to mine-related activities. However, some threshold or trigger levels were exceeded, likely due to mine-related impacts (especially chromium in TPE sediment) and active follow up with more detailed quantitative assessments are recommended for 2018.

The following management and monitoring actions related to AEMP programs are planned for 2018.

- CREMP
    - Beyond regular CREMP monitoring per Azimuth, 2015, recommended management actions for 2018 are to:
        - TPE: Repeat the sediment coring program to verify if the continued increase observed in 2017 in concentrations of chromium at TPE was real or if conditions have stabilized and repeat the bioavailability study that was undertaken in 2015 (i.e., to see if the changes are ecologically relevant).
        - WAL: Repeat the coring program to verify the nature of the observed trend (i.e., real or due to spatial heterogeneity) and conduct a targeted bioavailability study (i.e., to see if the changes are ecologically relevant).

- Water Quality and Flow Monitoring - will continue as per the license and MMER requirements in 2017
    - An action plan will be developed to facilitate safe sump sampling to ensure a complete dataset.
    - Regarding mill seepage, follow up monitoring will continue in 2017 in accordance with the 2017 Freshet Action Plan.
    - Water quality samples will continue to be collected in NP-2, NP-1, Dogleg pond, and Second Portage Lake in accordance with the 2017 Freshet Action Plan.
- EEM Biological Monitoring Studies
    - Results of the Cycle 3 EEM Biological Monitoring Study will be reported.
- Habitat Compensation Monitoring
    - Monitoring is not required in 2018.
- Dewatering Monitoring
    - N/A - No lake dewatering for the main Meadowbank site is planned for 2018.
- Fish-out Monitoring
    - N/A – No fish outs for the main Meadowbank site are planned for 2018.
- Blast Monitoring
    - No chages are proposed for blast monitoring methods in 2018.
- Groundwater Monitoring
    - A number of recommendations related to new well installation, sampling methods, and analytical parameters are provided in the 2017 Groundwater Monitoring Report (Appendix G8). However, none of these are specifically related to understanding mining impacts on the receiving environment.

8.10 NOISE MONITORING

As required by NIRB Project Certificate No.004 Condition 62: ***Develop and implement a noise abatement plan to protect wildlife from significant mine activity noise, including blasting, drilling, equipment, vehicles and aircraft; 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.***

The 2017 noise monitoring program at Meadowbank was conducted according to the Noise Monitoring and Abatement Plan (AEM, 2014). The objective of this program is to measure noise levels at five previously determined monitoring locations around the Meadowbank site, over at least two 24 h periods. Since high winds in the area tend to substantially reduce the quantity of available valid data, Agnico Eagle aims to conduct a minimum of two monitoring rounds of 2-4 days per station. In 2017, noise monitoring was conducted over 38 days, and the total usable amount of data for each station ranged from 10 - 91 hours. Daytime, night-time, 10-11pm, and 24 h L_{eq} values were calculated from recorded 1-min L_{eq} values for each monitoring event and location and are shown in Table 1 of Appendix G9 Noise Monitoring Report.

The daytime target sound level (55 dBA) was not exceeded during any monitoring event. One night-time value at R1 slightly exceeded the target sound level (45 dBA), with a recorded $L_{eq,night}$ value of 46.2 dBA. An examination of the data indicated that as in previous years, 1-h L_{eq} values only exceeded 45 dBA in the early morning hours (6 – 7 am), which corresponds to shift change-over on the minesite and generally increased activity levels.

Overall, since targets were only marginally exceeded on one occasion, during peak helicopter season, and by a maximum of 1.2 dB, significant impacts to wildlife beyond impact predictions are not anticipated. Furthermore, regular wildlife monitoring continues to indicate that monitoring thresholds related to sensory disturbance are not being exceeded (see 2017 Wildlife Summary Report available in Appendix G13).

Noise monitoring will continue in 2018.

Table 8.72. Daytime, night-time, 10-11 pm, and 24-h L_{eq} values for monitoring locations R1 – R5, and percentage of the corresponding time period for which valid data was available (% coverage). Day- and night-time periods with fewer than 3 hours of valid data are excluded (-), and those exceeding corresponding target sound levels are shaded grey.

Site	Dates (2017)	$L_{eq, day}$ 7am-11pm (dBA)	% coverage	$L_{eq, night}$ 11pm-7am (dBA)	% coverage	$L_{eq, 1 h}$ 10-11pm (dBA)	$L_{eq, 24 h}$ (dBA)	% coverage
R1	Jul. 21	47.1	75%	-	0%	39.4	47.1	50%
	Aug. 8 - 10	45.9	31%	46.2	100%	24.6	46.1	54%
	Sept. 3 - 5	-	13%	30.4	75%	35.3	32.0	33%
R2	Jul. 7 - 10	-	6%	39.7	63%	36.8	39.3	25%
	Jul. 26 - 27	-	13%	-	0%	-	56.2	8%
R3	Jul. 2 - 4	38.6	100%	36.2	100%	31.0	37.9	100%
	Aug 8 - 10	48.4	31%	43.5	100%	49.1	46.1	54%
	Aug. 20 - 22	37.9	100%	35.0	100%	33.0	37.1	100%
R4	Jul. 10 - 12	41.4	94%	42.4	100%	32.2	41.8	96%
	Aug. 1 - 2	38.1	56%	40.7	100%	38.1	39.5	71%
	Aug. 16 - 18	39.6	25%	-	0%	41.9	39.6	17%
R5	Jul. 13 - 14	38.6	19%	41.7	63%	-	40.8	33%
	Aug. 4 - 6	44.1	81%	34.8	63%	32.8	42.9	75%
	Aug. 26 - 30	-	6%	25.6	75%	-	34.0	29%

8.11 AIR QUALITY MONITORING

As required by NIRB Project Certificate No.004 Condition 71*: 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 2017 air quality and dustfall monitoring program at Meadowbank was conducted according to the Air Quality and Dustfall Monitoring Plan - Version 2 (November, 2013).

The objective of the 2017 program was to measure dustfall, NO_2, and/or suspended particulates (TSP, PM_{10}, $PM_{2.5}$) at four monitoring locations around the Meadowbank site. Locations were established in 2011 in consultation with Environment Canada.

Results obtained for the measured parameters were compared to Government of Nunavut (GN) Environmental Guidelines for Ambient Air Quality (October, 2011) for TSP, $PM_{2.5}$ and NO_2; BC Air Quality Objectives (August, 2013) for PM_{10}; and Alberta Ambient Air Quality Guidelines (August, 2013) for dustfall. The Canadian Ambient Air Quality Standards for $PM_{2.5}$ (2015) are also referenced.

No TSP samples exceeded the relevant 24-h GN standard of 120 µg/m^3, nor did annual average TSP values exceed the GN guideline of 60 µg/m^3. For PM_{10}, no samples exceeded the BC Air Quality Objective of 50 µg/m^3 for the 24-h average. For $PM_{2.5}$, no samples exceeded the GN guideline of 30 µg/m^3 or the Canadian Ambient Air Quality Standard of 28 µg/m^3 for the 24-h average.

The Alberta recreational area guideline for dustfall was exceeded in one out of 47 samples. While the applicability of these guidelines is not well defined, there are no recreational or residential users within vicinity of the minesite and exceedance of one sample is not expected to result in significant aesthetic or nuisance concerns. The industrial area guideline was not exceeded in any sample.

The GN annual average standard for NO_2 of 32 ppb was not exceeded, with annual averages of 0.79 and 1.56 ppb at DF-1 and DF-2, respectively.

Historical comparisons indicate no trends towards increasing concentrations of any measured air quality parameter.

Weather data collected onsite in 2017 are provided in Appendix A of the 2017 Air Quality and Dustfall Monitoring Report (Appendix G10).

Estimated greenhouse gas emissions for the Meadowbank site as reported to Environment Canada's Greenhouse Gas Emissions Reporting Program in 2017 were 197,678 tonnes CO_2 equivalent, which is similar to the value obtained in 2015 and 2016 (187,280 and 184, 223 tonnes CO_2 equivalent).

A summary of incinerator stack testing results is provided. The measured concentrations of mercury were below the GN standard of 20 µg/Rm^3 in all three tests. Measured concentrations of total dioxins and furans were also below the GN standard (80 pg TEQ / Rm³ @ 11 % v/v O_2) in all three tests.

Overall, there are no apparent trends towards increasing air quality concerns at the Meadowbank site. Incinerator stack testing will be conducted again in 2018 and 2019 to confirm the source of the SVOC exceedance has been correctly identified and remediated.

AWAR Monitoring

In response to community concerns of dust generation, Agnico Eagle has conducted studies of dustfall along the Meadowbank AWAR since 2012. These studies characterize dust deposition rates to help determine the potential for impacts to wildlife in excess of those predicted in the Final Environmental Impact Statement (FEIS).

The objectives of the study conducted in 2017 was to continue monitoring to confirm results of the 2016 study and observe changes in dustfall rates in areas with and without dust suppression.

As in previous years, dustfall samples were collected in open vessels containing a purified liquid matrix provided by an accredited laboratory (Maxxam Analytics). Particles are deposited and retained in the

liquid, which is then filtered to remove large particles (e.g. leaves, twigs) and analyzed by the accredited laboratory for total and fixed (non-combustible) dustfall.

In 2017, the dustfall sampling program was expanded to assess dustfall rates in five AWAR dust suppression locations (km 11, 25, 50, 69, 84), as well as at two reference sites without dust suppression (km 18 and 78) that have been monitored since 2012. Statistical analysis indicated that for all transects with dust suppression, significant reductions in mean fixed dustfall rates occurred up to 150 m from the road, compared to reference sites without dust suppression. Beyond that distance (i.e. at 300 m), rates of dustfall were comparable to reference sites without dust suppression, and to background rates of dustfall. Overall, results of the dust sampling program showed that the applied dust suppressant is effectively reducing rates of dustfall for at least 2 months following application.

The 2017 All-weather Access Road Dust Monitoring Report can be found in Appendix G11.

Dustfall rates measured in 2017 continue to lie well within the range of historical values. To date (2012 – 2017), 6 samples have exceeded the Alberta Environment total dustfall guideline for industrial areas of 1.58 mg/cm2/30d, with 5 out of 6 occurrences at the 25 or 50 m distance (i.e. within the zone where all habitat was assumed lost in the FEIS). One sample exceeded the industrial guideline at 150 m (upwind) in 2014, but all other samples at that distance have been well below the recreational area guideline, suggesting an anomaly occurred either due to natural variability, sample interference, or sampling/analytical error.

At and beyond the 100 m distance (smallest assumed ZOI), the majority of samples have been below the Alberta Environment recreational area guideline of 0.53 mg/cm2/30d. In total, 11 out of 119 samples collected at this distance have exceeded the guideline, all at 100 or 150 m (none in 2016 or 2017). Average total dustfall to date at 100 and 150 m is below the guideline for recreational areas, at 0.39 and 0.38 mg/cm2/30d, respectively (n = 43 and 38).

All samples collected at the 300 or 1000 m distance have been within the range of background values measured to date (0.007 – 0.357 mg/cm2/30d). Average dustfall rates continue to meet the range of observed background values between 100 and 200 m from the road.

Under assumptions of continuous, long-term dust emissions from AWAR traffic, the FEIS predicted that effects of dust on vegetation and wildlife would not be significant, even without the use of mitigation measures such as minimizing traffic and applying dust suppressants. Results of AWAR monitoring to date continue to indicate that the majority of dust does settle within 100 m of the road, as predicted. In addition, average rates of dustfall decline below Alberta Environment's guideline for recreational areas within 100 m, and meet the range of background dustfall rates within 200 m of the AWAR. Based on these results, it is unlikely that FEIS predictions with respect to VECs (vegetation community productivity and wildlife) are being exceeded due to dust. These results continue to be supported by wildlife monitoring conducted under the Terrestrial Ecosystem Management Plan, including the most recent (2017) Wildlife Screening Level Risk Assessment.

Nevertheless, Agnico Eagle applied dust suppressant throughout the summer months at five key AWAR locations in 2017, and monitoring results indicated that rates of dustfall were effectively reduced in those locations. In addition, Agnico Eagle applied dust suppressant in two locations near the hamlet (Agnico spud barge and fuel tank farm) as well as over 7 km of AWAR on the Meadowbank site. In 2018, Agnico Eagle plans to apply dust suppression throughout the summer months in the same locations as 2017, and

believes that the identification of these potential areas of concern, application of dust suppressant throughout the summer months, and monitoring of dustfall levels satisfies requirements of the Project Certificate with respect to dust suppression.

Wildlife monitoring to date has indicated no significant road-related effects, dust monitoring has indicated no trend towards increasing rates of dustfall, and risk assessment has indicated no incremental risk for wildlife from chemical contaminants near the AWAR. Therefore, impacts of Meadowbank AWAR road dust to not appear to be exceeding predictions made in the FEIS.

8.12 CREEL SURVEY RESULTS

As required by DFO Authorization NU-03-0190 (AWPAR) Condition 5.2.4: ***Engage the local Hunter Trapper Organization(s) in the development, implementation and reporting of annual creel surveys within the water bodies affected by the Plan.***

And

NIRB Project Certificate No.004 Condition 51: ***engage the HTOs in the development, implementation and reporting of creel surveys within waterbodies affected by the Project to the GN, DFO and local HTO.***

In March 2007, a harvest study was initiated by Agnico Eagle in association with the Baker Lake Hunters and Trappers Organization (HTO) in order to monitor and document the spatial distribution, seasonal patterns and harvest rates of hunter kills before and after construction of the Meadowbank All-Weather Access Road (AWAR). The harvest study was conducted annually and is open to Inuit and non-Inuit residents of Baker Lake who are at least 16 years of age. The harvest study focuses primarily on terrestrial wildlife harvests; however, fishing results are also recorded by the harvest study administrator in support of on-going creel surveys.

In 2016 and 2017, Agnico suspended the harvest data collection as participation rates were decreasing. Considering possible participants fatigue and overall need for renewal, it was intended to draft improved methodology that would involve the stakeholders within the program. Discussions were held to initiate discussions on past experiences and path forward for the Hunter Harvest Study (HHS), including creel surveys. Parties involved included community agents, the BL HTO, GN and KIA. The process also included the Community affairs department from Agnico Eagle.

Moving forward Agnico Eagle intends to continue working with the GN, KIA and HTO to ensure a representative number of participants and long term success of the program. The HHS, including creel surveys, would be implemented in 2018 with the collaborative approach.

8.13 WILDLIFE MONITORING*

8.13.1 Annual Monitoring

As Required by NIRB Project Certificate No.004, Condition 55: ***Provide the Annual Wildlife Summary Monitoring Report.***

As a requirement of the NIRB Project Certificate, the 2017 Wildlife Monitoring Summary Report represents the 12th of a series of annual Wildlife Monitoring Summary Reports for the Agnico Eagle Mines Ltd. (Agnico Eagle) Meadowbank Mine (the project). Below is a summary of the program for 2017. The complete report presenting the whole program and complete analysis of the result is presented in Appendix G13. Baseline and monitoring programs were first initiated in 1999 and will continue throughout the life of the mine. Details of the wildlife monitoring program for the project are provided in the Terrestrial Ecosystem Management Plan (Cumberland 2006). The 2017 report provides the objectives, methodology, historical and current year results, and management recommendations for each monitoring program. The 2017 Wildlife Monitoring Summary Report builds on data presented in previous reports and incorporates monitoring recommendations from these reports.

A habitat analysis was completed for the first time since 2014. The Vault Pit is now fully operational and expanded into Phaser Lake. The habitat analysis assesses the overall area of different Ecological Land Classification (ELC) units lost due to mine development, based on GIS analysis; no additional ground investigations were completed in 2017. Habitat loss for the mine site (based on all approved mine development plans) was predicted to be 867 ha; however, actual habitat loss for the mine site is 1,027 ha. The loss of High suitability habitat for the mine site was greater than predicted (i.e., beyond thresholds) for ungulates (growing and winter season), small mammals, and other breeding birds, while construction of the AWAR required considerably less area and habitat loss than predicted. The overall net loss for the project to date, combining the mine site and AWAR together, is 4% above predicted total habitat loss (i.e., 46 ha greater than predicted and approved).

Nine active Peregrine Falcon (*Falco peregrinus*) nests were observed and monitored at quarry sites along the AWAR in 2017, with successful nesting confirmed at six nests. Falcon activity at Vault Pit was successfully deterred, and a Common Raven (*Corvus corax*) nest was removed from the Baker Lake Tank Farm under a Government of Nunavut (GN) exemption permit. Raptor nest management plans were not warranted at any of the active nest sites as no project-related effects on raptor nesting success were observed.

The GN Caribou (*Rangifer tarandus*) collaring program, ongoing for the past 10 years in the Baker Lake area, continued in 2017 with monitoring of existing collared animals. Seasonal Caribou movements within and adjacent to the Meadowbank Regional Study Area (RSA) were tracked and mapped throughout the year. Collared Caribou were present predominantly during the 2017 fall rut, with some minor presence in late summer, fall, and early winter. No collared Caribou moved around or across the Meadowbank RSA during spring migration, but collared Caribou moved across the AWAR during fall migration. No additional collars were deployed for Baker Lake animals in 2017 and by the end of the year, only 11 collars remained active.

Road closures were implemented from late October to early November to ensure safe passage of migrating Caribou herds. No Caribou fatalities occurred because of activities at the mine or along the AWAR in 2017. One Wolverine (*Gulo gulo*) was killed at the mine site along the Vault ring road. Actions taken to improve prevention practices after this incident included employee consequences and reiteration of mine site wildlife protocols with all staff. With the Authorization of the GN officer, two Wolves (*Canis*

* TSM- Biodiversity and Conservation Management

lupus) were euthanized after attempts to deter the animals were unsuccessful. In general, improved food-handling practices and employee awareness programs at the mine site have helped prevent mine-related fatalities.

8.13.2 Harvest Study Results

As required by NIRB Project Certificate No.004 Condition 54

a. Updated terrestrial ecosystem baseline data

See "Meadowbank Mine 2017 Wildlife Monitoring Summary Report" attached in Appendix G13.

e. Details of a comprehensive hunter harvest survey to determine the effect on ungulate populations resulting from increased human access caused by the all-weather private access road, including establishing preconstruction baseline harvesting data, to be developed in consultation with local HTOs, the GN-DOE and the Nunavut Wildlife Management Board.

As required in the TEMP (Cumberland 2006), the Baker Lake Hunter Harvest Study (HHS) was initiated in March 2007 by Agnico Eagle in association with the Baker Lake HTO to monitor and document the spatial distribution, seasonal patterns, and harvest rates of hunter kills and angler catches before and after construction of the AWAR.

After low participation during the first year of the study, methods were strategically adapted, participation increased steadily, and valuable information on harvest patterns in the Baker Lake area was collected. Data from the HHS were provided annually in monitoring reports from 2007 to 2015; however, declining participant rates in 2014 and 2015, likely due to participant fatigue, led to reconsideration of the HHS approach in 2016. Lower participant rates and reduced data made it increasingly difficult to determine hunting patterns in the Baker Lake area and along the AWAR, and to answer fundamental questions on the effect of the mine on regional Caribou populations. Agnico Eagle suspended the program for 2016 and 2017. In 2017, stakeholders met and agreed to participate in the HHS committee. Kick-off meetings and information sessions were completed, and a fully integrated HHS is proposed to be underway by the end of 2018.

Thus, moving forward Agnico Eagle intends to continue working with the GN, KIA and HTO to ensure a representative number of participants and long term success of the program. The HHS would be implemented in 2018 with this collaborative approach.

To ensure success in re-starting the HHS, Agnico has contracted a third party consultant to assist in kicking off the HHS in 2018 and has also looked at and involved Northern research groups to increase chances in successful community involvement within the study.

f. Details of annual aerial surveys to be conducted to assess waterfowl densities in the regional study area during the construction phase and for at least the first three (3) years of operation, with the data analyzed and compared to baseline data to determine if significant effects are occurring and require mitigation.

Given the low densities of waterbird nests identified at the mine site and along the AWAR from 2005 - 2012 (i.e., too low to determine whether changes in nest abundance or success have occurred), and the absence of data suggesting that mine or road-related effects are occurring, the waterbird nest survey program has been discontinued.

g. Details of an annual breeding bird plot surveys and transects along the all-weather road to be conducted during the construction phase and for at least the first three (3) years of operation.

Details of the breeding bird plot surveys are provided in Section 4 of the "Meadowbank Mine 2016 Wildlife Monitoring Summary Report" (Appendix G13). The breeding bird plot monitoring program is to continue every year during the construction period, for at least the first three full years of mine operation (2010 to 2012) in accordance with the TEMP (Cumberland 2006). The most recent PRISM plot survey was conducted in 2015, and the next survey is planned for 2019.

The objective of the breeding bird plot monitoring program is to confirm that a mine-related change of 20% function, determined by an increase or decrease in local breeding bird abundance, richness, and diversity, has not occurred. The program uses the widely accepted Canadian Wildlife Service's (CWS) PRISM protocols (CWS 2005). A secondary objective of the monitoring program is to determine more effective ways to prevent disturbance to nesting birds based on feedback from mitigation measures and observations.

For the breeding bird PRISM plots, data analysis in 2015 showed that most bird community indices were variable with little difference in overall trends between mine and control plots. Thresholds had not been exceeded and no additional management or mitigation considerations were necessary. The next set of PRISM plot surveys is planned for 2019.

8.13.3 Caribou Migration Corridor Information Summary

As required by NIRB Project Certificate No.004 Condition 56: ***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, KIA and NIRB's Monitoring Officer annually.***

Caribou telemetry data are provided in Section 9 of the "Meadowbank Mine 2017 Wildlife Monitoring Summary Report" (Appendix G13).

8.13.4 Caribou Collaring Study

As required by NIRB Project Certificate No.004 Condition 57*: participate in a caribou collaring program as directed by the GN-DOE*

Agnico Eagle continue to participate in and provide for the GN DoE Caribou satellite-collaring program that includes data collected within the Meadowbank RSA, as per the recently renewed (2017) Memorandum of Understanding with government partners. The GN biologists discuss collar deployments with hunters and elders, and get approval prior to proceeding. Discussions are ongoing between Agnico Eagle, GN, and other partners on the best path forward to ensure caribou maps continue to integrate Elders and local HTO input. Detailed results can be found in Section 9 of the "Meadowbank Mine 2017 Wildlife Monitoring Summary Report" (Appendix G13).

The satellite-collaring program was developed to provide information on the distribution of Caribou occurring within the Meadowbank RSA and contribute data to other ongoing satellite-collaring programs for the Ahiak, Qamanirjuaq, and other herds. The satellite-collaring program, along with GN DoE regional

data, is an important monitoring and management tool that provides a regional perspective on Caribou activity near mine operations.

At the beginning of the 2017 monitoring year, 24 collars were active, including seven collars from the 2013 deployment that were active from January until October. As of December 2017, only 11 collars were active, including five from the 2015 deployment and six from the 2016 deployment. The location of Caribou and fuel caches prevented the deployment of additional collars in the Baker Lake area in 2017; more collars are planned to be deployed in this area in 2018. A summary of 2017 locations and movement patterns for animals collared around Baker Lake is provided in Section 9.6 of the 2017 Meadowbank Wildlife Monitoring Summary (Appendix G13). Movements of collared Caribou in close proximity to the Meadowbank RSA and LSA in 2017 are also included in the report (section 9.6, Figure 9.2.). Movements for Qamanirjuaq herd collared animals, a program also supported by Agnico Eagle, are provided for context. In 2017, an additional 35 animals were collared under this program, and a total of 75 collars were active and monitoring movements of the Qamanirjuaq herd at the end of 2017. Seasonal movements of all collared Caribou are discussed below.

8.13.5 Raptor Nest Survey

The raptor nest survey monitoring program has been designed to confirm that mine-related activities do not result in inadvertent negative effects on nesting raptors. Raptor surveys along the proposed AWAR alignment in 2005 (i.e., prior to construction) indicated that only low suitability habitat for nesting raptors was available. To construct the AWAR in 2007/2008, excavated and blasted rock materials were used from numerous quarries along the alignment, resulting in the creation of some moderate and high suitability raptor nesting habitat areas characterized by steep rock walls. Established nests within some of these quarries are monitored on an annual basis to evaluate occupancy. Detailed results can be found in Section 5 of the “Meadowbank Mine 2017 Wildlife Monitoring Summary Report” (Appendix G13).

The primary objectives of the raptor nest survey monitoring program are to:

1. Confirm that raptor nest failures are not be caused by mine-related activities. The threshold level is one nest failure per year; and

2. Confirm that no project-related mortality of raptors occurs. The threshold level of mortality is one individual per year.

In 2017, nine active Peregrine Falcon nests were documented in Quarries 3, 7, 8, 16, 17, 18, 19, 21 and 22 along the AWAR. Nesting was observed for the first time at Quarry 8, 17 and 22, while previous nest sites at Quarry 2 (2014), Portage Pit (2013) and Goose Pit (2016) were not active in 2017. Cumulative information on Peregrine Falcon nests from 2009 to 2017 is summarized in Table 5.1 and Figure 5.1 of the 2017 Wildlife Monitoring Summary Report. In addition to the nine active nest sites in 2017, Peregrine Falcon activity was also observed at five additional quarry sites (i.e., Quarries 2, 9, 10, 11, 14) during the monitoring program.

Observations made throughout the nesting season on raptor activity and nest success are detailed in Table 5.2. of the 2017 Meadowbank Wildlife Monitoring Summary Report. Nesting success was confirmed through identification of maturing chicks at six out of nine active nesting sites along the AWAR in 2017. The nest at Quarry 16 once again did not have confirmed egg or chicks present, but three falcons were present in mid-summer. At Quarry 18, where an active nest has been observed since 2010, no eggs or chicks were observed this year. A nest was observed for the first time at Quarry 8 where five young falcons were observed flying in late summer. This new 2017 nesting site should be closely monitored next

year to document eggs and/or chicks. Specific raptor nest management plans were not warranted at any of the active nest sites, as mine-related activity was minimal in the quarries.

Falcon activity observed at Vault Pit was deterred using raptor cannons. Additional falcon activity at Baker Lake Tank Farm #4 was reported to the Conservation Officer, and a raven nest observed at Baker Lake Tank Farm #5 was removed in April 2017 under an exemption permit. No other nesting activity was observed in more active areas of the mine (e.g., pits, waste rock piles);therefore, additional steps to avert nesting activities were not required.

Additional observations of raptor activity around the mine site are included in Appendix A of the 2017 Meadowbank Wildlife Monitoring Summary Report. Peregrine Falcons were observed flying over the mine site in May, June and July. A group of four Peregrine Falcons was observed along the AWAR in September, and one falcon was observed at rest at the Baker Lake spud barge in October. Rough-legged Hawk (*Buteo lagopus*) was observed on multiple occasions in May flying near the mine site and Amaruq Road, and one individual exhibited defensive behavior near the mine site's north east corner in July; however, follow-up monitoring did not confirm the presence of a nest. Peregrine Falcon and Rough-legged Hawk were observed during AWAR surveys.

8.14 COUNTRY FOOD

As required by NIRB Project Certificate No.004 Condition 67: ***Develop and implement a program to monitor contaminant levels in country foods in consultation with HC; a copy of the plan shall be submitted to NIRB's Monitoring Officer.***

In keeping with AEM's Terrestrial Ecosystem Monitoring Plan and Nunavut Impact Review Board Project Certificate, Condition 67, a Wildlife Screening Level Risk Assessment (WSLRA) and Human Health Risk Assessment for the Consumption of Country Foods (HHRA) were completed in 2017 to evaluate risks to wildlife and human health from contaminant exposure during operation of the Meadowbank mine. The full WSLRA and HHRA reports for 2017 are provided in Appendix G14 and G15 respectively, and summarized here.

WSLRA and HHRA assessments were based on soil, water and plant tissue samples collected from onsite, near-site, AWAR, and reference sites in 2017. Methodology of the risk assessments follows the format of the pre-construction screening level risk assessments (2005), and initial assessments under operational conditions (2011). The WSLRA evaluated risk to wildlife (ungulates, small mammals, waterfowl and songbirds) from dietary ingestion of chemical contaminants. The HHRA evaluated risk to humans from consumption of country food items (caribou meat and organs; Canada goose meat). Both assessments used a hazard quotient approach. As per Condition 67, the 2014 and 2017 HHRA report incorporates recommendations from Health Canada's review of the 2011 assessment, as well as updates from the most recently published federal guidance document (Health Canada, 2012). Updated toxicity reference values and bio transfer ratios were used as available.

<u>WSLRA</u>

The general approach and methodology of this assessment are based on those presented in the risk assessment of baseline conditions (Azimuth, 2006), using samples of soil, water and plant tissue collected onsite, near-site, along the all-weather access road (AWAR) and at external reference locations. Exposure (estimated daily intake; EDI) was calculated from 95% UCLM concentrations in environmental

media for each location, and toxicity reference values (TRVs) were developed from lowest-observed adverse effect levels (LOAELs) from the literature. TRVs were the same as those used in previous assessments.

HQ values were calculated as:

$$HQ = EDI / TRV$$

Where:

EDI = estimated daily intake (ug/kg body weight/day)

TRV = toxicity reference value (ug/kg body weight/day)

Risk was characterized as negligible when HQ ≤ 1.

Key findings were as follows:

- Risk to ungulates (caribou), small mammals (northern red-backed vole), and waterfowl (Canada geese) was found to be negligible (HQ < 1) for all COPCs in all locations.

- Potentially unacceptable risks to songbirds from chromium (HQ>1) were identified for all locations, which is consistent with all previous assessments (baseline, 2011, 2014). HQ values exceeded 1 for onsite, near-site, AWAR, and external reference locations, indicating that risk from this COPC is not elevated as a result of mining activities. Chromium is naturally elevated in ultramafic rock, which is common in the region.

- All 90th centile concentrations of COPCs in soil samples collected onsite were lower than values measured during the baseline (pre-construction) assessment except beryllium, for which a minor increase of 13% (0.5 to 0.57 mg/kg) was observed.

Overall the operation of the Meadowbank mine does not appear to be contributing excess risk to wildlife via dietary uptake of chemical contaminants

HHRA

As recommended by Health Canada, a hazard quotient (HQ) approach was used to classify the risk associated with the consumption of country food items from onsite, near-site, AWAR, and external reference locations. Risk was classified as negligible for each contaminant of potential concern (COPC) if the calculated HQ value was ≤ 0.2 (Health Canada, 2012). For each COPC with an HQ value > 0.2, it was determined whether onsite, near-site or AWAR HQ values exceeded the corresponding external reference HQ value. In those cases, further investigation into the underlying data was performed to understand the potential for incremental risk due to mining activities over and above contributions from background materials.

Overall, calculated hazard quotients were the same as or lower than the previous assessment in 2014, which used identical methods, indicating that excess risk is not occurring as a result of accumulation of chemical contaminants due to mining.

Key findings were as follows.

Caribou Meat (Muscle)

- Negligible risk (HQ ≤ 0.2) is associated with the consumption of caribou muscle (meat) for most COPCs. For chromium, lead, thallium, and zinc, HQ values exceeded 0.2 for some consumption scenarios at all study areas, including the external reference site, which also occurred in previous assessments.

    - For zinc, the exceedance only occurred for heavy consumption by toddlers, and was the same (0.3) for all sites, indicating no incremental risk as a result of mining activities.

    - For chromium, lead, and thallium, onsite or AWAR HQs exceeded the corresponding external reference value under some consumption scenarios. However, the difference in HQ values between impacted and reference sites was not expected to be significant in any case, based on analyses of background variability for each COPC/food item combination. These results indicate that potential incremental risk as a result of mining activities is not distinguishable from background variation.

Caribou Kidney

- Negligible risk (HQ ≤ 0.2) is associated with the consumption of caribou kidney from all study locations for all COPCs except thallium. The HQ value for thallium was 0.3 for the onsite study area for heavy consumption by toddlers, and was 0.2 for the AWAR and external reference locations.

    - This difference is not expected to be significant, considering that HQ values marginally exceed 0.2 and tolerable daily intakes are typically considered to be within an order of magnitude of true values. As a result, incremental risk of the project associated with this COPC is not expected to be significant.

Caribou Liver

- Negligible risk (HQ ≤ 0.2) is associated with the consumption of caribou liver from onsite, AWAR, and external reference study areas for all COPCs except lead, which had HQs > 0.2 for all study areas, including the external reference site under some scenarios (maximum HQ of 0.6).

    - Although HQ values for lead were higher at onsite or AWAR locations compared to the reference site under some consumption scenarios, differences were marginal (0.1). This difference is not expected to be significant, considering that HQ values are low and tolerable daily intakes are typically considered to be within an order of magnitude of true values. As a result, incremental risk of the project associated with this COPC is not expected to be significant.

Canada Goose Meat

- Negligible risk (HQ ≤ 0.2) is associated with the consumption of Canada goose meat from onsite, near-site, AWAR and external reference study areas for all COPCs except chromium, for which the HQ value for heavy consumption by toddlers was 0.3 for both onsite and reference areas indicating no incremental risk as a result of the project.

Combined Consumption

- The combined consumption analysis produced no additional scenarios under which adverse health effects may potentially occur.

Overall, this analysis indicated that mining activities do not appear to be contributing significant incremental risk from COPCs to consumers of country food items sourced in and around the Meadowbank area. This is consistent with the baseline assessment (2005) which concluded that based on projected concentrations of COPCs in environmental media (soil and water), risk to persons consuming country foods would not increase appreciably following mine development.

8.15 ARCHAEOLOGY

As required by NIRB Project Certificate No.004 Condition 69: carry out the Project to minimize the impacts on archeological sites, including conducting proper archeological surveys of the Project area (including the all-weather road and all quarry sites); [Cumberland] shall provide to the GN an updated baseline report for archeological sites in the Project area.

In 2017, there were no additional impact assessments carried out at Meadowbank.

In 2016, archaeological impact assessments and mitigation within the Amaruq exploration property were conducted at the Whale Tail zone and along the proposed exploration road between the Meadowbank mine area and the Amaruq property. Archaeological studies were conducted to identify sites that could potentially be impacted by project components and to ensure avoidance and/or to recommend mitigation measures for sites that cannot be avoided. Mitigative activities were conducted at various sites along the road and no grave sites were impacted. On February 28th, 2017, Agnico Eagle submitted to the GN Cultural and Heritage department the "Archaeological Site Status Report to 2016 Meadowbank Gold Project and Exploration Activities, Nunavut." (This report and the information contained in it are confidential and therefore were submitted directly to the GN Cultural and Heritage department. Requests for information should be made directly to the GN.)

8.16 CLIMATE

During the technical meeting and pre-hearing conference held in Baker Lake on January 14 -15, 2015 regarding the NWB Water License renewal, INAC mentioned that *climate data provide important input for interpreting site-specific geothermal aspects, such as the rate of mine waste freezeback and active layer thicknesses, for permafrost encapsulation of the mine wastes. In addition, the previous year's climate is useful for interpreting the hydrology and water balance for the site.*" It was recommended that the annual monitoring report summarize monthly climatic conditions at the Meadowbank site over a 12-month period. Table 8.73 includes average, minimum and maximum air temperatures, average and maximum wind speed as well as daily average, total and maximum volume of precipitation (rainfall / snowfall) on site. It should be noted that Agnico does not have a snow gauge but rather a rain gauge. For this reason, snow precipitations are reported as mm of rain.

In 2017, temperatures and winds recorded were similar to annual trends observed from 2009-2016. The maximum wind speed recorded in 2017 was 26.24 m/s. The maximum wind speed recorded between 2008 and 2016 was 29.22 m/s in 2015. Total precipitation in 2017 (268.35 mm), similar to 2016 (299.45 mm).

Table 8.73 – 2017 Monthly climate data

Date	Temperature Average	Temperature Max	Temperature Min	Wind Speed Average	Wind Speed Max	Total Precipitation	Daily Average Precipitation	Max Precipitation
	°C	°C	°C	m/s	m/s	mm	mm	mm
January	-28.05	-11.32	-41.02	4.9	20.05	18.8	0.61	2.0
February	-32.21	-16.77	-42.43	5.51	23.76	5.6	0.20	1.4
March	-29.43	-13.05	-40.78	4.48	19.09	17.8	0.57	10.2
April	-18.90	-8.83	-28.78	6.12	21.29	21.8	0.73	9.8
May	-6.10	6.38	-23.44	4.88	13.72	25.8	0.83	14.7
June	6.99	20.61	-0.92	4.82	21.93	35.7	1.19	23.5
July	12.88	24.26	3.427	5.14	16.46	22.6	0.73	10.7
August	15	26.11	1.60	5.09	14.13	23.0	0.74	9.5
September	4.63	20.64	-3.64	5.29	21.29	6.6	0.22	2.9
October	-8.39	3.68	-24.29	6.43	26.24	39.4	1.27	10.5
November	-17.94	-4.54	-30.26	6.28	21.68	48.9	1.63	13.5
December	-26.87	-15.81	-37.57	3.89	18.62	6.8	0.21	1.9

SECTION 9. CLOSURE

9.1 PROGRESSIVE RECLAMATION

9.1.1 Mine Site

As required by Water License 2AM-MEA1525 Schedule B, Item 17: ***A summary of any progressive closure and reclamation work undertaken including photographic records of site conditions before and after completion of operations, and an outline of any work anticipated for the next year, including any changes to implementation and scheduling.***

And

As required by KIA KVPL08D280 Production Lease Condition 6.01 (9): ***Reclaim and remediate the Leased Land in accordance with the Closure and Reclamation Plan, on an ongoing basis through the Term and deliver to KIA, not later than March 31 of each year of the Term, beginning five years after the effective date, an amended C&R Plan detailing the activities taken in the last year and to be undertaken in the next year and planned for the balance of the Term, that includes, but is not limited to the proposed methods and procedures for progressive reclamation.***

In January 2014, Agnico updated the 2008 site closure plan using revised life of mine calculations. The report “Interim Closure and Reclamation Plan for Meadowbank” can be found in Appendix H1 of the 2013 Annual report. This document was provided to the NWB in support of the Type A Water License renewal. The Plan was approved during the renewal process. The Interim Closure and Reclamation Plan for Meadowbank will be reviewed in 2018.

The current mine plan includes progressive closure associated with the following mine components: Portage and Goose open pits, Portage Waste Rock Storage Facility, Tailings Storage Facilities, water management infrastructure, and site infrastructure (limited structures).

Progressive reclamation of Goose, Portage and Vault Pit will start once the mining activities in each pit has ceased, 2015 and 2018 respectively. For Goose Pit, mining activities were completed in April 2015. There is no pumping activity to dewater the pit anymore and natural reflooding with inflows such as seepage water and natural runoff is occurring since 2015. In addition, some water from the Central Dike seepage was transferred to Goose pit in 2015 and 2017 as part of reflooding. No active pumping system is operating in Goose pit and part of the system has been decommissioned. Active reflooding of the Goose Pit could possibly be undertaken in2019, by pumping water from the Third Portage Lake into Goose Pit. The reflooding of Goose Pit will be completed in accordance with the requirements of the Water License. Overall, progressive closure for the pitsconsists of decommissioning and removing the pumping systems and actively (and passively) reflooding the pits.

Water management infrastructure to be decommissioned consists of all the pumping systems that had served for the dewatering of Second Portage Arm, the Bay Goose impoundment, the Vault area, as well as the reclaim water system and the pit water management systems. Following conversion of the

Portage Attenuation Pond into the Reclaim Pond (South Tailings Cell) in 2014, all of the dewatering equipment from the North Cell reclaim system (i.e. dewatering pipelines, reclaim barge, effluent diffuser pipelines, and pumps) has been dismantled and removed. This activity occurred in 2015. Following the cessation of operations, all reclaim pipelines and pumps will be dismantled. The tailings pumping system including pipelines will also be decommissioned at the end of mining operations.

Under the current design plans, waste rock from Portage and Goose Pits (ceased mining in April, 2015) is currently being stored in the Portage Rock Storage Facility, in the Goose NPAG Rock Storage Facility (NPAG for reuse at closure – capping of South Cell TSF) or in the Central Portage Pit (as fish habitat structure – mining completed in this area). For more detail, refer to the 2017 Mine Waste Rock and Tailings Management Plan, Appendix D1. The Portage waste rock storage facility (PRSF) was constructed to minimize the disturbed area and restrict runoff to the Tailings Storage Facility. The PRSF is composed of an internal sector comprising potentially acid generating (PAG) waste rock and a cover comprising of non-acid generating (NPAG) waste rock. The PAG rock portion of the PRSF has subsequently been capped, around the perimeter as the facility has risen, progressively, during operations with a 4m layer of NPAG rock to constrain the active layer within relatively inert materials. The control strategy to minimize the onset of oxidation and the subsequent generation of acid rock drainage includes freeze control of the waste rock through permafrost encapsulation and capping with an insulating convective layer of NPAG rock. The waste rock below the capping layer is expected to freeze, resulting in low rates of acid rock drainage (ARD) generation in the long term. Instrumentation has been installed in the PRSF to monitor the freeze back in the waste rock. Results to date from the thermistors indicate that freeze back is occurring in the PRSF structures, as described in Section 5.3.2 of this report. Monitoring will continue during operations and closure. The placement of the NPAG rock cover over the PAG rock has been progressively completed during operations and has been ongoing since 2012. As mentioned, there has been placement of a 4m NPAG rock cover over the exterior slopes, around the perimeter, as the PRSF is filled in lifts. As of January 2017, 86%of the area of the Portage PRSF had been covered with NPAG rock. Additional cover will be completed on the PRSF in 2018. The capping of the top of the facility will be completed during final closure operations after mining in Portage Pit has been completed.

A similar principle will be used for the Tailings Storage Facility. Thermal modelling indicates that the tailings will freeze in the long term, and that the talik that currently exists below 2PL Arm will freeze before seepage from the TSF will reach the groundwater below the permafrost. The tailings are potentially acid generating (PAG); therefore a cover of NPAG material will be placed over the tailings to physically isolate the tailings and to confine the active layer within relatively inert materials. The control strategy to minimize water infiltration into the TSF and the migration of constituents out of the facility includes freeze control of the tailings through permafrost encapsulation. Refer to the Waste Rock and Tailings Management Plan in Appendix D1 for additional details on the tailings cover design for closure. The final design of the tailings cover will be presented in the final closure and reclamation plan.

Progressive reclamation by capping the tailings in the North Cell was undertaken in winter of 2015 following the completion of the tailings deposition in this cell. The construction continued in 2016 and 2017. Capping occurred in sections (perimeter areas) where the tailings were at elevation 149.5m (design level). This consisted of capping with 2.0m of NPAG material. Site inspection during the construction as well as Quality Control sampling were completed to ensure that material used for the cover was NPAG, as discussed in Section 5.1 of this report. Progressive closure is planned to continue on the North Cell in

winter 2018. As the tailings deposition is completed in the North Cell since 2015, additional areas of the tailings can be covered with NPAG material.

As part of the closure and reclamation planning, Agnico has undertaken a research program in collaboration with the RIME (Research Institute in Mine and Environment). As discussed in Section 5.3.2, the focus of this research program is the reclamation of the tailings storage and waste rock storage facilities. Refer to this section of the report for additional details on the research project.

As per the Meadowbank No Net Loss Plan (NNLP) (October, 2012), compensation measures will have to be applied on site for closure. The NNLP quantifies the losses to fish habitat that will occur throughout the mine development and operational phase, and the gains that will be achieved through compensation measures. As part of the compensation measures, creation of fish habitat features within the mined out pits (Portage and Goose) is ongoing. The creation of fish reefs has been undertaken in the Central Portage Pit since the completion of mining. The construction of finger dikes in Third Portage Lake was initiated in 2016 to develop construction methods for these structures. The test was completed along Bay Goose dike at one location. . The dikes faces (East Dike, Bay Goose Dike, South Camp Dike, Central Dike) are also considered as compensation features in the NNLP and have been completed during operations.

For more information regarding these activities, refer to the *Interim Closure and Reclamation Plan* found in Appendix H1 of the 2013 Annual Report.

9.1.2 AWAR

As required by INAC Land Lease 66A/8-71-2, Condition 33: ***The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with the approved Abandonment and Restoration Plan, as well as any variations from the said Plan.***

And

As required by KIA Right of Way KVRW06F04, Condition 26: ***File annually a progress report for the preceding year, outlining any ongoing restoration completed, in conformity with the Abandonment and Restoration plan***.

No extensive progressive reclamation has been completed on the AWAR or associated quarries in 2017

9.1.3 Quarries

As required by INAC Land Lease 66A/8-72-2, Condition 33: ***The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with C&R Plan, as well as any variations from the said Plan.***

No restoration work was completed in 2017. Before the construction of the landfarm facility at the mine site in 2012, contaminated soils from spills occurring on the AWAR were stored in Quarry 5 and 22 along the AWAR. In 2014, Agnico completed assessments in Quarry 5 and 22 to verify if the substrate where contaminated materials (with petroleum hydrocarbons (PHC"S)) were stored met CCME Remediation

Criteria for Industrial use of Coarse Material. Quarry 5 was deemed remediated and details were provided in the 2014 Annual Report. Refer to Section 3.2 for more details regarding Quarry 22.

9.2 RECLAMATION COSTS

9.2.1 Project Estimate

As required by Water License 2AM-MEA1525 Schedule B, Item 19: ***An updated estimate of the current restoration liability based on project development monitoring, results of restoration research and any changes or modifications to the Appurtenant Undertaking.***

And

As required by NIRB Project Certificate No.004, Condition 80: ***File annually with NIRB's Monitoring Officer an updated report on progressive reclamation and the amount of security posted, as required by KivIA, INAC, and/or the NWB.***

Refer to Section 9.1 for the progressive reclamation completed in 2016 and in previous years. Progressive reclamation measures undertaken to date, which are reflected in the financial security cost estimate, include perimeter cover of the Portage Waste Rock Storage Facility with 4m of NPAG material. The financial security cost estimate from 2014 has been conservatively developed assuming no further progressive rehabilitation activities are completed through the remaining life of the mine, and all remaining reclamation costs are incurred at the onset of permanent closure. For this reason the financial security cost estimate should be revisited as progressive reclamation measures are completed.

A financial security cost estimate of the closure and reclamation activities for the Project, based on the current end of mine life configuration, was previously prepared using the RECLAIM template (Version 6.1, March 2009); details of this estimate are provided in Section 4.0, Appendix I1 and I2 of the closure plan found in Appendix H1 of the 2013 Annual Report. An update of the financial security cost presented in the Interim Closure and Reclamation Plan was prepared in December 2014 and is available in Appendix H1 of the 2014 Annual Report. The updated financial security cost estimate has been prepared using a more recent version of RECLAIM template (Version 7.0, March 2014). This updated closure cost was approved during the Type A Water License renewal process and forms part of the renewed Water License (July, 2015). The updated closure and reclamation cost estimate for the Meadowbank Gold Project using RECLAIM version 7.0 is $84,869,488. Indigenous and Northern Affairs Canada requested, during the Type A water license renewal process, that this amount be increased should Agnico be unable to take care of the closure and reclamation activities itself. Therefore, the agreed reclamation liability is $86,519,614.

Agnico Eagle has provided a Letter of Credit to the Government of Canada (Indigenous and Northern Affairs Canada) for C$71.1 million effective October 1, 2015 against site reclamation liability at Meadowbank for the mine plan. Agnico Eagle has also provided a Letter of Credit to the Kivalliq Inuit Association for C$78,834.710$ effective December 2015 against decommissioning and reclamation of the Mine site phase. Consequently as of the writing of this report Agnico Eagle has posted Letters of Credit of a combined value of C$150,534,710 against reclamation liability at Meadowbank (174% of estimated liability). On February 12, 2016 Agnico sent a request to the NWB to consider a change to the amount of

security under the License to remove the overabounding. On June 6, 2016, NWB issue the Amendment no1 to the Water License 2AM-MEA1525. The amendment mentioned "furnish and maintain security with the Minister in the amount of $43,259,807. As set out in the Meadowbank Security Management Agreement, May 17, 2016, the amount secured under this Part constitutes 50% of the total global security amount of $86,519,614 that is required to reclaim the Undertaking and reflects that the other 50% of the global security amount will be held outside the License by the Kivalliq Inuit Association, in accordance with the terms and conditions of the Meadowbank Security Management Agreement."

No additional work on the financial security cost estimate of the closure and reclamation activities with RECLAIM was completed in 2017. As agreed with Indigenous and Northern Affairs Canada in 2017, a new Interim Closure and Reclamation Plan for Meadowbank will be issued in 2018, including a new financial security cost estimate of the closure and reclamation activities.

9.2.2 AWAR and Quarries

As required by INAC Land Lease 66A/8-71-2, Condition 19: ***The lessee shall submit to the Minister every two years after the commencement date of this lease (January 2007), a report describing any variations from the Abandonment and Restoration Plan and updated cost estimates.***

And

As required by INAC Land Lease 66A/8-72-2, Condition 37: ***The lessee shall submit to the Minister every 2 years after the commencement date of this lease (January 2007), a report describing cumulative variations from the C&R Plan with updated cost estimates.***

And

As required by KIA Right of Way KVRW06F04, Condition 14: ***Submit to KIA every two years on each anniversary of the commencement date (February 2007), a report describing any variations from the Abandonment and Restoration Plan and updated cost estimates.***

No extensive progressive reclamation has been completed on the AWAR or associated quarries in 2017.

No major modifications were made in the last updated interim closure plan from 2014 compared to with the 'AEM Closure and Reclamation Plan, September 2008'. The cost estimate for the reclamation of the AWAR and quarries in the December 2014 cost estimation is 991,072$ with RECLAIM 7.0 instead of $1,061,664 estimated previously with Reclaim 6.1. The difference in cost is explained by 8.6 % increase in scarifying unit rate and by the drill/blast unit rate removed and replaced with drill/blast/load/short haul which represented a 28% decrease. No change to this estimate based on RECLAIM 7.0 was made in2017. This item will be reviewed in the next Interim Closure and Reclamation Plan for Meadowbank, to be issued in 2018.

SECTION 10. PLANS / REPORTS / STUDIES

10.1 SUMMARY OF STUDIES

As required by Water License 2AM-MEA1525 Schedule B, Item 20: ***A summary of any studies requested by the Board that relate to Water use, Waste disposal or Reclamation, and a brief description of any future studies planned.***

No studies were requested by the NWB in 2017.

10.2 SUMMARY OF REVISIONS

As required by Water License 2AM-MEA1525 Schedule B, Item 21: ***Where applicable, revisions will be completed as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals.***

The following monitoring and management plans were revised in 2017:

- Mine Waste Rock and Tailings Management Plan, Version 7 (Appendix D1);
- Tailings Storage Facility – Operation, Maintenance and Surveillance Manual, Version 8;
- Dewatering Dikes – Operation, Maintenance and Surveillance Manual, Version 7;
- 2017 Water Management Report and Plan (Appendix C2) including the Ammonia Management Plan and the Freshet Action Plan;
- Groundwater Monitoring Plan, Version 8;
- Oil Handling Facility: oil Pollution Emergency Plan, Version 8;
- Emergency Response Plan, Version 12.

The above listed plans are included in Appendix C2, D1, and I1. A brief description of revisions made to each of plans is provided in Appendix I2.

10.3 EXECUTIVE SUMMARY TRANSLATIONS

As required by Water License 2AM-MEA1525 Schedule B, Item 22: ***An executive summary in English, Inuktitut and French of all plans, reports, or studies conducted under this Licence.***

Appendix I2 includes an executive summary in English, French and Inuktitut for the following documents:

- All monitoring and management plans listed in Section 10.2 above.

- Reports or studies submitted in 2017:
    - 2017 Annual Geotechnical Inspection;
    - Annual Review of Portage and Goose Pit Slope Performance (2017);
    - 2017 Independent Geotechnical Expert Review Panel Reports;
    - 2017 Landfarm Report;

- 2017 Core Receiving Environment Monitoring Program Report;
- 2017 Meadowbank site visit and groundwater sampling results – Factual report;
- 2017 Wildlife Monitoring Summary Report;
- 2017 Q22 Report
- 2017 All-weather Access Road Dust Monitoring Report;
- 2017 Blast Monitoring Report;
- 2018 Mine Plan;
- 2017 Stack Testing Report;
- 2017 Air Quality and Dustfall Monitoring Report; and
- 2017 Noise Monitoring Report.

SECTION 11. MODIFICATIONS / GENERAL / OTHER

11.1 MODIFICATIONS

As required by Water License 2AM-MEA1525 Schedule B, Item 14: ***A summary of modifications and/or major maintenance work carried out on all water and waste related structures and facilities.***

In accordance with Water License 2AM-MEA1525, Part D, Item 14, Agnico submitted on January 18, 2018 a copy of the 2017 Construction Season As-Built Report Tailings Storage Facility regarding the construction of Stage 3 for Saddle Dam 3,4,5 and the preparation of the north abutment of Central Dike (Appendix B5).

Agnico also submitted the South Cell Internal Structure As-built report to the Nunavut Water Board. on January 11, 2018. Refer to (Appendix J1) for the report.

11.2 INTERNATIONAL CYANIDE MANAGEMENT CODE

As required by NIRB Project Certificate No.004, Condition 28: ***Cumberland shall become a signatory to the International Cyanide Management Code, communicate this to shippers, and do so prior to Cumberland storing or handling cyanide for the Project.***

In 2014 and 2015 audits and completion work were completed and assessed. A management of change process was implemented and put forward. From the status of Substantial Compliance in 2014, Agnico received full ICMC certification in March 2016. The full certification is posted on the ICMC website at http://www.cyanidecode.org/media-room/press-releases/2016/agnico-eagle%E2%80%99s-meadowbank-mine-and-supply-chain-fully-certified-under

As in previous years, a cyanide information brochure was made available to employees and the public. Copies are available at the Agnico Eagle's office in Baker Lake. A copy of this can be found in Appendix J2.

As per previous years shipments, the transport of cyanide in 2017 included a qualified nurse and an Emergency Response Team (ERT) member escorting the convoy of cyanide up to the Meadowbank mine site. In addition, they were present at the Baker Lake Marshalling facility for the removal of cyanide from the barge and the loading of the tractor trailers for hauling. As well, the road was completely closed for other traffic during cyanide transportation. In 2017, only one convoy of cyanide was needed during the barge season.

Recertification will be needed in May 2018 to ensure Agnico stays compliant with ICMC requirements. A full third-party audit was planned on March 28th 2018 to meet recertification delays. Unfortunately the audit had to be postponed because of blizzard conditions in the Kivalliq region. Prior engagements from the auditors also prevented the audit to be performed in the same timeframe. Thus, the audit is now planned to be performed June 21st 2018. Considering the situation, Agnico has received confirmation from the Cyanide Code managers that the initial certification was extended to July 12th 2018, thus ensuring compliance through the audit process.

11.3 INSPECTIONS, COMPLIANCE REPORTS AND NON-COMPLIANCES ISSUES

As required by Water License 2AM-MEA1525 Schedule B, Item 23: ***A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.***

And

As required by NIRB Project Certificate Condition 4: ***Take prompt and appropriate action to remedy any noncompliance with environmental laws and regulations and/or regulatory instruments, and shall report any noncompliance as required by law immediately and report the same to NIRB annually.***

ECCC conducted an inspection on July 31st and August 1st 2017. The purpose was to conduct an inspection of the Meadowbank Site and Amaruq Site for any non-compliance under Environment Canada's inspector jurisdiction (fishery act, MMER, E2, NPRI) and to review relevant documents of interest. MMER Vault discharge (MMER-2) was also sampled. No concern was expressed by ECCC and no inspection report was received.

On July 5th, 2017, KIA conducted the seasonal surface water sampling at the Meadowbank site. Agnico did not receive any follow up report or the sample results in 2017 for this event.

DFO did not conduct any site inspection at Meadowbank in 2017.

INAC conducted an inspection of the Meadowbank site on July 12th to 14th, 2017. Purpose of this visit was to conduct a inspection of the Meadowbank Site for any non-compliance items related to the project certificate and to review relevant documents of interest. The inspector did not produce a report and therefore all items were in compliance.

On July 13th and 14th, 2017 an inspection was conducted on the Meadowbank Site and Amaruq Site by a Regional Environmental Health Officer from the Government of Nunavut (GN). Purpose of this visit was to conduct a Health and Safety inspection of the Meadowbank facilities (Camp, laundry, kitchen, gymnasium, medical clinic, WTP, fresh water barge and the tailings storage facilities) and Amaruq Site for any non-compliance items related to health and safety. A copy of the report can be found in Appendix J3.

On August 24th and 25th, 2017, an inspection was conducted on the Meadowbank Site by Nunavut Impact Review Board (NIRB). Purpose of this visit was to conduct an inspection of the Meadowbank Site (including Baker Lake Marshalling facilities) for any non-compliance items related to the project certificate and to review relevant documents of interest. Agnico received the 2016 NIRB Annual monitoring report recommendations and submitted responses on August 15th, 2017. Documents can be found in Appendix J3.

On September 13th, 2017, KIA conducted another seasonal surface water sampling at the Meadowbank site. Agnico did not receive any follow up report or the sample results in 2017 for this event.

On September 24th, 2017, KIA conducted a AWAR and Amaruq exploration road inspection in relation to caribou and wildlife management. A follow-up report was received on September 27th. Outstanding issues were discussed and ongoing items will be addressed in 2018.

From October 24th to 27th, 2017, INAC and KIA came to Meadowbank site to perform a combined overall site inspection. No major concern were identified in the inspection report (Appendix J3). Historical pit related spill closure possibilities was discussed and overall pit related spills path forward. As well, with fall migration beginning, assistance was provided on AWAR actions.

In 2017, all water quality results complied with Water License and MMER authorized limits, expect for two TSS related results. On May 11th and September 22nd elevated levels of TSS were noted on analytical certificates received from our external laboratory from the ST-8/MMER-3 discharge into SPL. Discharge was immediately stopped and stakeholders notified of the incident and TSS levels were reported to the GN spill report line. Follow-up reports were also sent, explaining incidents and mitigations measures.

In addition, results from Incinerator stack testing, incinerator ash testing and waste oil testing complied with the applicable regulatory and guideline criteria. All results can be found in Section 6.3.

11.4 AWAR USAGE REPORTS

11.4.1 Authorized and Unauthorized Non-Mine Use

As required by NIRB Project Certificate Condition 32g: ***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

As required by NIRB Project Certificate Condition 33: ***Cumberland shall update the Access and Air Traffic Management Plan to: 1. Include an All-weather Private Access Road Management Plan, including a right-of-way policy developed in consultation with the KivIA, GN, INAC and the Hamlet of Baker Lake, for the safe operation of the all-weather private access road; and 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.***

The security department at the Meadowbank Gold Project maintains fully staffed security gatehouse at Baker Lake on a 24/7 schedule. The Security staff monitors the safety, traffic and security of all personnel and the public using the road. Agnico procedures for non-mine uses of the road require 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 primarily by local hunters using ATV's and snowmobiles. Daily records are kept. A summary of the non-mine authorized road use for 2017 is provided in Table 11.1. In 2017, 1716 non-mine authorized road uses were recorded. This is similar to previous year except 2015 which recorded a higher road higher usage. In 2012, 2013, 2014 2015 and 2016, respectively 1456, 1958, 1319, 2366 and 1504 non-mine authorized road uses were recorded respectively. In 2017, no incident involving non-mine authorized use occurred. Agnico is confident that the 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.

Table 11.1 2017 AWAR ATVs and Snowmobile Usage Records

Month	# of ATV's
January	0
February	0
March	0
April	0
May	38
June	371
July	173
August	448
September	492
October	194
November	0
December	0
Total 2017	1716

Agnico's Project Certificate 004 was issued in 2006. Following the approval of the All Weather Access Road (AWAR) in 2007, the Project Certificate was revised in 2009 to address concerns regarding access to the AWAR. Pursuant to condition 33, Agnico prepared the Transportation Management Plan: All weather Private Access Road in 2009. It was submitted and later approved by INAC and GN. Therefore no revision of the 2005 Access and Air Traffic Management Plan was undertaken. Agnico is of the opinion that the Transportation Management Plan replaced the Access and Air Traffic Management Plan in 2009. The AWAR Transportation Management Plan was last updated in March 2017 and can be found in Appendix I1.

11.4.2 Safety Incidents

As required by NIRB Project Certificate Condition 32e: ***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.***

And

As required by NIRB Project Certificate Condition 32f: ***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.***

And

As required by NIRB Project Certificate Condition 32h: ***Report all accidents or other safety incidents on the road, to the GN, KivIA [KIA], and the Hamlet immediately, and to NIRB annually.***

On December 13th, 2017, Agnico held a meeting in the Hamlet of Baker Lake to explain to the community the Policies and Procedures of the All Weather Access Road from Baker Lake to the Meadowbank Mine site. The presentation is attached in Appendix J4. Agnico also placed a notice on the local radio station describing the Policies and Procedures for use of the All Weather Access Road from Baker Lake to the Meadowbank Mine site. Agnico also conducts quarterly meetings with the Baker Lake Community Liaison Committee and issues related to the use of the AWAR are discussed regularly.

No incident involving non-mine authorized use occurred in 2017.

There have been no accidents to date involving mine related truck traffic and locals using ATV's.

A total of three (3) environmental spills occurred along the AWAR in 2017. Table 7.2 provides details on each of these spills. All spills were managed appropriately according to Agnico's spill contingency plan. The spills were remediated and contaminated material was deposited at the Meadowbank Landfarm. There were no impacts to any watercourses.

In 2017, three (3) arctic hares; five (5) fox and three (3) Common Ravens were reported fatalities along the AWAR. To avoid further incidents, messages are continually provided to employees and contractors to reinforce the procedures for wildlife protection during road use. As well, reminders were given on reporting any issues or observations concerning wildlife to the AWAR road dispatch.

11.5 ON-BOARD VESSEL ENCOUNTER REPORTS

As required by NIRB Project Certificate Condition 36: ***Inuit observation and encounter reports for on-board vessels transporting goods and fuel through Chesterfield Inlet.***

Agnico hired local representatives from Chesterfield Inlet to act as a marine mammal monitors for the transport of fuel during the 2017 shipping season. The monitors boarded the vessels in July and October 2017.

In fulfillment of NIRB Condition 36, Table 11.2 summarizes the observations made by the local marine mammal monitors onboard contractor vessels transporting fuel for the Meadowbank Mine through Chesterfield Inlet. The observation reports from the monitors are located in Appendix J5. There were no adverse incidents reported. No marine mammals were observed. Musk-ox and geese were observed on land.

Table 11.2: 2017 Summary of local area monitor's observations

Name	Direction / Location	Observation date	Observations
David Turner	GPS coordinates	July 24th,2017	1 seagull
David Turner	GPS coordinates	July 25th,2017	13 seagulls
David Turner	GPS coordinates	July 25th, 2017	3 geese
David Turner	GPS coordinates	July 26th, 2017	34 seagulls
David Turner	GPS coordinates	July 26th, 2017	3 muskox
David Turner	GPS coordinates	July 27th, 2017	13 seagulls
David Turner	GPS coordinates	July 28th, 2018	4 seagulls

11.6 TRADITIONAL KNOWLEDGE, CONSULTATION WITH ELDERS AND PUBLIC CONSULTATION

As required by NIRB Project Certificate No.004, Condition 39: ***annually advertise and hold a community information meeting in Chesterfield Inlet to report on the Project and to hear from Chesterfield Inlet residents and respond to concerns; a consultation report shall be submitted to NIRB's Monitoring Officer within one month of the meeting.***

And

As required by NIRB Project Certificate No.004, Condition 40: ***Gather Traditional Knowledge from the local HTOs and conduct a minimum of a one-day workshop with residents of Chesterfield Inlet to more fully gather Traditional Knowledge about the marine mammals, cabins, hunting, and other local activities in the Inlet. Report to the KIA and NIRB's Monitoring Officer annually on the Traditional Knowledge gathered including any operational changes that resulted from concerns shared at the workshop.***

And

As required by NIRB Project Certificate No.004, Condition 58: "*in consultation with Elders and the HTOs and subject to safety requirements, design the lighting and use of lights at the mine site to minimize the disturbance of lights on sensitive wildlife and birds***"**

And

As required by NIRB Project Certificate No.004, Condition 59: ***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"***

And

As required by Water License 2AM-MEA1525 Schedule B, Item 24: ***A summary of public consultation and participation with local organizations and the residents of the nearby communities, including a schedule of upcoming community events and information sessions.***

11.6.1 Community Meetings in Chesterfield Inlet

In accordance with NIRB Project Certificate No. 004, Condition 39 and 40, Agnico conducts a minimum of one community meeting a year in Chesterfield Inlet. During these meetings IQ is gathered and reported annually. Traditional knowledge is defined by the NIRB as a "cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission." (NIRB, 2007). Meeting were held with Chesterfield Hamlet representatives. Concerns on shipping issues were also discussed at his meeting. In 2017, Agnico hosted meetings during Whale Tail hearing process.

11.6.2 Community Meetings in Baker Lake

Agnico held a community meeting in Baker Lake on December 13th, 2017. The meeting focused on the AWAR and included discussions on safety rules, procedures to access road, wildlife and road closure.

More details regarding Baker Lake Community meeting can be found in in Appendix J6.

11.6.3 Meetings with Baker Lake HTO

In 2017 quarterly meetings were held with the Baker Lake HTO at the mine site and at Baker Lake. These meetings were general in nature and will be used to develop a better relationship and understanding with HTO. Agnico intends to continue work started in 2017 with the HTO to implement a memorandum of understanding (MOU) in relation to HTO wildlife monitors participating actively in field assessment on caribou movements in 2018.

On June 28th 2017, a meeting and field visit was organized with the HTO at the fisheries compensation structures on the AWAR (km 10) to provide information regarding the HCMP field work and discuss best practices in stream fisheries work.

11.6.4 Community Liaison Committee Meetings

In 2017, Agnico Eagle continued to facilitate meetings with the Meadowbank Community Liaison Committee in Baker Lake, which was established to inform stakeholders on the activities at the mine and to consult them on specific issues and projects.

The Community Liaison Committee's objective is to favour dialogue and exchange between Agnico Eagle and its local stakeholders such that all parties gain a better understanding of the issues associated with mining activities and provides a venue for stakeholders to provide advice to Management for solutions. The Committee consists of various representatives including Agnico Eagle, the Elders Society, youth, the business community, adult education committee, the Hamlet, the Nunavut Arctic College, the RCMP and the Hunters and Trappers Organization of Baker Lake. The meetings are chaired by the Agnico Eagle Community Liaison Coordinator.

Meetings are scheduled quarterly in both English and Inuktitut, with the understanding that the minimum number of meetings is two (2) annually. In 2017, two Community Liaison Committee meetings were held.

11.6.5 Meeting with the Kivalliq Wildlife Board

In February and June 2017, meetings were held regarding the Caribou monitoring and management. The workshop was held in Ottawa and Winnipeg respectively and included Government agencies, HTO, and Agnico Eagle. The meeting was for a discussion on best practices with stakeholder and Federal and territorial agencies.

11.6.6 Site Tours for Baker Lake Residents

Each year, Agnico Eagle offers a variety of ways for the residents of Baker Lake, as well as various other groups or individuals from the Kivalliq, to visit Meadowbank Site. The list below outlines the major visits to the site during 2017:

- In January 2017, the mine welcomed the Baker Lake MLA and Mayor of Baker Lake to site to see the operations and progression of Amaruq road construction;
- In April 2017, Agnico invited intervenors present at the NIRB/NWB Whale Tail pre-hearing as well as interested members of the public of Baker Lake ;
- Each year in August, Agnico Eagle invites the residents of Baker Lake to come on a site tour at Meadowbank Mine. In 2017, Meadowbank welcomed four (4) tours, for a total of approximately 100 visitors;
- In October 2017, Agnico Eagle invited a group of students from the Baker Lake High school for a site tour of Meadowbank.

11.6.7 Community Engagement Initiatives

Community initiatives that Agnico participated in during 2017 and including work readiness training, donations, mine site tours, school training week, etc. are summarized in Appendix J6.

11.6.7.1 Community Coordinators Program

The Community Coordinators program was revised in 2015, and in 2016 the program expanded to sponsor part-time Agnico Eagle Coordinators in all Hamlets in the Kivalliq Region with the addition of Chesterfield Inlet, Arviat, Whale Cove, Naujaat, and Coral Harbour. Agnico Eagle's offices in the communities of Rankin Inlet and Baker Lake already had Agnico Eagle staff working full and part-time to provide community relations support.

The objective of the community-based Agnico Eagle Coordinators is to provide a point of contact in each community to facilitate communications, provide services, and coordinate activities in the following areas:

- Support to the HR department by:
    - Assisting HR and other Agnico Eagle departments to locate employees or potential employees as required
    - Contact employees in advance of their shift departure times;
- Support to the Recruitment team by guiding interested individuals in the application process outlined by the Labour Pool Process;

- Provide advice and assistance to Agnico Eagle to organize and hold information sessions in the community on Agnico Eagle projects and initiatives, including those Labour Pool and business opportunities initiatives outlined in the Meliadine IIBA;
- Provide updates to the Hamlet Council on Agnico Eagle activities;
- Distribute Agnico Eagle information and promotional materials.

The increase of community involvement requirements for Agnico Eagle to achieve recruitment goals and the obligations for the NIRB and IIBA renders the Community Coordinators essential for Agnico Eagle's Nunavut operations. In 2017, Agnico provided training for Community Coordinators to ensure they have the proper tools and resources to fulfill their responsibilities. The training was held in Baker Lake and included a visit to Meadowbank to participate in a 'condensed Site Readiness' so the Coordinators could better understand and explain this training to interested applicants. Another Community Coordinators training is planned for 2018.

11.6.7.2 Summer Student Employment Program

Agnico's companywide policy offers summer employment programs to the children of all Agnico employees (both Inuit and non-Inuit) that are undertaking postsecondary education. Summer job opportunities were also offered to Inuit students who are participating in post-secondary activity, even if they had no family relative working at the mine. Historically, there have been no applications to Agnico Eagle's Summer Student program by the children of Inuit employees. The program will continue to be offered in 2018.

In 2016, Agnico advertised a new summer student program to attract Inuit post-secondary students from Kivalliq communities, including students enrolled in trades with the Nunavut Arctic College and with the Nunavut Sivuniksavut program. This program was offered and advertised in each Kivalliq Community, but there were no applications in 2016.

In 2017, Agnico received three (3) eligible Inuit summer student program applicants. From those applications, one (1) student accepted a position.

11.6.7.3 Community Funding Agreements

In 2015, Agnico Eagle initiated new community agreements called *Community Initiatives Fund* agreements with the hamlets of Baker Lake, Rankin Inlet, Arviat and Chesterfield Inlet. In 2016, Agnico Eagle established Community Initiatives Fund agreements will all hamlets in the Kivalliq, with the exception of Whale Cove.

The purpose of the fund is to invest in community-based activities that will enrich the cultural and social wellbeing of the community. Each hamlet is responsible for the allocation of the funds in alignment with the purpose and is guided by the *Donations Policy Agreement* where Agnico Eagle and the hamlet jointly agree to focus donations towards events that meet the following criteria:

1. Community Activities
2. Recreation Activities
3. Youth Education and Development

Agnico Eagle plans to renew the agreements for all hamlets in 2018, including establishing a Community Initiatives Fund agreement with Whale Cove.

In 2017, Agnico Eagle also entered into funding agreements with hamlets for specific purposes or activities.

- Family Days Events with Baker Lake, Arviat, Chesterfield Inlet and Rankin Inlet to invest in a community-based event that provides community residents and their families an opportunity to enjoy a recreational event.
- Clean Communities Program with Baker Lake and Rankin Inlet: This program sees agreements with the Hamlets of Baker and Rankin Inlet to remove solid and hazardous waste from the community. Agnico Eagle offered both communities a grant to organize and manifest waste products for backhaul shipping during Agnico Eagle's annual re-supply.

11.7 MINE EXPANSION

As required by NIRB Project Certificate Condition 29: ***report to NIRB if and when [Cumberland] develops plans for an expansion of the Meadowbank Gold Mine, and in particular if those plans affect the selection of Second Portage Lake as the preferred alternative for tailings management.***

11.7.1 Vault Pit Expansion into Phaser Lake

On July 15, 2014 Agnico submitted an application (which included supporting documents that described the project) to NIRB and DFO for the Vault Pit Expansion into Phaser Lake. NIRB determined that Vault Pit Expansion into Phaser Lake application required more information and NIRB requested that Agnico prepare a comprehensive addendum to the FEIS and submit it to NIRB. The Agnico EIS Addendum was submitted to NIRB on July 3, 2015. Agnico Eagle received Information requests (IRs) and comments from NIRB on September 4, 2015. Community sessions were held in Baker Lake and Chesterfield Inlet on September 9 and 11, 2015. On October 1 2015, Agnico submitted its IRs response package to NIRB. A Technical Review meeting hosted by NIRB was held on December 1, 2015. Agnico received the final NIRB Technical Review Comments on December 8. Agnico's responses were sent on December 22, 2015 to NIRB. The final Public Hearing took place in Baker Lake on March 1 and 2, 2016. On February 18, 2016 Agnico advised the NWB of Agnico's planned modification to the Vault Pit and ancillary works. As noted in that correspondence, under Part G, Item 1 of Type "A" Water License 2AM-MEA1525 Agnico may, without written consent from the Board, carry out modifications (as defined in the License) provided that such modifications are consistent with the terms of the License and meet the requirements of Part G, Item 1, including providing at least 60 days' notice prior to undertaking the modifications. On April 25, 2016, the Board accepts that the changes as proposed in Agnico's February 18, 2016 letter do constitute modifications that are consistent with the existing terms and conditions of the License but the Licensee will need to await the Minister's decision and conclusion of the NIRB process before these aspects of the Modifications can proceed. On July 27, 2016, Agnico Eagle received from DFO the Authorization NU-14-1046 to dewatered and conduct a fishout in Phaser Lake. Please refer to Section 8.3.2 and 8.8 of the 2016 Annual report for a complete overview of the dewatering and fishout activities. On August 2016, Agnico received the NIRB Project certificate amendment approval to include Vault Pit Expansion into

Phaser Lake. Agnico received the amended NTI leased that included a part of BB Phaser in the NTI Vault Production Lease BL14-001-PL. Agnico started the mining in Phaser and BB Phaser in Q4 2017.

11.8 INSURANCE

As required by NIRB Project Certificate No.004 Condition 45: ***"[Cumberland] shall carry, and require contracted shippers to carry adequate insurance to fully compensate losses arising from a spill or accident, including but not limited to the loss of resources arising from the spill or accident; any claims are to be reported to proper officials with a copy to NIRB's Monitoring Officer"***

All shipping contractors have insurance to fully compensate losses arising from a spill or accident, including but not limited to the loss of resources arising from spill or accident for all marine transport vessels and vehicles travelling on the AWAR.

No claim was reported by our marine or trucking shippers in 2017.

11.9 SEMC AND SEMP

As required by NIRB Project Certificate Condition 63: the GN and INAC shall form a Meadowbank Gold Mine Socio-Economic Monitoring Committee ("Meadowbank SEMC") to monitor the socio-economic impacts of the Project and the effectiveness of the Project's mitigation strategies; the monitoring shall supplement, not duplicate, the monitoring required pursuant to the IIBA negotiated for the Project, and on the request of Government or NPC, could assist in the coordination of data collection and tracking data trends in a comparable form to facilitate the analysis of cumulative effects; the terms of reference shall focus on the Project, include a plan for ongoing consultation with KivIA and affected local governments and a funding formula jointly submitted by GN, INAC and [Cumberland]; the terms of reference shall be submitted to NIRB for review and subsequent direction within six (6) months of the issuance of a Project Certificate; [Cumberland] is entitled to be included in the Meadowbank SEMC.

And

As required by NIRB Project Certificate No.004, Condition 64: [Cumberland] shall work with the GN and INAC to develop the terms of reference for a socio-economic monitoring program for the Meadowbank Project, including the carrying out of monitoring and research activities in a manner which will provide project specific data which will be useful in cumulative effects monitoring (upon request of Government or NPC) and consulting and cooperating with agencies undertaking such programs; [Cumberland] shall submit draft terms of reference for the socio-economic monitoring program to the Meadowbank SEMC for review and comment within six (6) months of the issuance of a Project Certificate, with a copy to NIRB's Monitoring Officer.

In 2017, Agnico once again retained Stratos Inc, a qualified socio-economic consultant, to produce the 2016 socio-economic monitoring report. A draft of the report was presented to the Socio Economic Monitoring Committee (SEMC) in Rankin Inlet from June 6-7, 2017.The annual SEMC meeting was attended by officials from NIRB, the GN, INAC (AANDC), KIA and Kivalliq community representatives. The final report considered their input and was submitted to the SEMC, KIA and NIRB at the beginning of

January 2018 (Appendix J7). The socio-economic monitoring report is updated yearly and submitted with the annual report.

The socio-economic indicators and associated metrics in this report are categorized according to the following valued socio-economic components, or VSECs.

1. Employment
2. Income
3. Contracting and Business Opportunities
4. Education and Training
5. Culture and Traditional Lifestyle
6. Migration
7. Individual and Community Wellness
8. Health and Safety
9. Community Infrastructure and Services
10. Nunavut Economy

Agnico will continue to actively participate in the Kivalliq Regional SEMC and will meet its socio-economic reporting requirements to NIRB through the SEMC annual report. Agnico has complied with all of the requests for data made by the SEMC and is current with all commitments made to the SEMC.

In 2017, Agnico also collaborated with the GN, INAC (AANDC) and KIA on the development of a revised Terms of Reference for a Kivalliq Projects socio-economic monitoring working group. These terms of reference would cover all Agnico Projects in the Kivalliq region. The Terms of Reference were finalized and submitted to all parties and NIRB on December 12, 2017. At the time of submission, the KIA had not yet clarified their role in the Working Group and as such was removed from the Terms of Reference. If the KIA does clarify their desired role in the future, the Terms of Reference will be updated accordingly and as appropriate, and resubmitted to the NIRB.

In 2017, Agnico, with Stratos Inc., developed a draft Kivalliq Projects Socio-Economic Monitoring Program. The program would cover all Kivalliq projects, and would result in one Program Report for all Agnico Kivalliq Projects, with project-specific reporting when possible and appropriate. The draft was submitted to the Socio-Economic Monitoring Working Group for review and comments. The final version will be submitted to NIRB in early 2018.

11.10 SOCIO ECONOMIC

As required by NIRB Project Certificate No.004, Condition 65: ***Cumberland shall include in its socio-economic monitoring program for the Meadowbank Project the collection and reporting of data of community of origin of hired Nunavummiut.***

11.10.1 Meadowbank Workforce

The headcount of people working at Meadowbank on December 31, 2017 was 1,141 people (contractors, Agnico Eagle permanent, temporary and on-call) broken down as follow:

- Agnico Eagle Employees: 841
- Contractors' Employees: 300
- The total Agnico Eagle workforce at the end of 2017 was 841. The breakdown according to job status is shown in Table 11.3,11.4 & 11.5 below.

Table 11.3: Total Workforce at Meadowbank Mine on December 31, 2017

	Inuit		Non-Inuit	
	#	%	#	%
Permanent	164	52%	500	95%
Temporary with Benefits	28	9%	10	2%
Temporary	6	2%	2	0%
On-Call	117	37%	1	0%
Coop	0	0%	8	2%
Student	0	0%	5	1%
TOTAL	**315**	**100%**	**526**	**100%**

Table 11.4: Female Workforce Breakdown at Meadowbank Mine on December 31, 2017

	Inuit Female		Non-Inuit Female	
	#	%	#	%
Permanent	51	46%	43	77%
Temporary with Benefits	6	5%	6	11%
Temporary	2	2%	0	0%
On-Call	53	47%	0	0%
Coop	0	0%	3	5%
Student	0	0%	4	7%
TOTAL	**112**	**100%**	**56**	**100%**

Table11.5: Male Workforce Breakdown at the Meadowbank Mine as of December 31, 2017

	Inuit Male		Non-Inuit Male	
	#	%	#	%
Permanent	113	56%	457	97%
Temporary with Benefits	22	11%	4	1%
Temporary	4	2%	2	0%
On-Call	64	32%	1	0%
Coop	0	0%	5	1%
Student	0	0%	1	0%
TOTAL	**203**	**100%**	**470**	**100%**

At the end of December 2017, 315 Inuit were employed at Meadowbank. Out of those, 117 of were on-call employees, 164 permanent employees and 34 temporary employees.

Agnico Eagle defines job statuses as follows:

- Permanent employee: an employee whose current job is not specifically tied to a short-term project and the position is expected to be required throughout the life of mine (LOM).
- Temporary employee: an employee whose current job will not continue beyond a specified period of time.
- On-call employee: an employee who has an undefined contract and is called upon when the need arises. It is expected that on-call employees will move to temporary or permanent positions as they become available.

It is important to understand that the 164 permanent employees and 34 temporary employees shown in are enrolled on the payroll system and are expected to work full time hours as of January 1st, 2018. The 117 on-call employees shown in are also enrolled in the payroll system, but are not guaranteed to be employed as of January 1st, 2018. These employees are called on an as-needed basis depending demand.

The breakdowns of Inuit employees at Meadowbank by skill level at the end of 2017 are shown in Figure 41 and Figure 42 below.

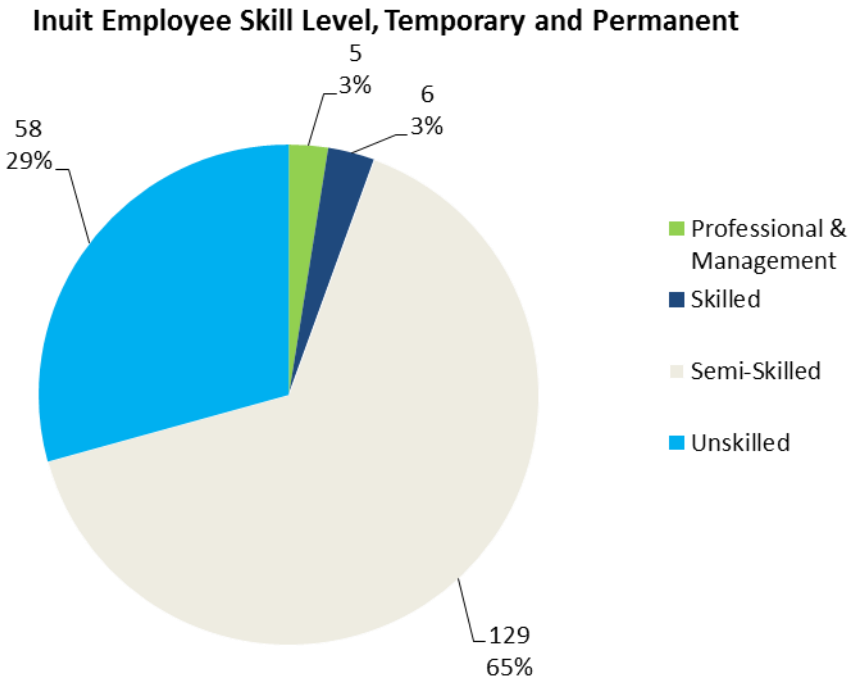


Figure 41. Skill Level of Positions held by Inuit in Temporary and Permanent Positions at Meadowbank on December 31, 2017

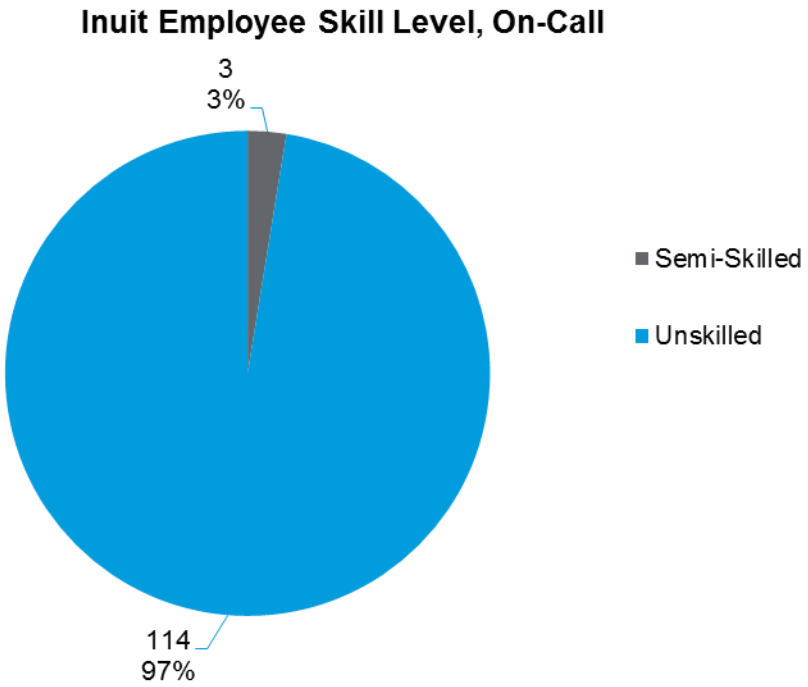


Figure 42: Skill Level of Positions Held by Inuit in On-Call Positions at Meadowbank on December 31, 2017

11.10.2 Hours Worked by Agnico Employees at Meadowbank

Agnico Eagle reports on Inuit employment by measuring the total number of person hours that all persons are expected to work, expressed as a percentage. The tables shown below are exclusively for Agnico Eagle employees working in all departments at the Meadowbank site.

Table 11.6 shows the total hours that employees were expected to work during 2017. In comparison to 2016, there was an increase of 2% in the total hours expected for our Inuit workforce.

Total Hours Expected				
	2017		2016	
	Inuit	Non-Inuit	Inuit	Non-Inuit
Total Hours	609,383	1,207,507	596,416	1,241,125
Inuit & Non-Inuit Content (%)	34%	66%	32%	68%

Table 11.6 Total Hours that Agnico Employees were Expected to Work in 2017

Table 11.7 shows the actual work and benefit hours worked by all employees at Meadowbank in 2016 and 2017, which are actual hours worked and hours of paid benefit, such as vacations and other paid leaves. Actual hours worked by Inuit in 2017 increased by 2% compared to 2016.

Actual Work & Benefit Hours				
	2017		2016	
	Inuit	Non-Inuit	Inuit	Non-Inuit
Total Hours	475,060	1,149,973	483,200	1,192,251
Inuit & Non-Inuit Content (%)	29%	71%	29%	71%

Table 11.7. Actual hours worked & paid benefit hours

Table 11.8. shows hours of work lost due to unapproved leave of absence for all Agnico Eagle employees at Meadowbank. Unapproved leave occurs when an employee decides not to show up for work and provides no notice. In such cases, employees lose hours of expected work, pay and benefit opportunities.

In 2017, the Inuit content of hours of work missed remained the same as the 2016 content.

Hours of Work Missed				
	2017		2016	
	Inuit	Non-Inuit	Inuit	Non-Inuit
Total Hours	134,323	57,534	113,216	48,874
Inuit & Non-Inuit Content (%)	70%	30%	70%	30%

Table 11.8. Hours of work missed

11.10.3 Employee retention

Based on Agnico Eagle's past experience and testimonies of former employees, it was noted that many Inuit have never had full time work in their home communities, where full time employment opportunities are potentially limited. Many such individuals want a job, but working away from home for two weeks at a time in a structured industrial environment is a change that many have difficulty adapting to.

Exit interviews support this assumption and the following provides the most common reasons given for voluntary terminations and turnover rates:

- Found another job
- Conflict with employee
- Does not like the job
- No babysitter
- Family situation
- Family situation

Agnico Eagle developed a new approach and has rolled out new initiatives with a focus on providing information, skills, and education to job applicants to ensure that they are better informed about what working life is like at a remote mine site, and to be better prepared to adapt, cope, and be successful in employment. The result is the development and implementation of a Labour Pool Program that consists of a linked series of activities, including:

- Community-based information sessions
- Community-based Work Readiness training
- E-learning for mandatory training
- Site Readiness training at Meadowbank
- On-Call Contract Program

The Labour Pool Program consists of a suite of activities that provide future employees with information, skills, and education for working life and conditions in a remote, fly in/fly out, industrial workplace. The On-Call Contract Program allows new employees opportunities to experience and adapt to a new work environment by practicing camp life for short periods of time.

Supervisors have commented that due to the suite of Labour Pool activities, on-call employees are better prepared to cope with the mine employment environment. The On-Call Program allows participants to discuss employment and upward mobility opportunities, gain a variety of employment experiences and decide if the mining work life is for them. The program also allows Agnico Eagle to assess employees to ensure proper placement within the Company.

Employee Turnover = (# of terminations / (Average # of employees for the year)) x100

Table 11.9. Turnover Rates by Employee Job Status, all

Employee Turnover by Job Status, All	
Job Status	**Turnover Rate Total**
Regular Permanent	11%
Temporary	45%
TOTAL	**17%**

Table 11.10. Turnover Rate per Job Status, Inuit Employees

Employee Turnover by Job Status, Inuit	
Job Status	**Turnover Rate Total**
Regular Permanent	28%
Temporary	49%
TOTAL	**36%**

Table 11.11. Turnover Rate for Non-Inuit Employees

Employee Turnover, Non-Inuit	
TOTAL	**5%**

Table 11.12. Turnover Rate per Community, Inuit

Employee Turnover by Community, Inuit	
Community	**Turnover Rate Total**
Arviat	43%
Baker Lake	29%
Chesterfield Inlet	18%
Coral Harbor	109%
Naujaat	92%
Rankin Inlet	39%
Whale Cove	42%
Outside Nunavut	38%
TOTAL	**36%**

Table 11.13. Inuit Employee Turnover Experience

Turnover Experience – Inuit Employees	
Reason	**# of Terminations**
Resignation or Voluntary Termination	67
Dismissal	43
Deceased	1
Retirement	1
TOTAL	**112**

In 2017, Agnico Eagle saw a total of 112 employee terminations (voluntary and involuntary), up from 69 in 2016.

11.10.4 Employment Demographics for Nunavut Based Employees

Table 11.14. shows a comparative breakdown of the home communities of temporary and permanent Inuit employees. Table 11.15. shows the breakdown of the home communities of on-call Inuit employees.

Table 11.14. Home Communities of Inuit in Temporary and Permanent Positions

	On December 31, 2017		On December 31, 2016	
Arviat	38	19%	38	18%
Baker Lake	99	50%	113	53%
Chesterfield Inlet	5	3%	4	2%
Coral Harbor	3	2%	2	1%
Rankin Inlet	28	14%	31	14%
Naujaat	1	1%	4	2%
Whale Cove	3	2%	3	1%
Others[1]	21	11%	20	9%
TOTAL	**198**	**100%**	**215**	**100%**

Table 11.15. Home Communities of Inuit in On-Call Positions

	On December 31, 2017		On December 31, 2016	
Arviat	30	26%	21	24%
Baker Lake	56	48%	43	50%
Chesterfield Inlet	7	6%	6	7%
Coral Harbor	5	4%	1	1%
Rankin Inlet	3	3%	10	11%
Naujaat	8	7%	0	0%
Whale Cove	8	7%	5	6%
Others	0	0%	1	1%
TOTAL	**117**	**100%**	**87**	**100%**

Agnico Eagle pays for the transportation of all Kivalliq-based employees from their home community to the mine for each work rotation. For employees coming from Arviat, Chesterfield Inlet, Rankin Inlet and/or Whale Cove, Agnico Eagle has a service contract with Calm Air to transport employees by charter plane from Rankin Inlet directly to and from the Meadowbank mine airstrip. For employees coming from Coral Harbour and/or Naujaat, a commercial ticket is bought from their home communities to the Baker Lake airport. Once in Baker Lake, they are transported by bus to and from the mine site via a daily ride. For all other employees not located in the Kivalliq region, transportation is provided from Mirabel and Val-d'Or via a charter flight operated by Nolinor Aviation.

11.10.5 Training and Learning Management Systems

Agnico Eagle's Training Management System (TMS) and the Learning Management System (LMS) ensure records of training activities, monitor e-learning training, and provide training reports.

11.10.5.1 Training Hours

There are currently three main categories of training: Health and Safety, General, and Specific training. Part of the Health and Safety training are the mandatory courses that can be found in an e-learning format. General and Specific training consists of job-related training that is provided both on the job and in class.

During 2017, a total of 36,042 hours of training were provided to all Meadowbank employees. Of these hours, 13,771 hours were received by Inuit employees. Please see Table 11.16. below for more information.

Table 11.16. Variation of Successful Hours of Training from 2016 to 2017

Hours of Successful Training Hours for Meadowbank – 2016 vs 2017						
	Training Hours (January 1 – December 31, 2016)	Training Hours (January 1 – December 31, 2017)				
		Health & Safety		General	Specific	Total
		In-Class	E-Learning			
Inuit Employees	18,174	1,575	482.5	606.5	11,107	13,771
Non-Inuit Employees	20,020	8,182	2,731.5	4,016.5	7,341	22,271
TOTAL	**38,194**	**9,757**	**3,214**	**4,623**	**18,448**	**36,042**

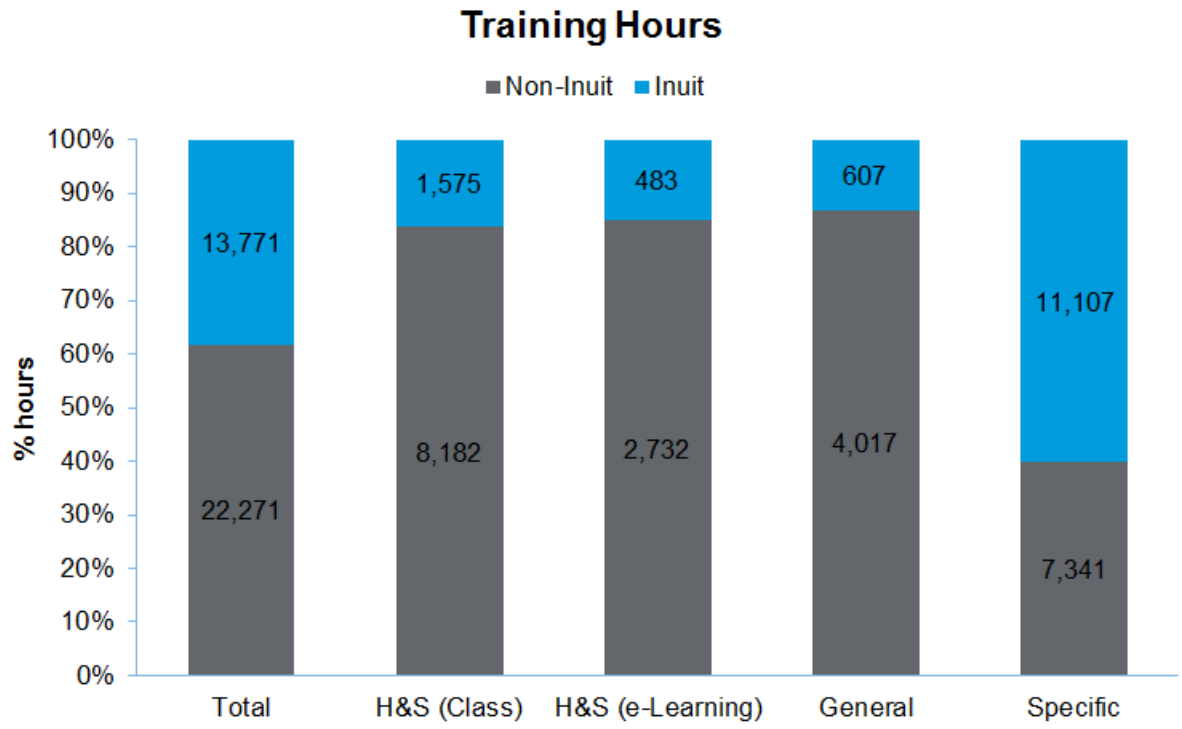


Figure 43: 2017 Training Hours by Employee

11.10.5.2 E-Learning Training Hours Provided to Inuit

Before coming on site for the first time, newly hired employees must complete their Mandatory Training online. The General Induction consists of online chapters that provide general information about Agnico Eagle and working life in camp. Once completed, employees are invited to access the online training that includes health and safety training. The e-learning training material has been translated into English, French, and Inuktitut. Lesson plans have been created and updated in order to improve the quality and the consistency of the training.

In 2017, 3,214 hours of e-learning were provided to all Agnico Eagle – Meadowbank employees. Among those hours, 15% were given to Inuit employees.

11.10.5.3 Health and Safety Training Hours Provided to Inuit

Health and Safety training includes mandatory training related to compliance with the Nunavut Mine Act, as well as training that is required according to Agnico Eagle's health and safety policies. The majority of mandatory training sessions are offered via e-learning prior to an employee's arrival on site.

Health and Safety training is provided to employees to ensure that all employees are aware of the potential risks, within the mine site and in their line of work, and are trained in proper procedure to avoid accidents.

In 2017, 2,057.5 hours (15%) of Health and Safety training was provided to Inuit employees. This combines both in-class and e-learning training.

11.10.5.4 General Training Hours Provided to Inuit

General training consists of training activities required by departments and includes training in such areas as light duty equipment, enterprise software systems and cross-cultural training.

Of the total training hours, 4,623 general training hours were provided to all employees in 2017, of which 606.5 hours (13%) were provided to Inuit employees.

11.10.5.5 Specific Training Hours Provided to Inuit

Specific training is focused on developing individual competencies related to a specific position. This training qualifies individual workers for promotion following their progression through a Career Path. These training programs are provided in classroom learning (theory) as well as practical learning (one on one).

In 2017, 18,448 hours (51% of total training hours) of specific training was provided to Agnico Eagle employees. Among those hours, 60% (11,107 hours) was dedicated to Inuit employees.

11.10.5.6 Career Path

In 2012, with the intention of supporting the upward mobility of Inuit employees, a Career Path Program was designed by the Meadowbank training team. This program is designed to provide the opportunity to Inuit employees who have limited formal skills or education to progress in their careers[3]. The program identifies the incremental steps that an employee is required to accomplish to advance in their chosen career of interest. The path directs a combination of work experiences, hours of completion, training, and skills development for an employee to achieve each step.

The Career Path system is currently available in seven (7) areas of activity; Building Mechanic, Drill, Field Services, Mine Operations, Process Plant, Road Maintenance, and Maintenance. The objective is to have only internal promotions of employees, with external candidates being hired only as an entry level position to feed the trainee programs at the base.

11.10.5.7 Haul Truck Trainee Program

As part of Agnico Eagle's initiatives to encourage employees to reach higher positions within the company, a Haul Truck Trainee Program was developed and implemented in 2012. The great majority of the Company's haul truck drivers started in an entry level position such as dish washer, janitor, guest room attendant, etc. The Haul Truck Trainee Program is popular among Inuit employees, who appreciate an opportunity to gain a career in the mining industry.

This year, 26 employees were enrolled in the Haul Truck Trainee Program. Among those, a total of 18 trainees successfully completed the Program (13 men, 5 women). In order to provide the best training possible to all the trainees, there is a maximum of 4 trainees at a time with one trainer.

Although Agnico Eagle's expenses related to training have increased, the Company believes that increasing the training period reduces the level of pressure and stress on trainees, lowers the risk of accidents, and results in a more confident, productive and competent employee.

[3] Note that all employees working in a department that is affected by a Career Path are required to follow its steps. It is not exclusive to Inuit employees, thus giving a fair chance to everyone within the department.

11.10.5.8 Process Plant Trainee Program

With the success of the Haul Truck Trainee Program, a new program was developed in 2015: the Process Plant Trainee Program. This program is designed to ensure the trainees acquire necessary knowledge to fulfill the positions of Process Plant Helper and Utility Person. Due to the technical nature of the content, the program is delivered to a maximum of two (2) employees with one (1) trainer, thus each wave of the Process Plant Trainee Program delivers a maximum of two (2) new employees to the Process Plant Department.

This trainee program allows the employee to have an understanding of the mining and milling process and to be fully competent and certified with Agnico Eagle to perform the tasks related to the Process Plant Helper and Utility Person positions, which are the first rungs of the Process Plant Career Path ladder. It will allow Inuit employees to be more successful in their progression along the Career Path. In 2017, a total of five (5) employees enrolled in the program. Amongst those, two (2) were delivered to the Process Plant.

11.10.5.9 Super Operator Program

Implemented in the second half of 2016, the Super Operator Program is an extension of the Process Plant Trainee Program. This 168-hour training is provided to employees who have successfully completed the Process Plant Trainee Program. The extension of the Process Plant Trainee Program will consist in teaching the basics of maintenance principles in order to have employees with more diversified skills in the Process Plant Department. These employees will eventually be able to perform specific basic maintenance repairs throughout the plant. By having this addition, we are confident that trained employees will acquire an important skill set to progress through the career path system.

This year, every Inuit employee that was trained as a Process Plant Trainee received the Super Operator Training.

11.10.5.10 Apprenticeship Program at Meadowbank

The Apprenticeship Program combines on-the-job learning and in-school technical instruction to allow Inuit employees the opportunity to be educated and trained in the trade of their choice. By the end of the program, the apprentice is able to challenge their Certificate of Qualification (COQ) to become a Journeyperson and will also have the opportunity to challenge their Red Seal Exams. This certification allows the employee to reach the highest position available in their selected Career Path and grants them interprovincial recognition in their trade.

When the Company started reporting apprentices at Meadowbank in 2012, 4 Inuit were registered in the program. As of the end of 2017, there were 10 apprentices and 6 pre-apprentice alternating between school and work (refer to Table 11.18.)

Currently, we offer seven (7) trades: cook, carpenter, millwright, electrician, heavy duty equipment technician, welder, and plumber. Please see Table 11.17. for the distribution of apprenticeship program participants by trade.

In 2015, two (2) employees completed their apprenticeship training within Agnico and in 2016, two (2) employees completed their apprenticeship training within the company. They challenged their COQ exam and are now all certified journey people. There were no graduates for the 2017 year, but since the program takes time to complete, we are expecting to have three (3) graduates in the next two (2) years.

Here is the breakdown of the previous graduates and their trade as well as the current registered apprentices and pre-apprentices.

Table 11.17. Number of Apprentices per Level per Trade in 2017

Trade	Pre Apprentice	Apprentice Level 1	Apprentice Level 2	Apprentice Level 3	Apprentice Level 4	Graduate
Carpenter		1				
Cook	2	1				
Electrician			1	1		
Heav Technician	3	1		1		2
Millwright	1	1				1
Plumber				1		
Welder		2				1
TOTAL	**6**	**6**	**1**	**3**		**4**

Horizontal (Category) Axis

Table 11.18. Apprenticeship Participation by Year

Evolution of the Apprenticeship Program	
Year	Number of Active Apprentices and Pre-Apprentices
2012	4
2013	8
2014	6
2015	17
2016	13
2017	16

Horizontal (Category) Axis

11.10.5.11 Labor Pool Initiative

The Labour Pool initiative is based on the Inuit Impact and Benefit Agreements with the KIA to offer pre-employment opportunities to Inuit from all Kivalliq communities. The program, which started its development phase in 2014, was fully implemented in 2016.

The goal of the program is to pre-qualify candidates from Kivalliq communities. Agnico Eagle will visit communities to provide employment information sessions where residents can attend to receive information on Agnico Eagle's projects in Nunavut as well as information on how to access a job with Agnico Eagle or its contractors.

All applicants that have the minimal requirements to be hired (must be at least 18 years old and have a clean record of employment with Agnico Eagle) are required to complete mandatory training by e-learning as well as participate in the 5-day Work Readiness and Site Readiness training programs. The objective is to create a pool of candidates ready to work that Agnico Eagle and its contractors can draw future employees from.

As part of the Labour Pool initiative, employment information sessions are conducted every quarter in all Kivalliq communities. The information sessions are a new event which serves the purpose of giving information about the mines, the work lifestyle, and career opportunities as well as knowing how to apply to be part of the Agnico Eagle family. Figure 44 shows the process flow of the entire Labour Pool process at Agnico Eagle's Nunavut divisions:

Figure 44. Labour Pool Process

11.10.5.12 Work Readiness Training Program

The Work Readiness training program is a pre-employment requirement. Implemented in April 2013, the program is delivered over a 5-day period at the community level throughout the year.

During 2017, the program was delivered to 240 participants from which 201 (84%) graduated from the program. The table below shows the breakdown of participants including total participants that were enrolled and the number that successfully completed the program[4]:

[4] Only a complete attendance to the 5-day training is required to successfully complete the program.

Table 11.19. Number of Participants in the Work Readiness Program in 2017

Work Readiness Participation – 2017					
Community	**Number of Individuals Contacted**	**Accepted**	**Total Participants at Start**	**Successful Completion**	**Non-Successful**
Arviat	*Held independently in community*				
Baker Lake	163	102	90	83	6
Chesterfield Inlet	29	18	13	11	2
Coral Harbour	53	40	32	22	10
Naujaat	56	38	27	22	4
Rankin Inlet	361	81	56	48	8
Whale Cove	41	34	22	14	8
TOTAL	**706**	**313**	**240**	**201**	**39**

Many employees that benefited from the program were able to obtain positions and continue to improve their skills at work. The Work Readiness Program provides coaching in the following areas:

(1) Insight into personal beliefs that drive behaviors in participants' social lives;
(2) Awareness of employer's unspoken expectations;
(3) Self-control skills for managing strong emotions;
(4) Communication skills for dealing with difficult social interactions; and
(5) Problem solving skills for logically resolving interpersonal workplace issues.

Site Readiness

Participants that have successfully completed the Work Readiness Program will be retained for the Site Readiness Program and then will become part of the Labour Pool.

The Site Readiness Program is a five-day training provided at the Meadowbank site. Throughout the week, participants are enrolled in diverse activities such as mandatory training sessions, site visits, job initiation, information sessions on training and career opportunities, as well as interviews and discussions on employment opportunities with a Human Resource representative to assess career ambitions and identify work interest.

Afterwards, candidates wanting to work for the Camp Department are given short term on-call assignments. All other applicants become part of the Labour Pool list until a job opportunity matching their interest and competencies becomes available.

Site Readiness participants came from the following communities and Table 11.20. shows the breakdown of participants for the year per community, by participants that enrolled and participants that successfully completed the program:

Table 11.20. Number of People who Participated in the Site Readiness Program in 2017

Site Readiness Participation – 2017					
Mine Site	Number of Individuals Contacted	Accepted	Total Participants at Start	Successful Completion	Non-Successful
Meadowbank	223	30	193	173	20
TOTAL	**223**	**30**	**193**	**173**	**20**

11.10.5.13 Emergency Response Team (ERT) training

At Agnico Eagle Mines Ltd., the most important priority is to keep employees safe. At Meadowbank, an Emergency Response Team (ERT) is well trained and is always ready to assist and help in any type of situation. To join the team, a candidate must show signs of interest in safety, prove good attendance and behavior at work, and also be in good physical condition.

An ERT practice takes place every Sunday and each member must attend at least six (6) practices throughout the year.

Throughout the year, ERT members were trained in first aid, firefighting, extraction, search and rescue, rope rappelling, etc. This training includes practical aspects as well written exams.

11.10.5.14 Cross Cultural training program

Implemented in 2010, the Cross-Cultural Training Program has been provided to many Agnico Eagle employees. The 5-hour course allows employees from different cultures and background to understand each other's culture in order to improve understanding and communication in the workplace.

The program was reviewed with the assistance of the Nunavut Literacy Council in 2013, and revised again in 2014.

Throughout 2017, 103 employees successfully completed the training. Among them, 34 were Inuit employees (33%), including 9 women (26%) and 25 men (74%).

SECTION 12. POST-ENVIRONMENTAL ASSESSMENT MONITORING PROGRAM (PEAMP) – EVALUATION OF IMPACT PREDICTIONS

As per Meadowbank's NIRB Project Certificate, Appendix D (Post-Environmental Assessment Monitoring Program (PEAMP)), the following provides a review of monitoring conducted in 2017 in relation to impacts described in the Final Environmental Impact Statement (FEIS; Cumberland, 2005). As stated in the NIRB Project Certificate, the PEAMP is a conceptual program designed "*to work as an instrument of the proponent's overall monitoring efforts and should provide feedback to the NIRB and other agencies regarding ongoing project monitoring*." The overall goal of this program is to provide the NIRB and other regulatory agencies with information on how current environmental and socioeconomic effects of the Meadowbank mine site compare to impacts predicted in the FEIS.

More specifically, the objectives of the PEAMP as specified in the Project Certificate Appendix D are to:

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.

In addition, a discussion of year-over-year trends is provided for any monitoring components where an exceedance of impact predictions was observed.

The methods, objectives, results and recommendations of the specific monitoring reports and results are discussed in greater detail above in the annual report, or in attached appendices.

It should be noted that the monitoring programs as described in the FEIS were developed at a conceptual level to assist in evaluating the overall potential impacts of the project. These were supporting documents in the FEIS and assisted in informing predictions, establishing regulatory limits, and forecasting management and mitigation actions to assist in the impact prediction process. Monitoring plans and sampling locations have since undergone changes and revisions to reflect actual mine operations. Monitoring and management plan revisions have been approved by the Nunavut Water Board, most recently during the renewal process for the Meadowbank Type A Water License which was completed in 2015. These differences are taken into account when making comparisons to FEIS predictions.

This section has been organized into 6 main categories: Aquatic Environment, Wildlife and Terrestrial Environment, Noise Quality, Air Quality, Permafrost, and Socio-Economics. For each of these categories, Table 12.1 summarizes the valued ecosystem components (VECs) identified in the FEIS, the original impact predictions and the management plans/mitigative measures submitted as part of the FEIS. This review focuses on the potential impacts for which monitoring were recommended, for the phase of mine activity currently underway (i.e. operations).

Agnico Eagle is currently working with various researchers in multiple disciplines (i.e. tailings storage and optimization, wildlife and aquatic researchers, socio-economic researchers, etc.) and would be interested in discussing other opportunities with the NIRB to advance regional monitoring initiatives as requested.

Table 12.1. Summary of FEIS VECs, assessment endpoints and references for the predictions, management and mitigative measures.

VEC	Summary of Potential Impacts	Reference for Impact Predictions	Reference for Management and Mitigative Measures
Aquatic Environment			
Surface water quantity	Reduced water level and flow in receiving lakes	FEIS, Section 4.21.2.3 FEIS App B, Table B4	FEIS, Section 4.24.2.5
Surface water quality	Contamination of receiving lakes	FEIS, Section 4.21.2.3 FEIS App B, Table B5 FEIS App E FEIS - WQ	FEIS, Section 4.24.2.5
Fish populations	Direct impacts through blasting. Indirect impacts through habitat changes.	FEIS, Section 4.21.2.7 FEIS App B, Table B13	
Fish habitat	Direct impacts through habitat destruction or alteration. Indirect impacts through introduction of contaminants.	FEIS, Section 4.21.2.7 FEIS App B, Table B14	FEIS, Section 4.24.2.3 NNL
Terrestrial Environment			
Vegetation (wildlife habitat)	Removal of plant cover, abrasion/grading, salt, dust, grey water release	FEIS, Section 4.21.2.4 FEIS App B, Table B6	FEIS, Section 4.24.2.1 TEMP
Ungulates	Habitat loss, mortality	FEIS, Section 4.21.2.5 FEIS App B, Table B7	FEIS, Section 4.24.2.2 TEMP
Predatory mammals	Habitat loss, mortality	FEIS, Section 4.21.2.5 FEIS App B, Table B8	FEIS, Section 4.24.2.2 TEMP
Small mammals	Habitat loss, mortality	FEIS, Table 4.24 FEIS App B, Table B9	FEIS, Section 4.24.2.2 TEMP

VEC	Summary of Potential Impacts	Reference for Impact Predictions	Reference for Management and Mitigative Measures
Raptors	Habitat loss, mortality	FEIS, Section 4.21.2.6 FEIS App B, Table B10	FEIS, Section 4.24.2.2 TEMP FEIS App B, Table B10
Waterfowl	Habitat loss, ingestion of contaminants, mortality	FEIS, Section 4.21.2.6 FEIS App B, Table B11	FEIS, Section 4.24.2.2 TEMP
Other breeding birds	Habitat loss, mortality	FEIS, Section 4.21.2.6 FEIS App B, Table B12	FEIS, Section 4.24.2.2 TEMP
Air Quality	Contamination of aquatic environment by dust. Contamination of terrestrial environment by dust. Poor air quality. Odours may attract scavengers. Production of greenhouse gases, other gaseous contaminants and particulate matter.	FEIS, Section 4.21.2.2 FEIS App B, Table B2	FEIS, Section 4.24.2.3
Noise	General disturbance of wildlife as a result of regular noises (behavioural changes, displacement). Reduced habitat effectiveness.	FEIS, Section 4.21.2.2 FEIS App B, Table B3	FEIS, Section 4.24.2.3
Permafrost	Thaw instability. Changes in permafrost depth in various areas (increase/decrease). Ice entrapment in tailings/reclaim.	FEIS, Section 4.21.2.1 FEIS App B, Table B1	FEIS, Section 4.24.2.4
Socio-economic		FEIS, Section 4.21.4 FEIS App B, Table B15	FEIS, Section 4.24.3
Traditional Ways of Life (personal and community)	Reduced access to land. Reduction in traditional activities including harvesting. Undervaluing traditional ways and loss of knowledge.	FEIS Section 4.21.4.4 FEIS App B, Table B15	FEIS Section 4.24.3 FEIS App B, Table B15

VEC	Summary of Potential Impacts	Reference for Impact Predictions	Reference for Management and Mitigative Measures
Employment, Training, and Business	Financial expenditures of $23 million annually for 10 years. Employment of at least 60 workers. Goods and services contracts for local businesses. Overall increased economic activity, including indirect and induced effects. Increased capacity of local labour force to participate in formal economy. Increase in interest of school on part of youth. Increased individual, family, and community wellness.	FEIS Section 4.21.4.3 FEIS App B, Table B15	FEIS Section 4.24.3 FEIS App B, Table B15
Wellness (personal and community)	Poor financial decision making. Increased income disparity. Increased public health and safety risks. Stress from rotational employment. Increased traffic accidents and emergencies. Disturbance by project activities.	FEIS Section 4.21.4.5 FEIS App B, Table B15	FEIS Section 4.24.3 FEIS App B, Table B15
Infrastructure and social services	Shortage of housing and other infrastructure. Increased demand for social services.	FEIS Section 4.21.4.6 FEIS App B, Table B15	FEIS Section 4.24.3 FEIS App B, Table B15
Sites of heritage significance	Potential degradation of historically significant sites.	FEIS Section 4.21.4.7 FEIS App B, Table B15	FEIS Section 4.24.3 FEIS App B, Table B15
Contributions to economy of Nunavut and Canada	$92M annually during operations phase.	FEIS Section 4.21.4.8	None

12.1 AQUATIC ENVIRONMENT

The results of the 2017 aquatic ecosystem and physical environment monitoring programs were evaluated, and a comparison was made to the impacts predicted in the FEIS. The aquatic environment VECs identified in the FEIS were: surface water quantity, surface water quality, and fish/fish habitat. The following sections summarize the predicted impacts to the aquatic environment VECs, assess the accuracy of the predictions, discuss the effectiveness of the monitoring program at targeting predicted impacts and provide recommendations for any additional required mitigation or adaptive management. Any use of the monitoring data in regional monitoring initiatives is described.

12.1.1 Accuracy of Predictions

In general, Meadowbank's water quality and quantity monitoring programs intend to meet the requirements of the NWB (Type A license) and Environment Canada MMER criteria. As anticipated, the mine lay-out and infrastructure have changed since the FEIS was produced, and sampling locations have been adjusted accordingly. Overall, observed impacts to water quantity, water quality, fish and fish habitat measured in 2017 are within FEIS predictions or are not expected to result in adverse environmental impacts. See Tables 12.2, 12.3 and 12.4 for summaries.

12.1.1.1 Water Quantity

A summary of predictions for impacts to water quantity and the accuracy of these predictions (measured impacts) are provided in Table 12.2.

Water usage predictions were made during the FEIS to predict potential impacts to water levels in Third Portage Lake, Second Portage Lake, and Wally Lake. Modeling predicted the natural range of water levels in Third Portage Lake to be 133.82 – 134.19 masl, and the impact assessment indicated that this range would not be exceeded (Physical Environment Impact Assessment Report, 2005). Although these values accounted for 1-in-100 yr precipitation or drought events, prior to operation, water levels were already below this range when monitoring began (prior to any significant freshwater consumption) in 2009. Pumping rates of freshwater from Third Portage Lake remained well within license limits in 2017, and water levels do not appear to have changed significantly since monitoring began (2009) (see Figure 44). Although only one measurement of baseline water levels in Second Portage Lake was reported from 2005 in the FEIS (133.1 masl), making comparisons difficult, measured water levels since 2013 appear to be within this range. (Figure 45). Discharge volumes from the Vault Attenuation Pond to Wally Lake were underestimated in the FEIS (potentially due to changes in site designs since that time) but any increase in water levels in Wally Lake appears to be minimal, as anticipated in the FEIS (Figure 46).

Table 12.2. Predicted and measured impacts to water quantity. *when monitoring began in 2009, prior to significant freshwater use, the water level in TPL was already outside this range at 133.5 masl.

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted (2017)	Predicted Impact	Measured Impact (2017)
Altered (reduced) water levels in Third Portage Lake	Potentially high seepage rates (from lakes into pits)	Monitor pit seepage rates	Lake levels monitored	No change in lake level (modeled range = 133.82 – 134.19 masl*; 2009 measured = 133.5 masl)	133.41 – 133.72 masl (average = 133.59 masl)
	Freshwater consumption (Third Portage Lake)	Monitor freshwater use	Freshwater use monitored	0.53 M m^3/yr (Year 5 – 8; FEIS) NWB renewed water license and approved 2.35 Mm^3/yr until 2017 and 9.12 Mm^3/yr in 2018 through to expiry of license.	528,171 m^3
	Discharge from Portage Attenuation Pond	Monitor discharge volumes and timing	Discharge volumes monitored	458,400 m^3/yr (max)	No discharge in 2017
	Non-contact water diverted from Second Portage Lake drainage into TPL	Monitor discharge volumes of non-contact water	Lake levels monitored	No change in lake level (modeled range = 133.82 – 134.19 masl*; 2009 measured = 133.5 masl)	133.41 – 133.72 masl (average = 133.59 masl)
Altered water levels in Second Portage Lake	Potentially high seepage rates (from lakes into pits)	Monitor pit seepage rates	Lake levels monitored	Dike seepage rates predicted at 10^{-2} – 10^{-4} L/s/m of dike; Minor effect on lake level (baseline = 133.1 masl)	132.70 – 133.08 masl (average = 132.92 masl)
	Non-contact water diverted from Second Portage Lake drainage	Monitor discharge volumes of non-contact water	Lake levels monitored	Minor effect on lake level (baseline = 133.1 masl)	132.70 – 133.08 masl (average = 132.92 masl
Increased water levels in Wally Lake	Discharge from Attenuation Pond	Monitor discharge rates	Monitored discharge rates	Minimal increase in water levels. Total average annual discharge is approximately 456,450 m^3 during open water months	Water levels 139.25 - 139.73 masl (avg. = 139.52 masl) 715,606 m^3 discharged

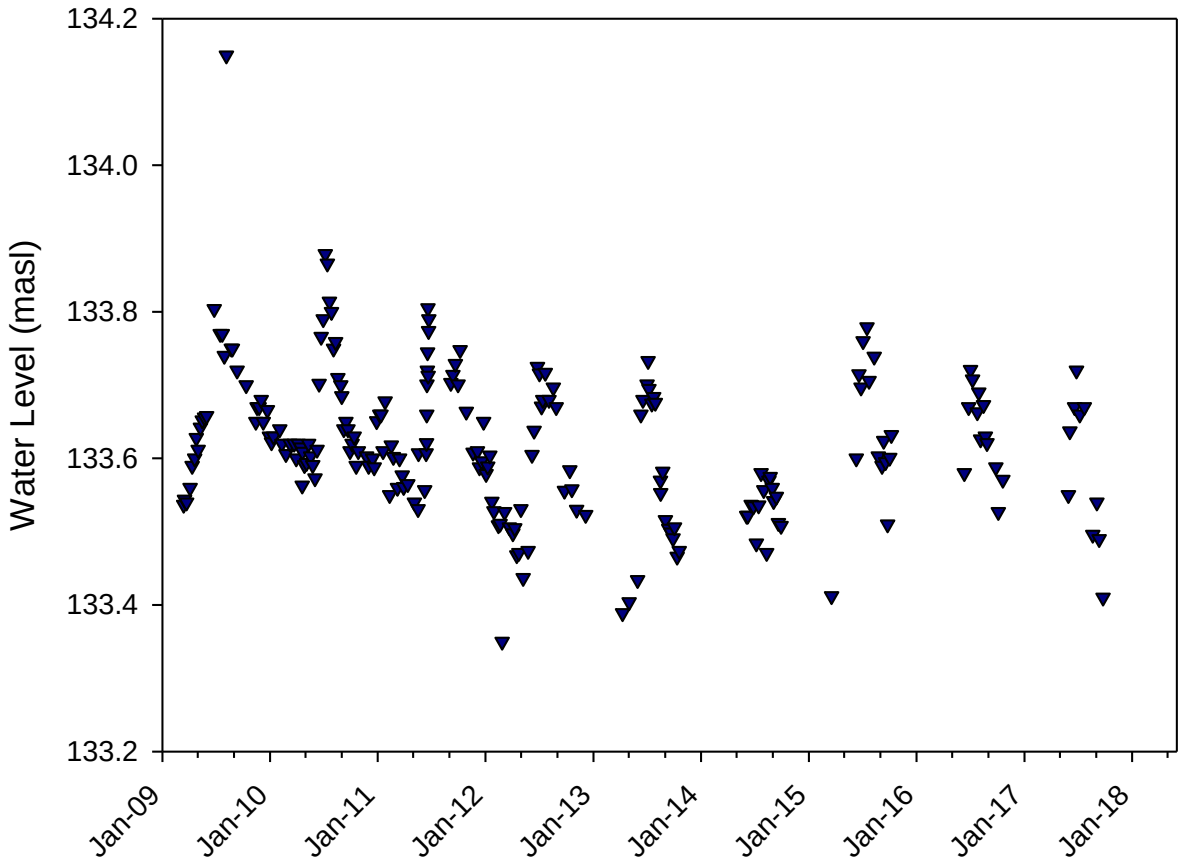


Figure 45. Measured water levels in Third Portage Lake.

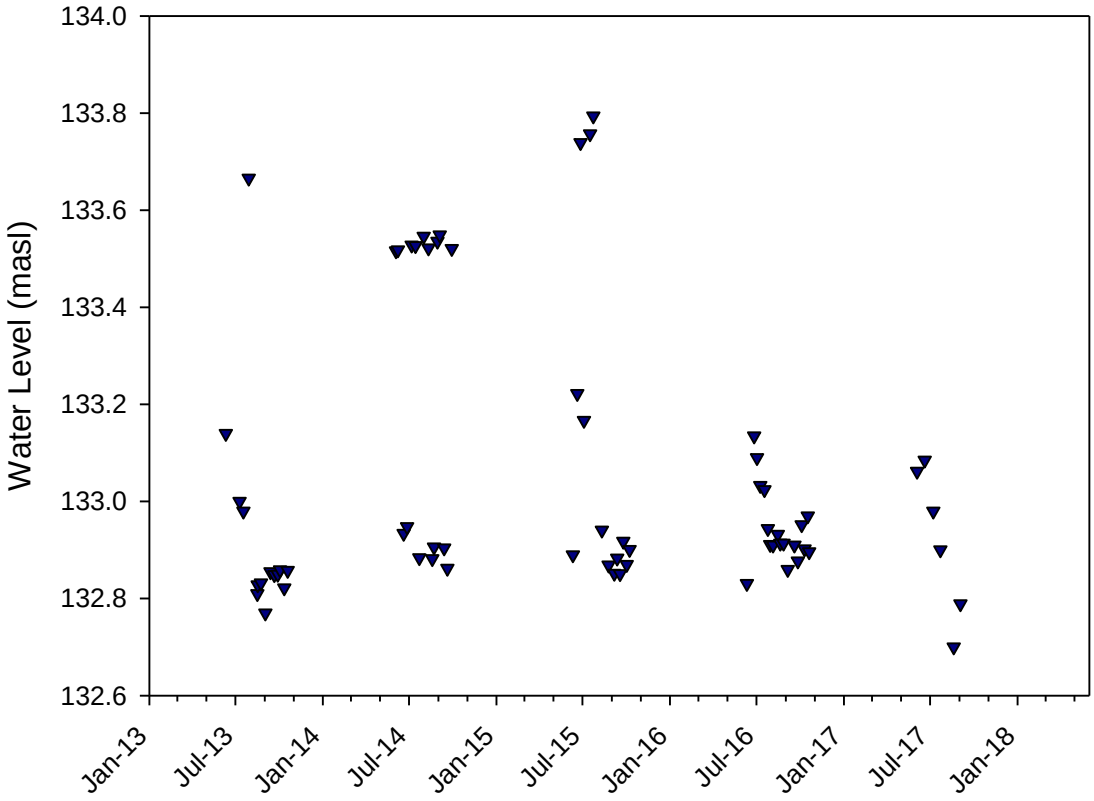


Figure 46. Measured water levels in Second Portage Lake.

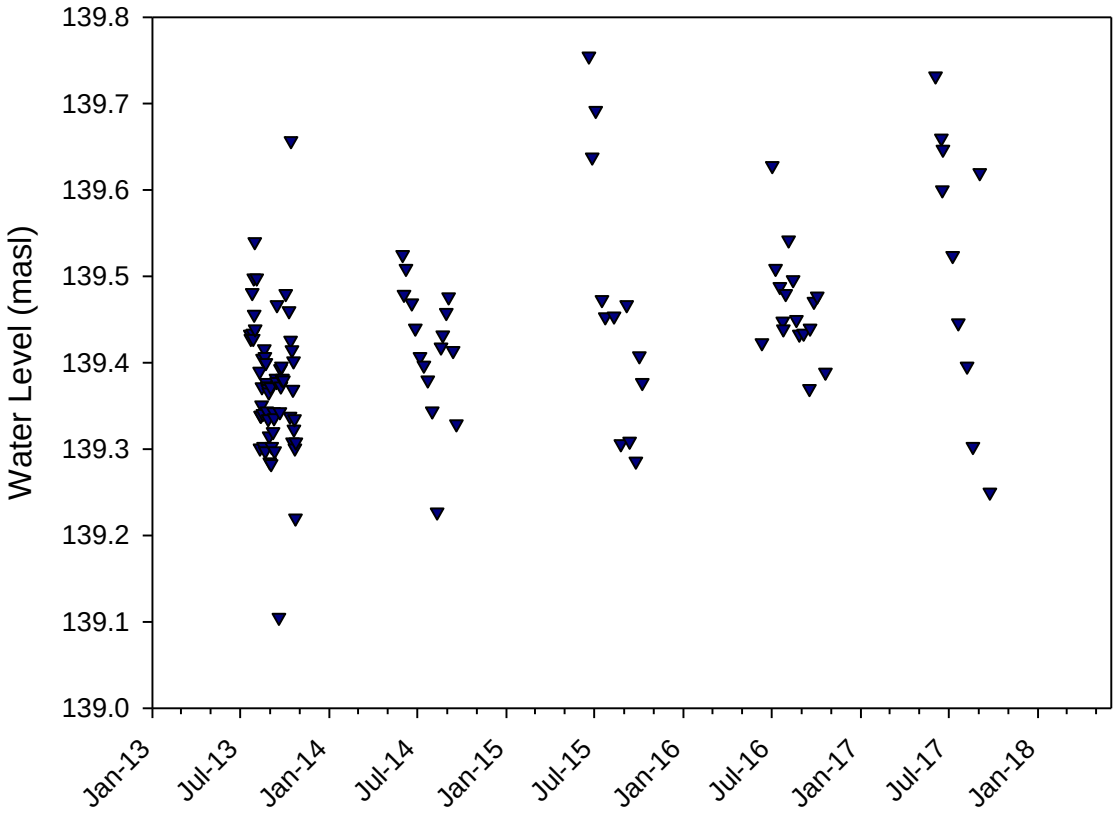


Figure 47. Measured water levels in Wally Lake.

12.1.1.2 Water Quality

There are many monitoring programs conducted to evaluate water quality at Meadowbank. These are mainly a requirement of the Type A Water License as well as the federal MMER program. They are designed to provide immediate feedback such that mitigation or adaptive management can be implemented. As outlined in the FEIS, the Core Receiving Environment Monitoring Program is intended to monitor large-scale (e.g. basin-wide) changes in physical and biological variables to evaluate potential impacts from all mine related sources in the receiving environment. It therefore serves as the most important monitoring program for evaluating short term and long term potential impacts to the aquatic environment. In 2016, Agnico Eagle implemented an updated CREMP plan in accordance with the terms of their renewed NWB water license (2AM-MEA1525) for the Meadowbank site. Each year, information from the CREMP and other targeted programs is evaluated in an integrated manner and reported as the AEMP (Section 8.9 of this document) to determine any required changes to mitigation practices. The AEMP summarizes the results of each of the underlying monitoring programs, including the CREMP, reviews the inter-linkages among the monitoring programs; integrates the results, and recommends management actions.

Aspects of the mine that were identified in the FEIS as potentially leading to significant impacts during operations are summarized Table 12.3, along with results of the monitoring programs aimed at assessing these impacts. Note that this assessment focuses on comparing current measured effects with predictions made in the Physical Environment Impact Assessment Report (2005); it does not attempt to compare

effects of all aquatic environment monitoring programs with respective threshold or trigger values developed for AEMP programs or to regulatory criteria imposed. For results of those assessments, see individual monitoring reports, or the summary provided under Section 8.7 of this report. Overall, the FEIS predicted a low impact on the receiving environment water quality, designated by <1x change in CCME Water Quality Guidelines, and no exceedances of MMER/NWB Water License criteria. As described in Table 12.3, with the exception of 2 TSS samples for effluent discharged to Second Portage Lake, these predictions were not exceeded in 2017. Further discussion of the TSS exceedances is provided in Section 8.3.3.5, but on average these did not exceed 10% of the license limit of 30 mg/L, and discharge to the receiving environment ceased immediately upon receipt of results (2 days after sample collection). These exceedances are therefore not expected to have a significant impact on receiving environment water quality. Furthermore, no exceedances of TSS triggers were observed in Second Portage Lake through CREMP sampling. Further comparison of CREMP results to specific FEIS water quality model predictions is provided in the 2017 CREMP report (Appendix G1).

Table 12.3. Predicted and measured impacts to water quality.

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted (2017)	Predicted Impact	Measured Impact (2017)
Impaired Wally Lake water quality	Vault attenuation pond effluent discharge; dike leaching	Effluent and receiving environment monitoring	Receiving environment: CREMP Effluent: MMER, Water License	Receiving environment: CREMP results <CWQG except arsenic and cadmium Effluent: <MMER	Receiving environment: CREMP results all <CWQG Effluent: <MMER and Water License Criteria
Impaired Second Portage Lake water quality	Portage Attenuation pond effluent discharge; dike leaching; (East Dike seepage)	Effluent and receiving environment monitoring	Receiving environment: CREMP Effluent: MMER, Water License	Receiving environment: CREMP results <CWQG except cadmium Effluent: <MMER, Water License	Receiving environment: CREMP results all <CWQG Effluent: <MMER and Water License Criteria except 2 TSS samples
Impaired Third Portage Lake water quality	Portage Attenuation pond effluent; dike leaching	Effluent and receiving environment monitoring	Receiving environment: CREMP (MMER effluent monitoring not required)	CREMP results <CWQG except cadmium	Receiving environment: CREMP results all <CWQG

12.1.1.3 Fish and Fish Habitat

In addition to water quality and quantity, site specific monitoring programs were developed to address the impacts of mining activities to fish and fish habitat. These are primarily guided by Fish Habitat Offsetting/ No Net Loss Plans (NNLP) and associated fisheries monitoring (e.g. CREMP, Habitat Compensation Monitoring Plan, blast monitoring) as set out in the DFO Fisheries Act Authorization for the mine site. Results of these programs are summarized in relation to FEIS predictions in Table 12.4, below. Again, only predictions for which monitoring was proposed are discussed. All measured impacts to fish and fish habitat were within FEIS predictions, with the exception of slightly elevated TSS in two effluent discharge samples for Second Portage Lake. Further discussion of the TSS exceedances is provided in Section 8.3.3.5, but on average these did not exceed 10% of the license limit of 30 mg/L, and discharge to the receiving environment ceased immediately upon receipt of results (2 days after sample collection). These exceedances are therefore not expected to have a significant impact on receiving environment fish habitat. Furthermore, no exceedances of TSS triggers were observed in Second Portage Lake through CREMP sampling.

Table 12.4. Predicted and measured impacts to fish and fish habitat

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted (2017)	Predicted Impact in FEIS	Observed Impacts (2017)
Loss/impairment of fish habitat	Construction of temporary and permanent in-water features (e.g. TSF, dikes, pits).	Monitoring of compensation features per NNLP (targeted studies under AEMP for dike “pore water” (interstitial water) quality, periphyton growth, fish use).	Monitoring of compensation features per NNLP (see Habitat Compensation Monitoring Plan report, Appendix G5)	Dikes will provide a medium for lower trophic growth; habitat for non-spawning life functions except Goose Island dike where spawning may occur.	Compensation features appear to be functioning as intended (good interstitial water quality, continuing periphyton growth, fish presence around dikes)
	Construction of barge facility in Baker Lake	Annual monitoring of shoreline stability and integrity (proposed 2016)	CREMP monitoring at Baker Lake barge dock	Negligible impact	No impacts of barge activity on water quality, sediment quality, phytoplankton, benthic invertebrates observed to date (CREMP)
Reduced fish egg survival	Metals and particulates from dike leachate, effluent, and road dust. Blasting	Dike leachate: Targeted studies under AEMP (“pore water” (interstitial water) sampling during year 1 Effluent: Water quality monitoring under MMER. Dust: Whole-lake	Dike leachate: pore water sampling under HCMP Effluent: MMER monitoring Dust: Whole-lake water quality under CREMP Blasting: Blast	Dike leachate: Dissolved metals may reduce fish egg survival and larval development during overwinter incubation. Effluent: < MMER (2002) regulations Dust (whole-lake water quality under CREMP): negligible ecological effect, <CWQG for aquatic life	Dike leachate: No adverse effects anticipated related to interstitial water quality (< CCME guidelines except 1 TSS sample). Effluent: < MMER, Water License except 2 TSS samples Dust (whole-lake water quality under CREMP):

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted (2017)	Predicted Impact in FEIS	Observed Impacts (2017)
		water quality under CREMP Blasting: Blast monitoring	monitoring	(CCME) except cadmium (TPL), and arsenic and cadmium (Wally Lake) Blasting: Most blasts will not exceed DFO overpressure guideline (50 kPa); no exceedances of PPV guideline (13 mm/s)	CREMP results <CWQG Blasting: No exceedances of DFO overpressure guideline (50 kPa); no exceedances of PPV guideline (13 mm/s)
Mortality of fish and fish eggs	Blasting	Blast monitoring	Blast monitoring	Most blasts will not exceed DFO overpressure guideline (50 kPa); no exceedances of PPV guideline (13 mm/s)	No exceedances of DFO overpressure guideline (50 kPa); no exceedances of PPV guideline (13 mm/s)
	Worker fishing in project area, despite no-fishing policy; increased fishing in area due to AWAR	Worker fishing: Staff interviews AWAR fishing: Creel survey	Worker fishing: None AWAR fishing: Next monitoring in 2018	Unknown	Worker fishing: Not assessed AWAR fishing: N/A
	Accidental spills (e.g. fuel)	Event-based monitoring; spill emergency response plan	Spill Contingency Plan: All spills reported to Environment Department; monitoring spills during site inspections	Not defined	No offsite impact to any watercourses as a result of spills in 2017.
Fish stress, behavioural	Increased concentrations of	Dust: Whole-lake water quality	Dust: Whole-lake water quality	Dust (whole-lake water quality under CREMP):	Dust (whole-lake water

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted (2017)	Predicted Impact in FEIS	Observed Impacts (2017)
changes, avoidance	dissolved metals and TSS from dust and effluent discharge	monitoring under CREMP Effluent: Monitoring under MMER program	under CREMP Effluent: MMER monitoring	negligible ecological effect; <CWQG for aquatic life (CCME) except cadmium (TPL), and arsenic and cadmium (Wally Lake) Effluent: < MMER criteria	quality under CREMP): CREMP results <CWQG Effluent: < MMER, Water License except 2 TSS samples
Impaired lower trophic levels (incl. loss of phytoplankton, periphyton and benthos)	Leaching of metals from dikes	Targeted studies under AEMP ("pore water" sampling; periphyton sampling) during year 1	Interstitial water and periphyton sampling of dike faces under Habitat Compensation Monitoring Plan (Appendix G5)	Dike faces will provide a medium for periphyton growth	Dike faces are providing a medium for periphyton growth; no adverse effects anticipated related to interstitial water quality (< CCME guidelines except 1 TSS sample).
	Sedimentation through dust/particulate dispersion (road dust, wind dispersal, terrain disturbance) and effluent discharge	Dust: Water quality monitoring through CREMP Effluent: MMER monitoring	Dust: CREMP (water quality and lower trophic level monitoring) Effluent: MMER monitoring	Dust: negligible ecological effect; CREMP results <CWQG for aquatic life (CCME) except cadmium (TPL), and arsenic and cadmium (Wally Lake) Effluent: Settling of TSS and altered sediment chemistry may impact benthos.	Dust (water quality and lower trophic level monitoring under CREMP): CREMP results <CWQG, no observed impacts to phytoplankton, benthic invertebrates Effluent: < MMER, Water License except 2 TSS samples
Increased fish biomass	Release of nutrients in treated	Nutrients, chlorophyll a, and	Nutrients, chlorophyll a, and	Increase in nitrogen concentrations; change in	N/A - Treated sewage is disposed of in TSF, so

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted (2017)	Predicted Impact in FEIS	Observed Impacts (2017)
	sewage	phytoplankton monitoring through CREMP in TPL	phytoplankton monitoring through CREMP in TPL	phytoplankton species in TPL	potential for impact is removed.
Impaired fish passage along AWAR streams	Culvert installation	AWAR Fish Monitoring Report: (targeted monitoring study under AEMP - hoopnets at culvert crossings only; 1 year minimum)	Not required – program complete in 2011 after 5 years	Negligible residual impact on fish and their movements within streams and channels	N/A

12.1.2 Effectiveness of Monitoring Programs

The aquatic monitoring programs at Meadowbank were originally designed as part of the FEIS and adapted to meet the requirements of the NWB Type A License, Environment Canada regulations and DFO Fisheries Act Authorizations for the protection of the aquatic system. Beyond meeting the regulatory requirements, the numerous 2017 aquatic monitoring programs addressed nearly all relevant potential impacts to water quantity, water quality and fish/fish habitat identified in the FEIS, as demonstrated in Tables 12.2, 12.3, and 12.4. Two components that will be further documented in 2018 to support this analysis include annual visual monitoring of shoreline stability and integrity at Agnico's Baker Lake barge facility, as well as documentation regarding any onsite fishing (although this practice is not permitted under Agnico's policies for the Meadowbank site, and no incidents have been observed by or reported to the Environment Department to date).

12.1.3 Recommendations for Additional Mitigation or Adaptive Management

Overall, the measured impacts to water quantity, water quality, fish and fish habitat appear to be within the FEIS predictions, or were not expected to result in adverse effects, indicating that the original predictions were conservative. In the case where water levels in Third Portage Lake are occasionally below predicted levels, it is not clear that this impact is mine-related, since significant changes in water levels have not occurred since prior to dewatering and freshwater use began (2009). Based on this comparison to FEIS predictions, there are no additional recommendations for mitigation of impacts to water quality, water quantity, or fish/fish habitat.

12.1.4 Contributions to Regional Monitoring

In 2017, Agnico Eagle worked with a group of researchers from the University of Manitoba (Dr. Jorg Stetefeld and team) who are initiating a study on use of eDNA for predicting presence/absence and/or changes in relative abundance of northern fish species. Furthermore, Agnico continues to discuss current methods of evaluating fish habitat and productivity of a fishery under the DFO Fisheries Act and fisheries protection policy with consultants, academic researchers and has provides all raw fishout data and habitat mapping to DFO scientists for use by any interested parties. At a regional level, the information, monitoring tools, monitoring data and modelling that is used at Meadowbank has been applied by Agnico Eagle and other consultants at other proposed projects in Nunavut including, the Meliadine Gold Project and Amaruq Whale Tail Pit project.

In addition, Agnico Eagle Mines has participated as a technical advisory group member of the Inu'tutit project since 2014. The Inu'tutit Initiative is part of longer term plan that is being led by a secretariat of key players made up of the NGMP, KivIA, INAC and Nunavut Water Board (NWB), and is being implemented through partnerships between the KivIA, federal and territorial governments, industry (Areva Resources and Agnico Eagle Mines), the Hamlet of Baker Lake and eventually, universities and academic institutions. More specifically, the Kivalliq Inuit Association (KivIA) has partnered with Indigenous and Northern Affairs Canada (INAC) and the Nunavut General Monitoring Plan (NGMP) to develop an Aquatic Cumulative Effects Monitoring Program (CEMP) for the Baker Lake Basin under the auspices of the Inu'tutit Initiative.

Although the intent of the Inu'tutit CEMP is not to determine the influence of a particular point source at this time, the concept of gradients of exposure from point sources have influenced site selection in addition to a broader effects-based study design to monitor the condition of the subwatersheds. Sites

selected for the Inu'tutit CEMP incorporate concepts of both stressor and effects base study design, and include locations to monitor the aquatic environment at the project, watershed and basin scales.
Finally, Agnico is supporting a study by University of Manitoba researchers (Dr. Charles Wong & team) in the Hamlet of Baker Lake, focusing on assessment of municipal wastewater impacts to the surrounding water quality. Field work for this study will begin in 2018. Agnico is also looking to expand the study to work with the Hamlet and include assessment of current treatment system performance, design and evaluation of a new treatment system, as well as measurements of impacts to lower trophic levels and fish health.

12.2 TERRESTRIAL AND WILDLIFE ENVIRONMENT

In accordance with the PEAMP objectives, the results of the 2017 wildlife monitoring programs were evaluated and a comparison was made to the thresholds for adaptive management established for each VEC (vegetation (wildlife habitat), ungulates, predatory mammals, small mammals, raptors, waterfowl and breeding birds). Thresholds, as developed in the Terrestrial Ecosystem Management Plan (a component of the FEIS), were used in this comparison because most impact predictions in the Terrestrial Ecosystem Impact Assessment were qualitative (other than loss of habitat area).

The following sections summarize the thresholds for terrestrial and wildlife VECs, provide an assessment of any exceedances of thresholds, and discuss the effectiveness of the monitoring program at targeting predicted impacts. Additional recommendations are made for any required mitigation or adaptive management. Any use of the monitoring data in regional monitoring initiatives is described.

12.2.1 Accuracy of Predictions

For each VEC, a summary of predicted impacts and the accuracy of those predictions (observed impacts) as determined through various monitoring programs are provided in Table 12.5.

Overall, two Terrestrial Ecosystem Monitoring Program thresholds were exceeded or potentially exceeded in 2016 (waterfowl mortalities; and potentially, sensory disturbance of caribou related to the AWAR).

Table 12.5. Terrestrial impacts and associated effects predicted in the FEIS, proposed monitoring, actual monitoring (2017) and any observed impacts (2017). Adapted from Table 10.1 in the 2017 Wildlife Monitoring Summary Report (Appendix G13). Measured impacts exceeding or potentially exceeding impact predictions/thresholds are indicated in grey.

Potential Impact	Potential Cause(s)	Proposed Monitoring Methods	Monitoring Conducted (2017)	Threshold/ Prediction	Measured Impact (2017)
Vegetation (Wildlife Habitat)					
Habitat Loss	Mine site footprint, pits, roads, water management and collection systems	Ground Surveys, Mapping, GIS Analysis	Ground Surveys, Mapping, GIS Analysis	Mine Site – 867 ha + 5% AWAR – 281 ha + 5%	Mine Site - 1,021 ha AWAR – 173 ha Net – 4% above total predicted habitat loss

Potential Impact	Potential Cause(s)	Proposed Monitoring Methods	Monitoring Conducted (2017)	Threshold/ Prediction	Measured Impact (2017)
Habitat Degradation by Contamination	Dust from roads, TSF, airstrip	Vegetation and Soil Samples (SLRA)	Vegetation and Soil Samples (SLRA)	No excess mine-related risk	No excess mine-related risk
Ungulates					
Sensory Disturbance	Avoidance due to noise and activity (roads, airstrip, mine site)	Ground Surveys, Satellite-collaring	Ground Surveys, AWAR Road Surveys, Satellite-collaring	Avoidance of habitat more than 500 m from site; 1000 m from AWAR	Ground surveys: no avoidance AWAR surveys/satellite collaring: Possible – Indication of disturbance from cumulative data (follow up work by GN on road-related effects)
Vehicle Collisions	Vehicular or air traffic collisions	Ground surveys, Collision Reporting System	Ground surveys, Collision Reporting System, AWAR Road Surveys	One mortality per year	None
Habitat Loss and Degradation	Mine site footprint, pits, roads, water management and collection systems	Ground Surveys, Mapping, GIS Analysis	Ground Surveys, Mapping, GIS Analysis	Growing – 240 ha of High Suitability Habitat + 10% Winter – 191 ha of High Suitability Habitat + 10%	Growing – 318 ha Winter – 248 ha
Hunting by Baker Lake Residents	Improved access to hunting along the AWAR	Hunter Harvest Study	Not conducted - will resume in 2018	< 20% increase of historical harvest activities within the RSA; no significant impact to herds	N/A
Other Mine-related Mortality	Falling into pits, TSF or other	Ground surveys	Ground surveys	One mortality per year	No mine-related mortalities

Potential Impact	Potential Cause(s)	Proposed Monitoring Methods	Monitoring Conducted (2017)	Threshold/ Prediction	Measured Impact (2017)
	means				
Exposure to Contaminated Water or Vegetation	Consumption of contaminated dust deposited on vegetation	Vegetation and Soil Samples (SLRA)	Vegetation and Soil Samples (SLRA)	No excess mine-related risk	No excess mine-related risk
Predatory Mammals					
Project-related Mortality	Vehicular or air traffic collisions, falling into pits, TSF or other means	Ground Surveys, Collision Reporting System	Ground Surveys, Collision Reporting System, AWAR Road Surveys	One mortality per year for large predatory mammals	One wolverine and two wolves were killed
Small Mammals					
Project-related Mortality	Vehicular or air traffic collisions, falling into pits, TSF or other means	Ground Surveys, Collision Reporting System	Ground Surveys, AWAR Road Surveys	Mortality of 100 individuals per year	Four Arctic Hare and eight Arctic Fox were found dead or killed.
Habitat Loss and Degradation	Mine site footprint, pits, roads, water management and collection systems	Ground Surveys, Mapping, GIS Analysis	Ground Surveys, Mapping, GIS Analysis	178 ha of High Suitability Habitat + 10%	241 ha
Exposure to Contaminated Water or Vegetation	Consumption of contaminated dust deposited on vegetation	Vegetation and Soil Samples	Vegetation and Soil Samples	No excess mine-related risk	No excess mine-related risk
Raptors					
Healthy Prey Populations	Mine Footprint, dust and exhaust, noise (road, airstrip, mine site, Baker Lake barge area)	Vegetation and Soil Samples; PRISM plot surveys; ELC habitat mapping	Vegetation and Soil Samples	Thresholds are qualitative, and can be achieved through management and maintenance of vegetation and healthy prey communities.	-
Disturbance of Nesting	Noise and Activity	Active Nest Monitoring	Active Nest Monitoring	One nest failure per	Threshold not exceeded

Potential Impact	Potential Cause(s)	Proposed Monitoring Methods	Monitoring Conducted (2017)	Threshold/ Prediction	Measured Impact (2017)
Raptors				year	
Project-related Mortality	Vehicle/ bird collisions	Ground Surveys, Collision Reporting System	Ground Surveys, AWAR Road Surveys, Collision Reporting System	One mortality per year	No mortalities
Waterbirds					
Disturbance of Nesting Waterfowl	Noise and Activity; dewatering	Waterfowl Nest Surveys	Waterfowl Nest Surveys; Ground Surveys	One nest failure per year	Threshold not exceeded
Habitat Loss and Degradation	Mine site footprint, pits, roads, water management and collection systems	Ground Surveys, Mapping, GIS Analysis	Ground Surveys, Mapping, GIS Analysis	518 ha of High Suitability Habitat + 10%	549 ha
Exposure to Contaminated Water or Vegetation	Mine site dust; Secondary containment structures and tailings storage facilities	Vegetation and Soil Samples	Vegetation and Soil Samples	No excess mine-related risk	No excess mine-related risk
Project-related Mortality	Vehicle/ bird collisions	Ground Surveys, Collision Reporting System	Ground Surveys, AWAR Road Surveys	One mortality per year	No mortalities
Other Breeding Birds					
Project-related Mortality	Vehicle/ bird collisions	Ground Surveys, Collision Reporting System	Ground Surveys, AWAR Road Surveys	50 project-related mortalities per year	Three Common Ravens were killed on the AWAR (Km 23) on 24 November and one Ptarmigan was found dead on the minesite.
Habitat Loss and Degradation	Mine site footprint, pits, roads, water management and collection	Ground Surveys, Mapping, GIS Analysis	Ground Surveys, Mapping, GIS Analysis	322 ha of High Suitability Habitat + 10%	422 ha

Potential Impact	Potential Cause(s)	Proposed Monitoring Methods	Monitoring Conducted (2017)	Threshold/ Prediction	Measured Impact (2017)
	systems				
Exposure to Contaminated Water or Vegetation	Mine site dust	Vegetation and Soil Samples	Vegetation and Soil Samples	No excess mine-related risk	No excess mine-related risk
Changes in Breeding Bird Populations	Mine Footprint, dewatering dust and exhaust, noise (road, airstrip, mine site, Baker Lake barge area)	Breeding Bird Prism Plots and Transects	Next scheduled for 2019	For PRISM plots, threshold is > 20% from control plots. For transect surveys, threshold is reduced use beyond 100 m of road centerline.	N/A

Since large predatory mammal mortality occurred beyond FEIS thresholds in 2017 (death of one wolverine and two wolves), an assessment of historical trends for this component was conducted. Large predatory mammals include grizzly bear, wolf, and wolverine. In 2015 and 2016, no mortalities of predatory mammal mortalities occurred in relation to project activities. In 2014, one nuisance wolf was euthanized after multiple interactions and ineffective deterrents, and in 2013 there was one wolverine mortality. In 2012, there was one wolverine mortality and one problem wolf was euthanized by the Nunavut DoE. In 2011, one nuisance wolverine and three wolves were euthanized onsite. No grizzly bear mortalities have ever occurred in relation to project activities.
Based on this data, there is no clear trend towards increasing mortalities of large predatory mammals on the Meadowbank site.

Potential disruption of caribou movements due to the Meadowbank AWAR was first reported in 2015, and analysis of the data are ongoing, with no confirmation at this point of whether this threshold has been exceeded.

Finally, exceedances of the total predicted area of habitat disturbance occurred for all VECs except waterbirds and AWAR vegetation. Table 3.3 in the Wildlife Monitoring Summary Report (Appendix G13) provides disturbance areas for high suitability habitat calculated approximately every 2 years since 2010. These data demonstrate a relatively steady increase in disturbance area for each VEC. Further habitat analyses are planned for 2018 to determine appropriate management actions.

12.2.2 Effectiveness of Monitoring

Current monitoring programs are effectively able to measure impacts as they relate to established threshold levels.

12.2.3 Recommendations for Additional Mitigation or Adaptive Management

As summarized in Table 12.5, three Terrestrial Ecosystem Monitoring Program thresholds were exceeded or potentially exceeded in 2017 (habitat disturbance areas, large predatory mammal mortalities, and potentially, sensory disturbance of caribou related to the AWAR).

To determine appropriate management actions for exceedances of impact predictions related to habitat disturbance areas, further habitat analyses are planned for 2018. Some possibilities may include further progressive reclamation, such as removal of contaminated soil, placement of stockpiled native soils, reseeding (e.g., native-grass cultivars and forbs such as nitrogen-fixing legumes) and transplanting of vegetation.

No specific new mitigation or adaptive management was recommended in relation to large predatory mammal mortalities, but actions taken in response to the wolverine mortality (which occurred after it was hit by a truck on a minesite road) included employee consequences and reiteration of mine site wildlife protocols.

To further analyze project-related effects on caribou movement, more detailed analysis of caribou monitoring, collar data, hunter harvest activity, and other potential influences on caribou movement and migration is ongoing by regulatory agencies and other interested parties. In 2017, most caribou activity in the Meadowbank area was observed during the fall rut, at which time 10 collared individuals crossed the AWAR. In contrast, 2015 and 2016 collar data indicated that the AWAR might be altering natural movement patterns of collared caribou. The program would benefit from additional collars deployed in the Baker Lake area, as currently only 11 collars remain active.

12.2.4 Contributions to Regional Monitoring

Meadowbank continues to contribute to the GN DOE caribou collaring program which started in 2009. Six deployments have been completed in the area around Baker Lake since Agnico Eagle became involved in the collaring program. Nine (2008), twenty one (2009; shared with AREVA), thirteen (2011), fifteen (2013; shared with AREVA), ten (2015) and 13 (2016) caribou collars were deployed (greater than $250 000). In early 2011, Meadowbank contributed additional funding toward the GN-led program to estimate the number of breeding females in the Beverly herd of taiga-wintering barren-ground caribou. In 2013, Agnico Eagle finalized discussions with the GN and entered into a new Memorandum of Understanding (MOU) to commit to another long term (3 year) contribution in support of the regional GN caribou monitoring program. This agreement will continue to assist the GN- DOE- Wildlife branch in directing the implementation, data analysis and management of caribou populations in the Kivalliq region. Agnico Eagle renewed the MOU in 2016.

In addition, in 2017 Agnico Eagle worked with the GN to evaluate the Zone of Influence of the Meadowbank Mine, as it relates to caribou. Seasonal ranges are important to understand as Barren-ground caribou exhibit migratory behaviour between calving and wintering areas. Migratory animals use a variety (seasonal) of habitats to meet life-history requirements as they move across the landscape and sensory disturbance from development is hypothesized to reduce selection of preferred habitats. In 2017, in collaboration with Agnico Eagle staff, Golder biologists and statisticians worked to determine a zone of influence for the Meadowbank mine, or evaluate if it is affecting a large number of individuals. It is

predicted that reduced use of preferred habitats should reduce herd size (from lower survival and reproduction). Data analysis was completed and hypotheses were tested, documents were provided to regulators and reviewed, presentations were made at the GeoScience Forum and publications are expected in 2018. To reach consensus on research projects, needs for future monitoring and research, gain approval and ensure consistent endpoints of success, a Terrestrial Advisory Group (TAG) was also developed and a series of workshops were developed.

Finally, Agnico is also working with raptor researcher Dr. Alastair Franke from the University of Alberta to document presence of raptors in the Meadowbank area. Dr. Franke's Arctic Raptors group will be tracking changes that may occur as a result of mining activity and sharing results across the scientific community through publications.

12.3 NOISE

While noise generation was predicted in the FEIS for many minesite components, a significant effect of noise (disturbance of wildlife; reduced habitat effectiveness) was only associated with three components: pit development, the mine plant and the airstrip. Noise monitoring was therefore proposed in association with pit development, waste rock, tailings handling and the mill.

The following section summarizes the predicted sources of significant noise impacts at the Meadowbank site, identifies predicted sound levels at established monitoring locations, provides an assessment of the accuracy of the predictions and discusses the effectiveness of the monitoring program at targeting predicted impacts. Furthermore, additional recommendations are made for any required mitigation or adaptive management. Any use of the monitoring data in regional monitoring initiatives is described.

12.3.1 **Accuracy of Predicted Impacts**

Table 12.6, below, summarizes the causes of noise impacts predicted in the FEIS, identifies the proposed monitoring measures, and indicates the accuracy of predictions based on results of monitoring conducted in 2017 (measured sound levels). Since the potential impacts of Project-related noise were all identified as wildlife disturbance, the accuracy of these predictions is also monitored through the terrestrial environment monitoring programs, as discussed in Section 12.2.

In the past, measured sound levels at R5 have exceeded predictions on some occasions, but in 2017, no measured sound levels exceeded predictions.

Table 12.6. Potential causes of noise impacts predicted in the FEIS, proposed monitoring, actual monitoring (2017) and observed monitoring results (2017). *at indicated monitoring station, based on FEIS modeling (assumed 24 h L_{eq}). ** for sites ~350 m from the AWAR; excludes noise due to air traffic.

Potential Cause(s)		**Proposed Monitoring**	**Monitoring Conducted in 2017**	**Predicted Sound Level*** (24 h $L_{eq;}$ dBA)	**Measured Sound Level - 2017** (24 h $L_{eq;}$ dBA)
Pits	Noise from blasting, etc.	Monitor noise levels and	Monitored noise levels (see	R1 = 58-63 dBA	R1 = 32, 46, 47 dBA

Potential Cause(s)		**Proposed Monitoring**	**Monitoring Conducted in 2017**	**Predicted Sound Level*** (24 h $L_{eq;}$ dBA)	**Measured Sound Level - 2017** (24 h $L_{eq;}$ dBA)
Waste Rock /Tailings Facility	Noise from berm construction, material handling	responses of wildlife	Section 12.2 for wildlife monitoring)	R2 = 58-63 dBA	R2 = 39, 56 dBA
Roads and Traffic	Noise from maintenance and use			R3 = 49-53 dBA	R3 = 37, 38, 46 dBA
Airstrip	Noise from air traffic			R4 = 58-63 dBA	R4 = 40, 40, 42 dBA
Mine plant and associated facilities	Noise			R5 = $L_{eq(1hr)}$ < 57 dBA dBA**	R5 = all < 57 dBA

24 h L_{eq} values over time were also plotted to determine any trends in mine site sound levels (Figure 48). The upper level of predicted values is shown for R1 – R4. No prediction with respect to a 24h L_{eq} was made for R5. As shown in this figure, there is no clear trend towards increasing sound levels at any site, with the highest sound levels generally occurring in 2012. Further analysis of trends over time for different averaging times is presented in the 2017 Noise Monitoring Report (Appendix G9).

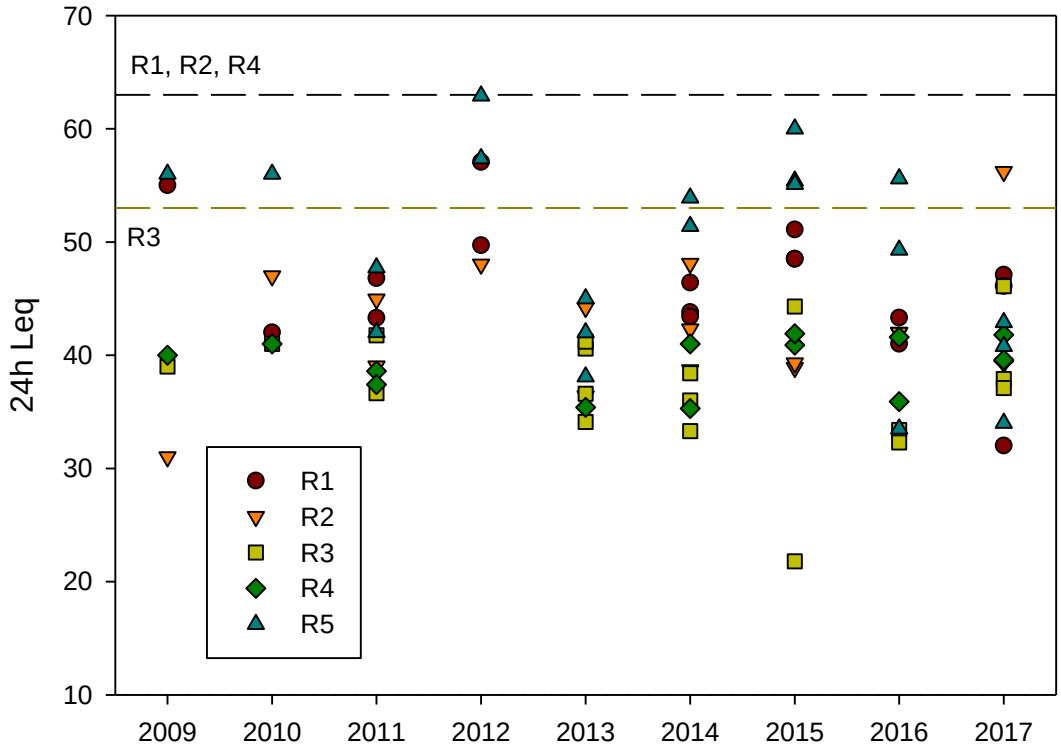


Figure 48. L_{eq} values calculated from filtered data for 24 h averaging times at locations R1 – R5 on the Meadowbank site in surveys from 2009 - 2017. Dashed lines indicate maximum predicted sound levels in the FEIS for each location (24-h L_{eq} prediction not available for R5).

12.3.2 Effectiveness of Monitoring

By monitoring sound levels at five locations around the minesite for two 3-4 day periods annually, the current monitoring program provides a conservative assessment of the accuracy of predicted noise levels. Impacts of mine-related activities (including noise) on wildlife are also monitored through the Terrestrial Ecosystem Monitoring Program (TEMP), as described in Section 12.2.

12.3.3 Recommendations for Additional Mitigation or Adaptive Management

Overall, impact predictions are not being exceeded so no additional mitigation or adaptive management actions are recommended at this time. This conclusion is further supported by regular wildlife monitoring (see Section 12.2), which indicates no exceedances of thresholds related to impacts from noise on the minesite for wildlife.

12.3.4 Contributions to Regional Monitoring

In 2017, Meadowbank has not contributed to any specific regional monitoring for noise.

12.4 AIR QUALITY

A review was conducted of the predicted impacts to air quality identified in the FEIS. While dust generation or air emissions were predicted for many minesite components, a significant effect on terrestrial and aquatic environments was only associated with three components (pit development, the mine plant and the waste rock and tailings facilities).

The following sections summarize the predicted impacts to air quality, provide an assessment of the accuracy of the predictions and discuss the effectiveness of the monitoring program at targeting predicted impacts. Furthermore, additional recommendations are made for any required mitigation or adaptive management. Any use of the monitoring data in regional monitoring initiatives is described.

Accuracy of Predicted Impacts

Table 12.7, below, summarizes the predicted impacts to air quality, associated effects, monitoring measures proposed in the FEIS, and results of monitoring conducted in 2017.

In the FEIS, air quality modeling was conducted for fugitive dust in three size fractions ($PM_{2.5}$, PM_{10} and TSP) originating from the TSF, WRSF, and ore stockpile, for 24h and annual averaging times. Deposition rates for dust from these sources were also calculated ($g/m^2/30d$). However, contour plots were only provided for TSP and deposition rates. Otherwise, only maximum ground level concentrations were described. In addition, modeling was conducted for criteria pollutants (CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$) emitted from the power plant and mobile sources for 1h, 24h and annual averaging times, and concentration contour plots were provided for these analyses.

The main monitoring program for air quality recommended in the FEIS is static dustfall, which is being continuously monitored at four locations around the minesite. In addition, Agnico Eagle conducts monitoring of TSP, PM_{10}, $PM_{2.5}$ and NO_2, in accordance with the Air Quality and Dustfall Monitoring Plan. Carbon monoxide and sulphur dioxide were not required to be monitored as part of the program developed by Agnico Eagle in consultation with regulatory agencies.

Therefore, the following predicted values were able to be compared to measured values: NO_2 (annual average), $PM_{2.5}$, $PM_{10,}$ TSP (24 h & annual average), and dust deposition (30 d rate). It should be noted that since field monitoring captures emissions from all sources at once (as well as background sources), while the FEIS presents modeled outputs from combinations of sources as described above, accuracy of these quantitative predictions cannot specifically be assessed through field monitoring. However, if measured concentrations or deposition rates are lower than predicted values, it can be concluded that FEIS predictions are not being exceeded. In some cases, as described below, measured or estimated background concentrations were able to be added to predicted values to facilitate the comparison.

The following specific methods were used:

- Modeled values for suspended particulates and deposition rates were obtained for the two air quality monitoring locations (DF-1 and DF-2) from the FEIS Air Quality Impact Assessment

Figures 6.2 – 6.24. PM_{10} values were derived from Figures 6.7 and 6.8, based on references in the text (Table 6.1), although these figures are labelled as SP. Model values for a TSF size of 960x560m were used in the comparison.

- A recent impact assessment for the Whale Tail Pit project at Meadowbank calculated background values for $PM_{2.5}$ of 6.7 and 3.6 µg/m^3 for 24-h and annual averaging times, respectively (Whale Tail Pit EIS, Appendix 4-A). No background data was available for other size classes of suspended particulates, but these $PM_{2.5}$ values were added to all predicted concentrations of suspended particulates for the comparison, since $PM_{2.5}$ forms a subset of PM_{10} and TSP.

- For NO_2, modeling results were only provided in the FEIS for the maximum predicted ground-level concentration, which occurred adjacent to the power plant. The closest NO_2 monitoring station (DF-2) is at a distance of approximately 1 km southwest (cross-wind) from this location.

- To compare measured dustfall rates to those predicted in the FEIS, the maximum recorded background value for fixed dustfall collected to date (0.191 mg/cm^2/30d – see 2016 AWAR Dustfall Monitoring Report) was added to the predicted dustfall rate for each monitoring station, and compared to the measured value for fixed dustfall.

Despite the generally conservative nature of these comparisons, the results provided in Table 12.7 indicate that only 3 of 275 suspended particulate samples exceeded impact predictions in 2017. All 3 exceedances occurred for TSP, which may well have been because the estimated ambient (background) concentrations were knowingly underestimated for this size fraction (as stated above, the TSP-$PM_{2.5}$ size fraction is not included). Six of 22 dustfall samples exceeded the maximum predicted deposition rate, all occurring at DF-1 where rates were predicted to be very low (e.g. less than half Alberta's dustfall guideline for recreational areas). No exceedances occurred for NO_2, $PM_{2.5}$, PM_{10}, or the annual average TSP. In addition, rates of dustfall along the AWAR fall within impact predictions, and GHG emissions are below the predicted value.

Table 12.7. Potential causes of air quality concerns, monitoring measures proposed in the FEIS, and results of monitoring conducted in 2017. *See explanation in Section 12.4.1. Any exceedances are bolded.

Potential Cause(s)	Proposed Monitoring (FEIS)	Monitoring Conducted (2016)	Max. Predicted Value (FEIS) + Est. Partial Background*	Measured Value (2017)
Generation of dust during placement of dike material	Static dustfall	N/A (no dikes constructed)	-	-
Generation of dust from exposed lake sediment	Static dustfall	Static dustfall, NO_2 (four locations) and suspended particulates (two locations)	NO_2 (ppb; annual avg.) = 4.97	NO_2 (ppb; annual avg.; DF-2) = 1.56
Generation of dust and gases from blasting, excavation etc.	Static dustfall		$PM_{2.5}$ (µg/m^3; 24 h avg.): DF-1: 20+6.7 = 26.7 DF-2: 10+6.7 = 16.7	$PM_{2.5}$ (µg/m^3; 24 h avg.): DF-1: 0/56 samples > 26.7 DF-2: 0/53 samples > 16.7
Generation of dust from material deposited on waste rock pile or tailings	Static dustfall		$PM_{2.5}$ (µg/m^3; annual avg.) DF-1: 1+3.6 = 4.6 DF-2: 0.5+3.6 = 4.1	$PM_{2.5}$ (µg/m^3; annual geometric avg.) DF-1: 0.4 DF-2: 2.2
Generation of dust and emissions from development, maintenance and use	Static dustfall		PM_{10} (µg/m^3; 24 h avg.): DF-1: 20+6.7 = 26.7 DF-2: 40+6.7 = 46.7 TSP (µg /m^3; 24 h avg.) DF-1: 4+6.7 = 10.7 DF-2: 52+6.7 = 58.7 TSP (µg /m^3; annual avg.) DF-1: 0.25+3.6 = 3.85 DF-2: 16+3.6 = 19.6 Dustfall (mg/cm^2/30d): DF-1: 0.03+0.191 = 0.22 DF-2: 0.8+0.191 = 0.99	PM_{10} (µg/m^3; 24 h avg.): DF-1: 0/56 samples > 26.7 DF-2: 0/53 samples >46.7 TSP (µg /m^3; 24 h avg.): DF-1: 0/14 samples >10.7 **DF-2: 3/43 samples >58.7** TSP (µg /m^3; annual geometric avg.) DF-1: 2.1 DF-2: 10.5 Dustfall (mg/cm^2/30d): **DF-1: 6/11 samples > 0.221** DF-2: 0/11 samples > 0.991
Generation of dust and emissions from development, maintenance and use of roads	Static dustfall	As above, plus AWAR targeted study	As above for site. For AWAR: Majority of dustfall expected to occur within 100 m.	More than 2x reduction in average total dustfall occurred between 25 and 100 m; see 2017 All-Weather Access Road Dust Monitoring Report
Release of pollutants from incineration	Maintain scrubbers; report	GHG emissions reported	190,768 t CO_2 equivalent	197,678 t CO_2 equivalent

Potential Cause(s)	Proposed Monitoring (FEIS)	Monitoring Conducted (2016)	Max. Predicted Value (FEIS) + Est. Partial Background*	Measured Value (2017)
	emissions			

Since some measurements of TSP (24 h) and dustfall exceeded FEIS model predictions for project inputs, it cannot be assumed that FEIS predictions are not being exceeded for these parameters. Therefore, an examination of historical trends was performed to determine any tendency towards increasing Project-related effects. As demonstrated in Figure 49 and 50, no trends towards increasing dust generation or deposition are apparent.

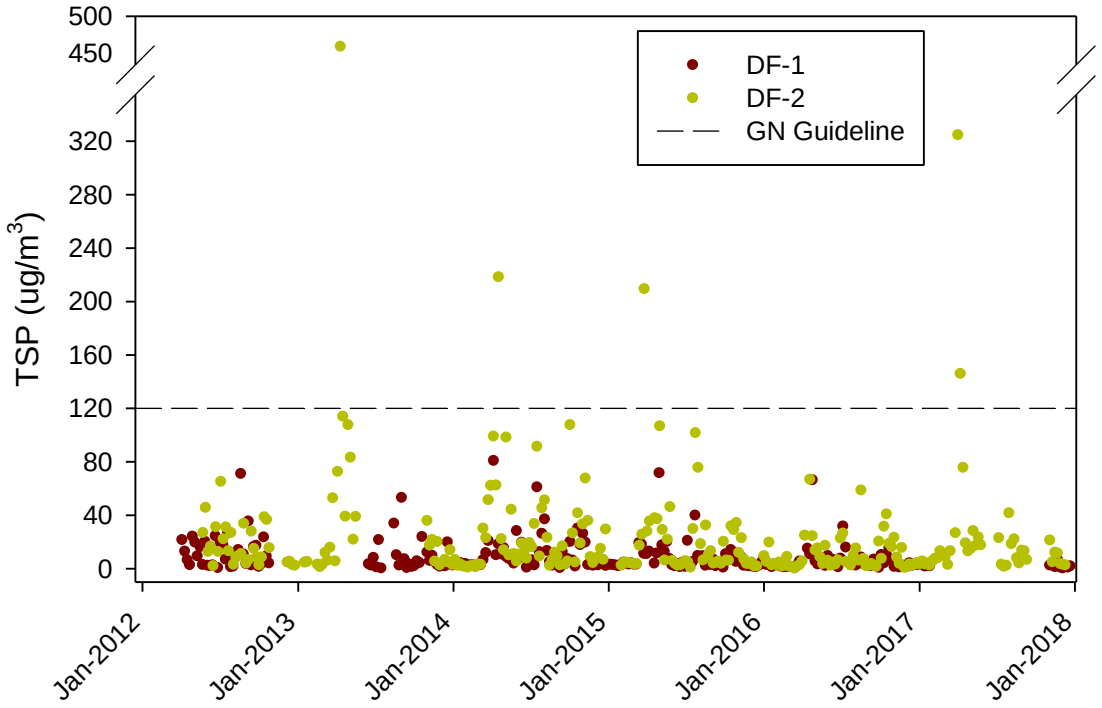


Figure 49. 24-h average concentrations of total suspended particulates (TSP) at Meadowbank stations DF-1 and DF-2. Dashed line indicates the 24-hr average GN guideline for ambient air quality.

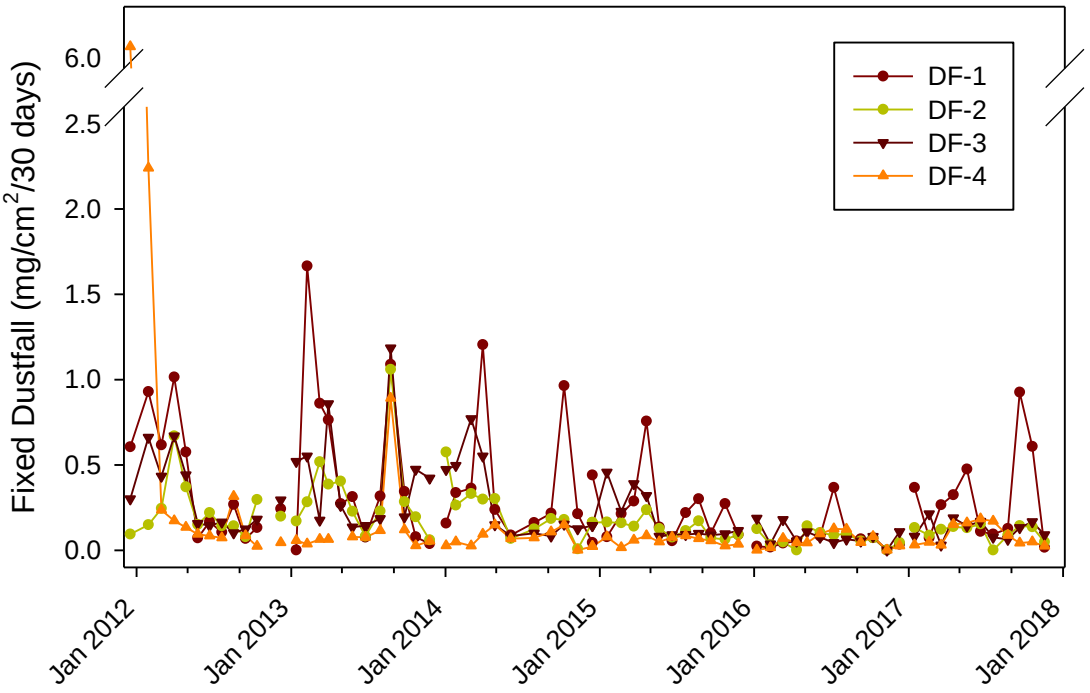


Figure 50.Measured rates of fixed dust deposition at monitoring stations DF-1 – DF-4 at the Meadowbank site, since monitoring began in 2012.

12.4.1 Effectiveness of Monitoring

Impacts to air quality were predicted in the FEIS through standard modeling procedures, which predict concentrations of criteria contaminants emitted from a designated source. Since field monitoring identifies concentrations occurring from the combination of all sources (including background), it is difficult to compare results of the air quality monitoring program with predicted values. Furthermore, while concentration contour plots were provided in the FEIS for several analyses (allowing for interpolation of predicted values at current monitoring stations), only maximum predicted ground-level concentrations were provided for others.

As a result of these issues, air quality monitoring results are more effectively compared to established regulatory guidelines and standards (as in the 2017 Air Quality Monitoring Report), which in all cases are higher than predicted concentrations at the current monitoring stations.

12.4.2 Recommendations for Additional Mitigation or Adaptive Management

Based on this analysis, no additional mitigation or management actions are recommended.

12.4.3 Contributions to Regional Monitoring

In 2017, Meadowbank has not contributed to specific regional air quality monitoring programs, but all data generated through the air quality monitoring program is publicly available.

12.5 PERMAFROST

The following section summarizes the measured impacts on permafrost due to specific mine activities in 2017 as compared to FEIS predictions, provides an assessment of the accuracy of the predictions, and determined the effectiveness of the monitoring program at measuring predicted impacts. Furthermore, recommendations are made for mitigation or adaptive management. This information is based on the 2017 Geotechnical Inspection Report (Appendix B1), which reviewed instrument data collected between September 2016 and September 2017.

12.5.1 Accuracy of Predicted Impacts

A summary of potential project effects, as described in the FEIS and results of monitoring in 2017 to assess the accuracy of these predictions is provided in Table 12.8 below.

Table 12.8. Predicted and measured impacts to permafrost.

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted (2017)	Predicted Impact in FEIS	Observed Impacts (2017)
Permafrost aggradation and stabilization of new active layer in dikes	-	Monitor ground temperatures; monitor slopes; monitor sub-permafrost pore pressures (tailings dike)	Ground temperature monitoring (thermistors); slope monitoring (inclinometers); pore pressure monitoring (piezometers)	Net increase in permafrost distribution and/or decrease in ground temperatures.	East Dike, Bay-Goose Dike, South Camp Dike: similar to historical trends, partially frozen foundations. Vault Dike: frozen foundation Central Dike: similar to historical trends, partially frozen foundation SD1&2: frozen foundations; SD3&4: partially frozen foundations; Stormwater Dike: partially frozen foundation
Permafrost changes in Second Portage Lake (2PL) NW arm area	Dewatering, reclaim and attenuation pond filling, and tailings deposition	Representative monitoring of ground temperatures; assessment of anticipated ice entrapment (i.e. ground ice development)	Thermistor monitoring in TSF (thermistors NC-T1, NC-T2, NC-17-01 through 08)	Net increase in permafrost distribution and/or decrease in ground temperatures	Thermistors indicate tailings are not completely frozen.

Permafrost changes in Third Portage Lake (TPL) north central shoreline and Portage Pit area	Portage pit development	Assessment of suspected ground ice development in conjunction with permafrost aggradation. Assessment of ground ice content of select shoreline polygons.	Thermistor monitoring on South Camp Dike, Bay-Goose Dike, Goose pit area, Central Dike, East Dike	Net increase in permafrost distribution and/or decrease in ground temperatures	General increase in permafrost aggradation due to structures; permafrost is developed in part of the Portage Pit Wall while the part aligned with the south abutment of Central Dike is unfrozen
Permafrost changes in waste rock area	Construction of waste rock facility	Internal and foundation temperatures to be monitored	Thermistor monitoring of internal and foundation temperatures	Fall, winter and spring placement will continue to bury the natural ground surface and permafrost will aggrade into the waste rock where a new and temporary active layer will form. Placement of lifts on natural ground in the summer may continue to cause temporary and localized deepening of the active layer, warming of near surface permafrost and possible subsidence, particularly in low lying areas.	Frozen conditions for all thermistor locations below 3.0 m from surface
Potential settlement of buildings	Loss of permafrost under heated structures	Ground temperature measurements where there is a need to monitor foundation temperatures	None	Net decrease in permafrost distribution and/or increase in ground temperatures	No ground temperature measurements have been undertaken at or near buildings on site. To date there has been no observed thawing of foundations.

Permafrost changes below pipelines	Stabilization of permafrost temperature and active layer thickness	Monitor pipeline alignment for potential permafrost degradation	None	Minor and undifferentiated net gain or loss of permafrost	No ground temperature measurements but no observations of thawing due to pipelines.

12.5.2 Effectiveness of Monitoring

Aggradation of permafrost and stabilization of the active layer are being consistently monitored for the dikes, tailings storage facility, and waste rock storage facility. Changes in permafrost conditions as a result of these features are therefore effectively compared to FEIS predictions. However it should be noted that these processes are ongoing as site operations continue, and final determinations of the accuracy of many predictions cannot effectively be made until cessation of related site works.

No instrumentation has been installed to date to monitor building or pipeline effects on permafrost. Since the pipelines and infrastructure are observed to be stable, it is considered that the permafrost is lightly impacted by these features.

12.5.3 Recommendations for Additional Mitigation or Adaptive Management

Regular field inspections, monitoring and assessment of the monitoring data will continue in 2017. No management actions specifically related to permafrost monitoring are identified in the 2017 Geotechnical Inspection Report (Appendix B1).

Additional management and monitoring recommendations related to geotechnical considerations can be found in the 2017 Geotechnical Inspection Report (Appendix B1).

12.5.4 Contributions to Regional Monitoring

A research project in collaboration with the Research Institute of Mines and Environment (RIME) was initiated in 2014 at Meadowbank. The Research Institute on Mines and Environment, through the NSERC-UQAT Chair on Mine Site Reclamation, is mandated to evaluate the performance of two field experimental cells constructed in 2014 and 2015 on Meadowbank's North Cell TSF. Monitoring for these cells continued in 2017, and design work began for a test cell to evaluate thermal cover for the Whale Tail Pit waste rock storage facility.

12.6 SOCIO ECONOMIC

In 2016/2017, the third report on the Meadowbank Gold Mine Socio-Economic Monitoring Program (SEMP) was developed in consultation with the Kivalliq Socio-Economic Monitoring Committee (SEMC). Agnico once again retained Stratos Inc, a qualified socio-economic consultant, to produce the socio-economic monitoring report. A draft of the report was presented to the Socio Economic Monitoring Committee (SEMC) in Rankin Inlet from June 6-7, 2017. The annual SEMC meeting was attended by officials from NIRB, the GN, INAC (AANDC), KIA and Kivalliq community representatives. The final report considered their input and was submitted to the SEMC, KIA and NIRB at the beginning of January 2018 (2016 Socio-economic Monitoring Report; Appendix J6). The socio-economic monitoring report is updated yearly and submitted with the annual report.

Monitoring results were provided on the following valued socio-economic components (VSECs):

1. Employment
2. Income

3. Contracting and Business Opportunities
4. Education and Training
5. Culture and Traditional Lifestyle
6. Migration
7. Individual and Community Wellness
8. Worker Health and Safety
9. Community Infrastructure and Services
10. Nunavut Economy

The Executive Summary of the Socio-Economic Monitoring Report summarizes socio-economic indicators, metrics, trends, observed impacts and observations/impacts vs. predictions. This information is further summarized in Sections 12.6.1 – 12.6.4, below.

In the Meadowbank IIBA Agnico has also committed to prepare an annual Baker Lake Wellness Report & Implementation Plan. The KIA has agreed that the report and plan will be community-based and driven. In 2015, Agnico retained Stratos Inc, a reputable Ottawa-based consulting firm, to work with community based stakeholders to identify:

- wellness indicators that are meaningful to the community of Baker Lake,
- priority areas of community wellness,
- opportunities for interagency collaboration,
- potential initiatives to address impacts.

The most recent Baker Lake Wellness Report and Implementation Plan were completed in March, 2017. Results were included in the 2016 Annual Report, and references to that report are maintained here where relevant.

12.6.1 **Accuracy of Predicted Impacts**

Based on results of the 2016 Socio-Economic Monitoring Report (December, 2017) and Baker Lake Wellness Report (March, 2017), the accuracy of Project impacts as predicted in the FEIS is assessed for each identified valued socio-economic component (VSEC) in sections 12.6.1.1 to 12.6.1.9.

12.6.1.1 Contracting and Business Expenditures for Nunavut

Predicted Impact (as in FEIS):

- $23 million in annual business expenditures in Nunavut over a ten year operation phase.
- Total expenditures of $224M for Nunavut over the lifetime of the project.
- Goods and service contracts for local businesses - With continuing preferential contracting, local business participation in the project is expected to grow with time.
- Overall increased economic activity.

Monitoring Conducted: Total and contract expenditures on Baker Lake, Nunavut-based, NTI registered, and Inuit-owned businesses (2011 – 2016) (per Table 12.9 below, and SEMP Chart 13 & 14)

Table 12.9. Expenditures for materials and services by vendor type, 2007-2015 (source: 2015 PEAMP).

Vendor type	2007-2015	% Expenditures
Total Expenditures	$ 2,884,539,492	100%
NTI Registered	$ 821,343,194	28%
Nunavut-based	$ 1,163,806,472	40%
Northern-based (NU & NT)	$ 1,355,116,828	47%
Baker Lake-Based	$ 453,746,947	16%

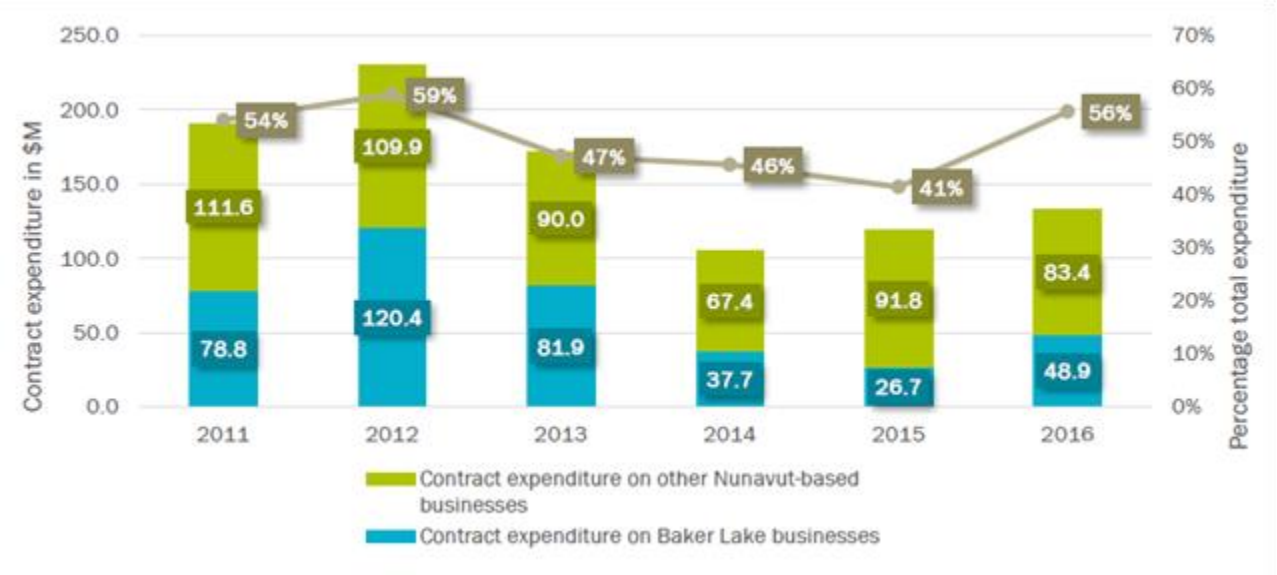


Figure 51. SEMP Chart 13 - Contract Expenditures on Baker Lake and Nunavut-Based Businesses, 2011 – 2016 (source: Agnico Eagle).

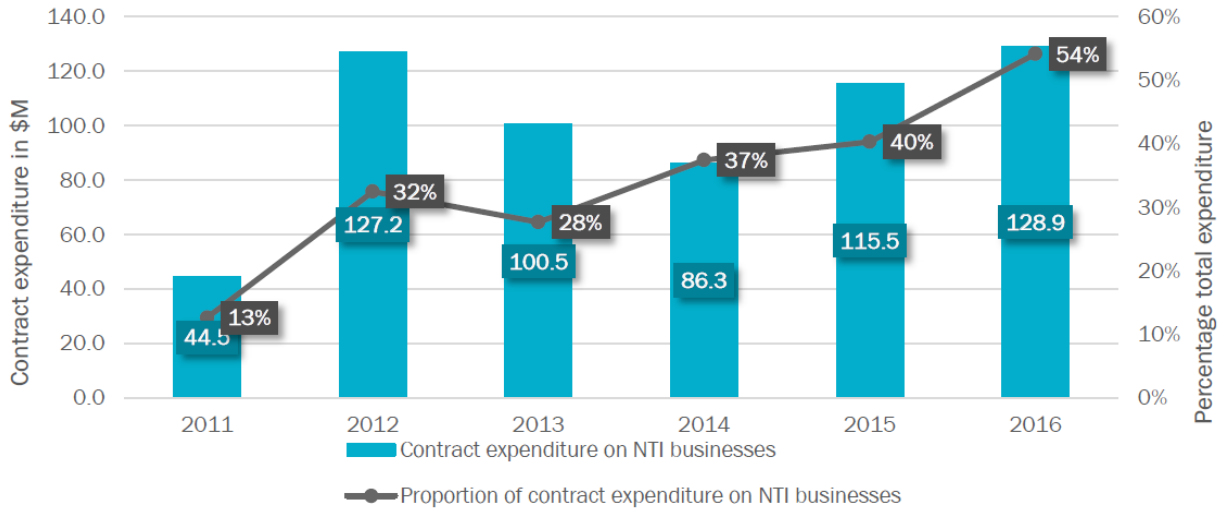


Figure 52. SEMP Chart 14 - Contract Expenditures on NTI Registered Businesses, 2011 – 2015 (source: Agnico Eagle).

Observed impacts as compared to FEIS predictions:

- Expenditures for Nunavut-based businesses have exceeded predictions, with a minimum of 67M in contract expenditures per year since 2011.
- By 2015, the predicted total expenditure for Nunavut over the lifetime of the project had already been exceeded despite being only 4 years in operation.
- In 2016, absolute contract expenditures on Nunavut-based, NTI-registered, and Baker Lake businesses increased. While total contract expenditures have decreased since 2011 - 2013, the NTI-registered businesses' relative share of contract expenditures has been on an upward trend since 2013, representing 54% in 2016, which is the highest level yet achieved.
- The FEIS prediction of a 'high magnitude, positive, and long-term' impact appears to have been realized thus far.

12.6.1.2 ***Employment***

Predicted Impact (as in FEIS):

- During operation phase, employment of at least 60 workers, with the largest fraction of less skilled jobs supplied from Baker Lake residents
- Estimated workforce of 370 people during operation phase
- The potential impacts of employment are likely to take some time to gain full momentum, and overall are considered of high magnitude, positive, long term and of high significance, specifically to those individuals and their families who are able to benefit.

Monitoring Conducted: Number of employees, 2010-2016 (SEMP Chart 1); Meadowbank Inuit Employment by Kivalliq community, 2012-2016 (SEMP Chart 7).

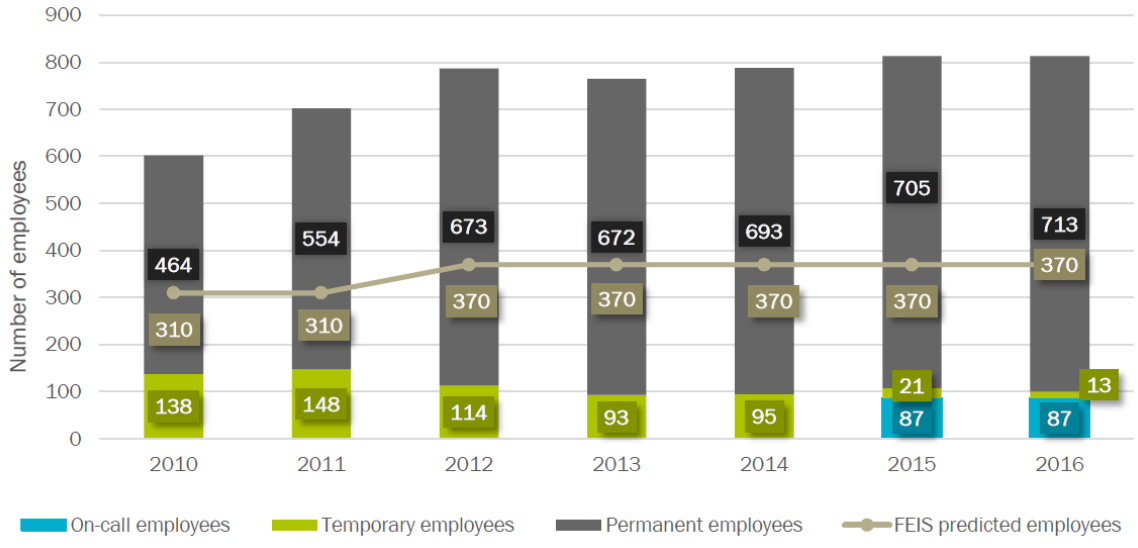


Figure 53. SEMP Chart 1 - Meadowbank employment, 2010 - 2016 (permanent and temporary) (source: Agnico Eagle).

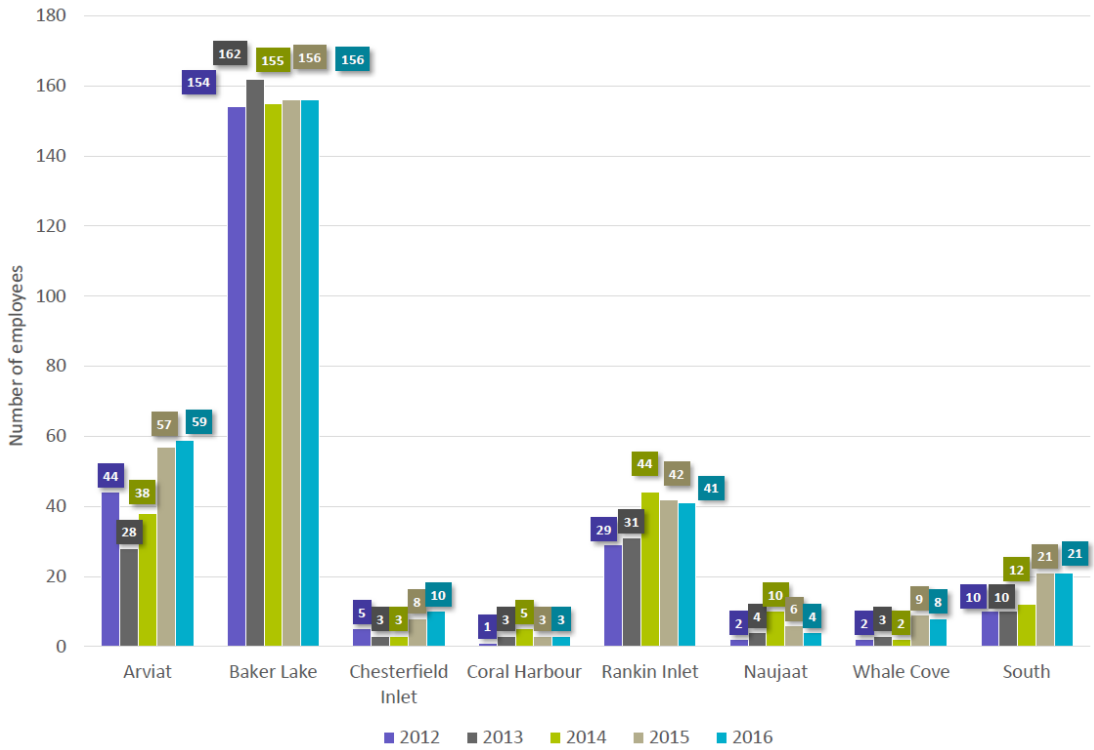


Figure 54. SEMP Chart 7 - Meadowbank Inuit employment by Kivalliq community, 2012 - 2016 (source: Agnico Eagle).

Observed impacts as compared to FEIS predictions:

- The number of Kivalliq-based employees remained steady in 2016 at 281, representing a slight decline in the proportion of total employment from 35% to 34%. More than half of these employees are from Baker Lake, which meets FEIS predictions.
- The total employee figures to date have significantly exceeded the values predicted in the FEIS.

12.6.1.3 Nunavut Economy

Predicted Impact (as in FEIS):

- If at least 20% of expenditures were spent in the region over the lifetime of the project, there would be a total expenditure in Nunavut of over $224 M. This figure is made up of about $61 M during the 24-month construction phase, $20 M per year over a ten year operation phase, and a further $2.6 M over the closure phase
- During the operations phase, the annual contribution to GDP would be $35.5 M

Monitoring Conducted: : Meadowbank contract expenditures by northern and southern business, 2011 – 2016 (Chart 36); Nunavut GDP all industries and mining, quarrying, and oil & gas, 2000 – 2015 (Chart 37)

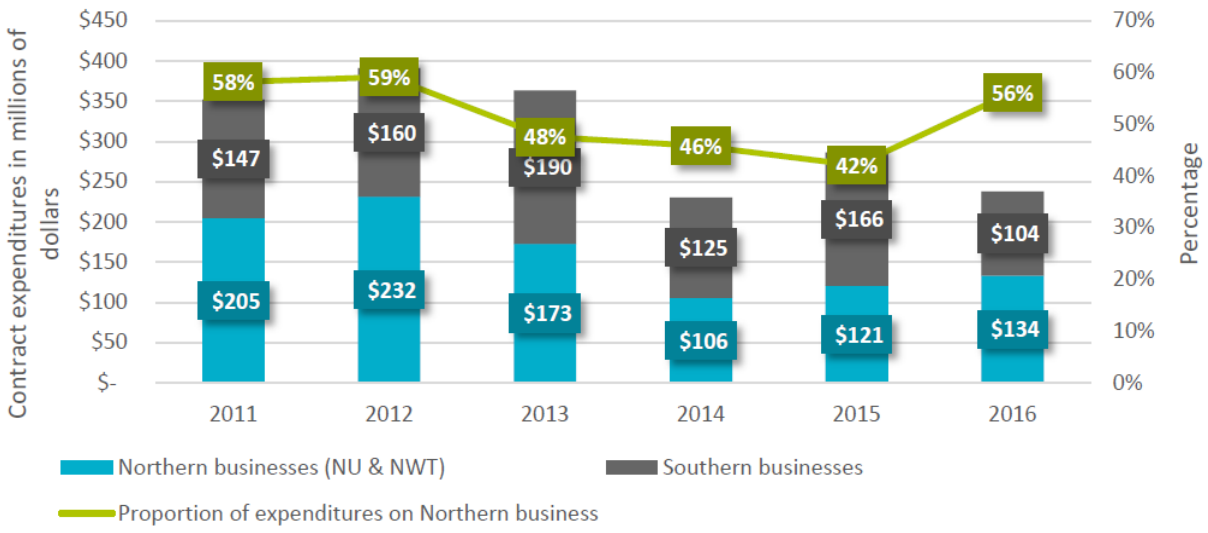


Figure 55. SEMP Chart 36 - Meadowbank contract expenditures in $M, by northern and southern business, 2011 – 2016 (source: Agnico Eagle).

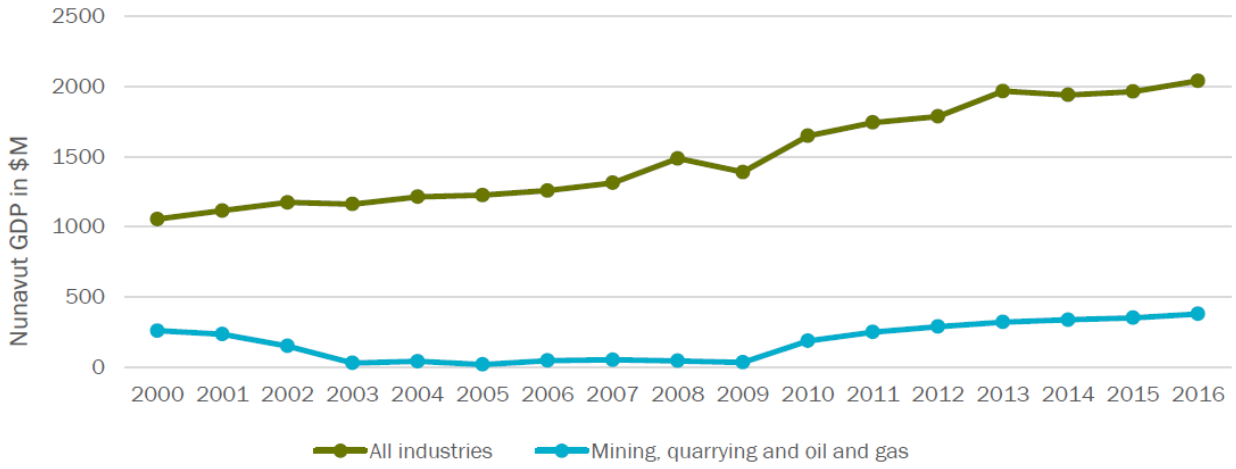


Figure 56. Nunavut GDP all industries and mining, quarrying and oil & gas, 2000– 2016 (source: (Statistics Canada, 2016)).

Observed impacts as compared to FEIS predictions:

- The FEIS predicts an expected $20M in annual business expenditures in Nunavut over the operations phase. This prediction has been far exceeded, with over $100M of annual expenditures for Nunavut based businesses.
- The predicted total expenditure for Nunavut over the lifetime of the project ($224M) has already been exceeded.
- Given that Meadowbank was the only operating mine in Nunavut from 2010 to 2015 (when Baffinland's Mary River Project began operations), the GDP growth data suggest that Meadowbank's contribution to GDP has exceeded the FEIS prediction.

12.6.1.4 Income

Potential Impact (as in FEIS):

- Direct project wages paid to people in Kivalliq Region, primarily Baker Lake, could exceed $4 M annually.

Monitoring Conducted: Income paid to Meadowbank Inuit employees, 2010 – 2016 (Chart 11)

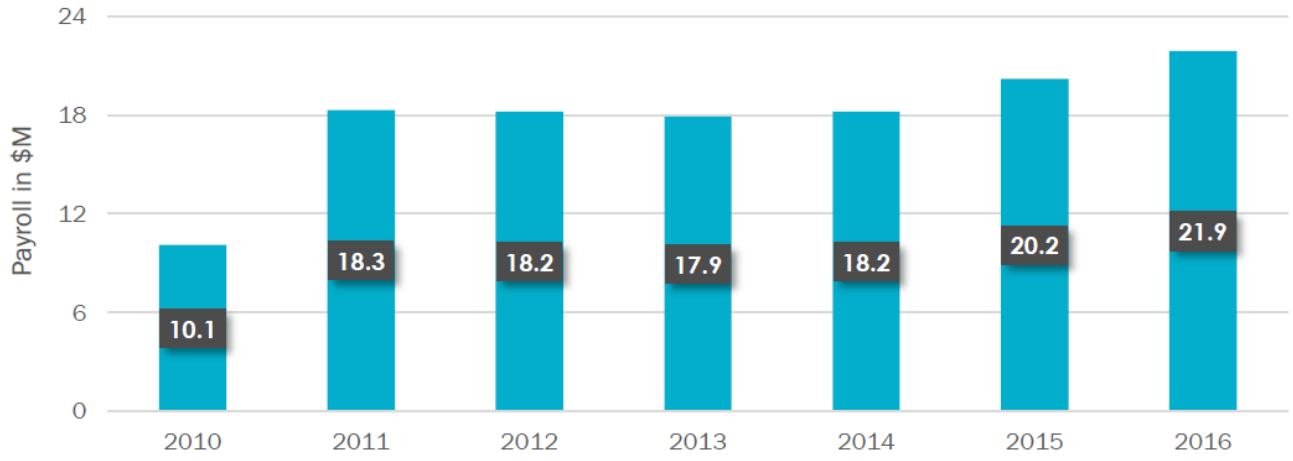


Figure 57. SEMP Chart 11 - Income paid to Meadowbank Inuit employees, 2010 – 2016 (source: Agnico Eagle).

Observed impacts as compared to FEIS predictions:

- Income paid to Inuit employees increased to $22M in 2016, from an average of $18.6M/year since 2011, continuing to significantly exceed the FEIS prediction of $4 million in direct project wages annually.

12.6.1.5 Education and Training

Potential Impact (as in FEIS):

- Cumberland and KIA will address the need for a broader based project education and training initiatives to assist those who wish to develop skills that will position them for project employment. This [sic] education and training initiative [sic] will also include an element to address motivational issues around getting children through high school. Such measures would be intended to contribute to encouraging a commitment to education on the part of youth.
- Cumberland and KIA will address the need for broader based project education and training initiatives to assist those who wish to develop skills that will position them for project employment.
- Provide on the job training…to improve skills towards improved job performance and promotion.
- The potential impacts of education and training are considered of medium magnitude, positive, long term and of high significance, specifically to those individuals and their families who are able to benefit.

Monitoring Conducted: Specific Training Hours Provided to Inuit and non-Inuit Employees, 2012-2016 (SEMP Chart 18); Apprenticeships for Inuit Employees, 2010-2016 (SEMP Chart 20).

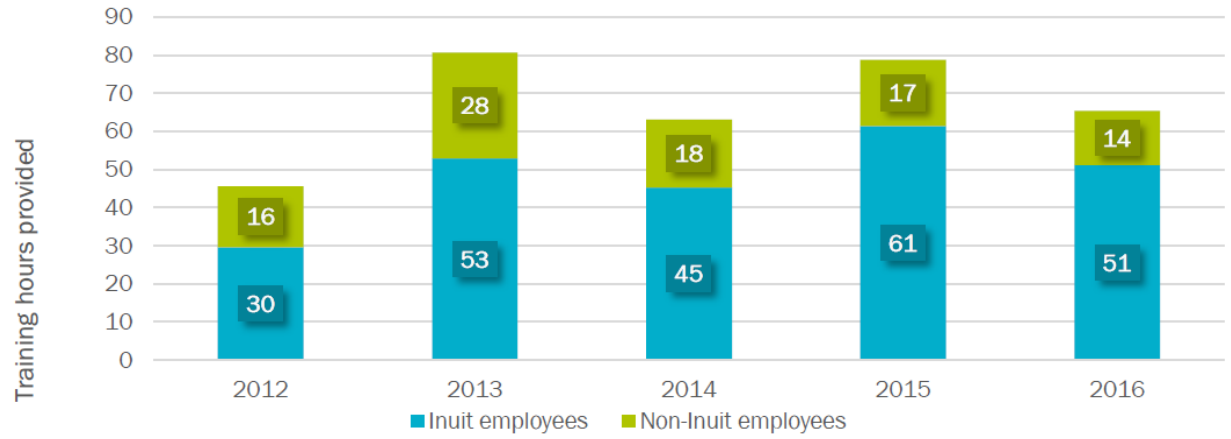


Figure 58. SEMP Chart 18 - Specific Training Hours Provided per Inuit and non-Inuit Employees, 2012 - 2016 (source: Agnico Eagle).

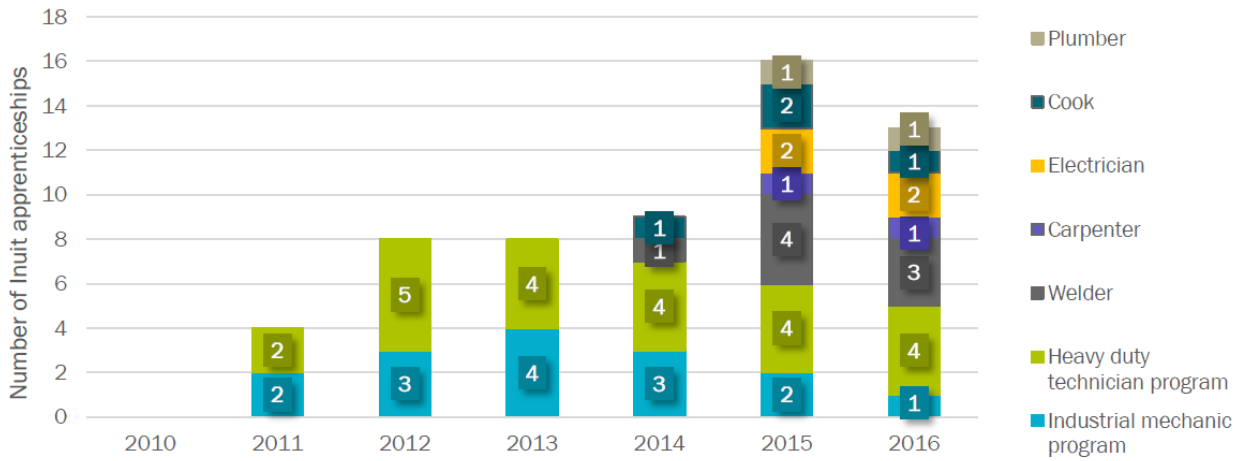


Figure 59. SEMP Chart 20 - Apprenticeships for Inuit Employees, 2010 – 2016 (source: Agnico Eagle).

Observed impacts as compared to FEIS predictions:

- Up until 2014, Agnico Eagle contributed approximately $284,000/year to a variety of school-based initiatives. With the expiry of the MOU with the Department of Education in 2015, these contributions dropped significantly in 2015 ($39,000/ year), and remained unchanged in 2016.
- Support for, and participation in, in-house training and apprenticeship programs has been steady throughout the mine's operation. While specific training hours provided to Nunavut-based employees decreased in 2016, total training hours increased. This likely represents an increase in general training and health and safety training.

- The number of Inuit apprenticeships has almost doubled between 2014 and 2015, but declined by 3 in 2016. However, this decline is largely due to an increase in apprentice graduates (4 total as of 2016).

12.6.1.6 Culture and Traditional Lifestyle

Predicted Impact (as in FEIS):

- The project will not significantly restrict access to or productivity of lands used for traditional activity.
- There is potential for both negative and positive impacts, of any magnitude, on traditional ways of life, which could be of high significance. Any net impact, since it would be an impact of cultural change, would be long term and continue beyond the life of the project. The impact would be experienced primarily in Baker Lake.

Monitoring Conducted: Percentage of Nunavut Inuit population 15 years of age and older partaking in traditional activities, 2006 and 2012 (SEMP Table 8).

Table 12.10. SEMP Table 8 - Percentage of Nunavut Inuit population 15 years of age and older partaking in traditional activities, 2006 and 2012 (sources: (Statistics Canada, 2011b; Wallace, 2014)).

Traditional Activity	2006	2012
Hunted in the past 12 months	72%	--
Fished in the past 12 months	76%	--
Gathered wild plants (berries, sweet grass, etc.) in the past 12 months	79%	--
Trapped in the past 12 months	30%	--
Hunted, fished, trapped or gathered in previous 12 months	--	81%

Observed impacts as compared to FEIS predictions:

- No new data with regards to these predictions has become available since last year's report.
- Since the 2012 data only includes a composite metric (hunted, fished, trapped, or gathered), no conclusions can be drawn regarding changes in individual activities (including any that relate to changes in lifestyle associated with employment at Meadowbank).

Other observations made as part of the 2016 Baker Lake Wellness Report indicate a shift in caribou migration, and limited time or equipment results

12.6.1.7 Migration

Potential Impact (as in FEIS):

- It is not likely that migration to any other community than Baker Lake would be significant.

Monitoring Conducted: Annual Percentage Change in Population Estimates of Kivalliq Communities 2011 – 2015 (SEMP Table 9)

Table 12.11. SEMP Table 9 - Annual percentage change in population estimates of Kivalliq communities, 2011 - 2016 (source: (Nunavut Bureau of Statistics, 2016)).

Community	2011	2012	2013	2014	2015	2016
Arviat	3%	3%	2%	2%	2%	3%
Baker Lake	3%	0%	2%	1%	0%	0%
Chesterfield Inlet	1%	3%	2%	0%	0%	1%
Cole Harbour	5%	1%	2%	1%	2%	2%
Rankin Inlet	3%	1%	2%	1%	-1%	0%
Naujatt	8%	2%	4%	3%	3%	3%
Whale Cove	2%	0%	2%	0%	1%	6%

Observed impacts as compared to FEIS predictions:

- Population change results from the interaction of three variables: births, deaths, and migration. If other factors are assumed constant, the population data does not indicate any significant migration to Baker Lake (or other communities with high Meadowbank employment), which is a lower impact than the FEIS prediction.

12.6.1.8 Community Infrastructure and Services

Predicted Impact (as in FEIS):

- The impacts on social services and infrastructure, of low to medium magnitude, are considered largely positive in the medium term and of moderate significance. There is some potential for closure to have a negative impact on social service delivery.
- The potential public health and safety impacts of the project, of unknown magnitude, are negative, and, because there is such high impact at the individual level in the event that a risk is realized, the effects must be considered long term and of high significance.
- Increased employment and business opportunities will result in increased income, a measure of economic security, capacity building that will contribute to employability over the long term, and improved self-image of employees and their families. This could result in reducing dependence on government social services.

Monitoring Conducted: Estimates of use of GN infrastructure directly related to Meadowbank, 2015 (described below), Kivalliq Community Health Centre Visits Per Capita, 2006-2015 (SEMP Chart 32); Number of Meadowbank employees referred to their community health centre for personal or work-related reasons, 2010 – 2016 (SEMP Chart 33); Social assistance expenditures by Kivalliq community , 2006 – 2014 (SEMP Chart 34); Department of Family Services average monthly social assistance case load by Kivalliq community, 2001 – 2015 (SEMP Chart 35)

Estimates of use of GN infrastructure directly related to Meadowbank are as follows:

- Use of Baker Lake Airport to access commercial flights: Between 75 and 100 times per year (passenger trips)
- Use of other Nunavut airports to access commercial flights: Between 2000 and 3000 times per year (passenger trips)
- Use of Baker Lake Community Centre: Between 5 and 10 times per year

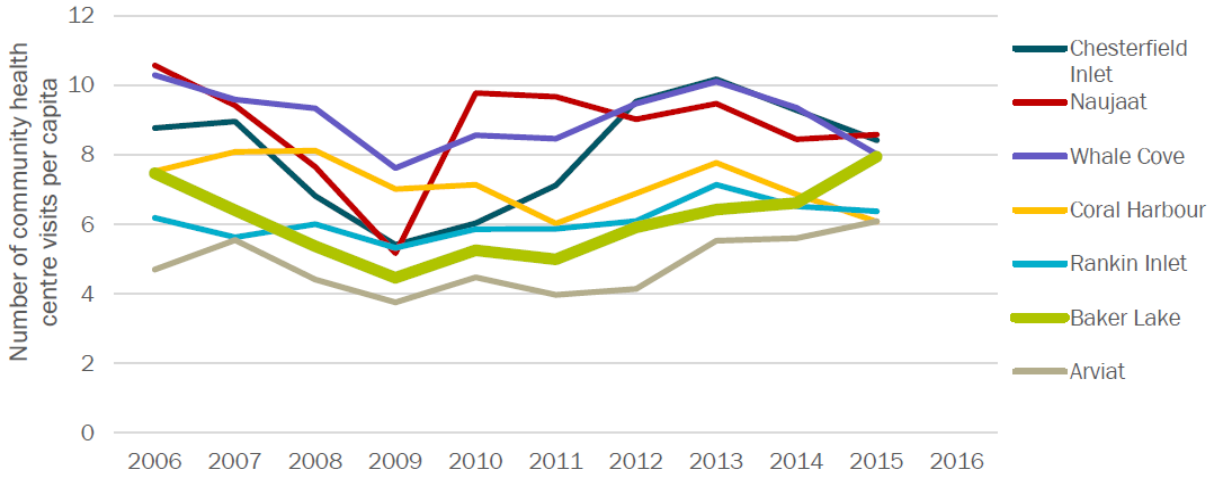


Figure 60. SEMP Chart 32 - Kivalliq community health centre visits per capita, 2006 – 2015 (source: (Government of Nunavut Department of Health, 2016)).

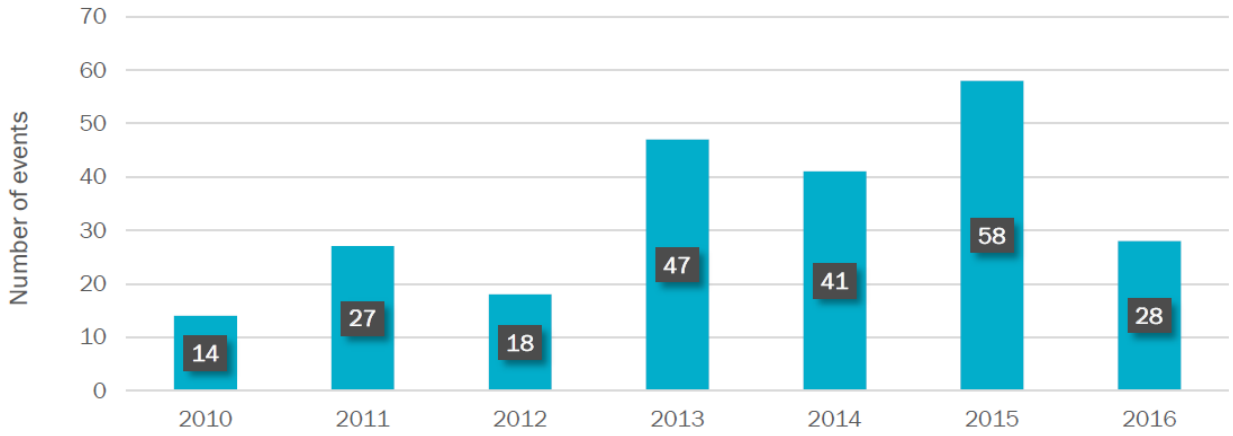


Figure 61. SEMP Chart 33 - Number of Meadowbank employees referred to their community health care centre for personal or work-related reasons, 2010 – 2016 (source: Agnico Eagle).

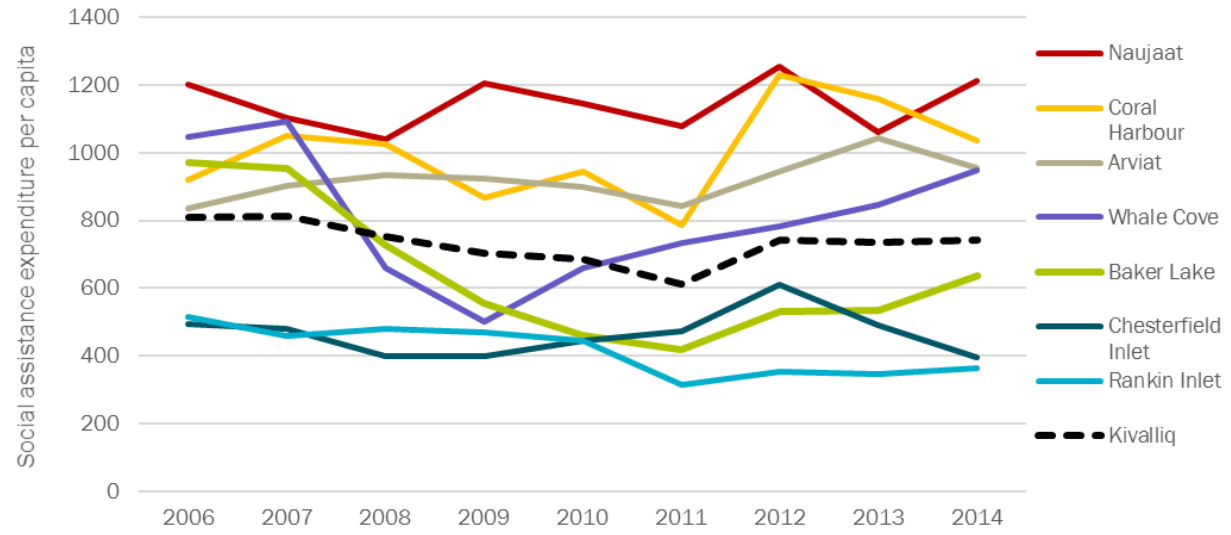


Figure 62. SEMP Chart 34 - Per capita social assistance expenditures by Kivalliq community, 2006 to 2014 (source: (Government of Nunavut Department of Family Services)

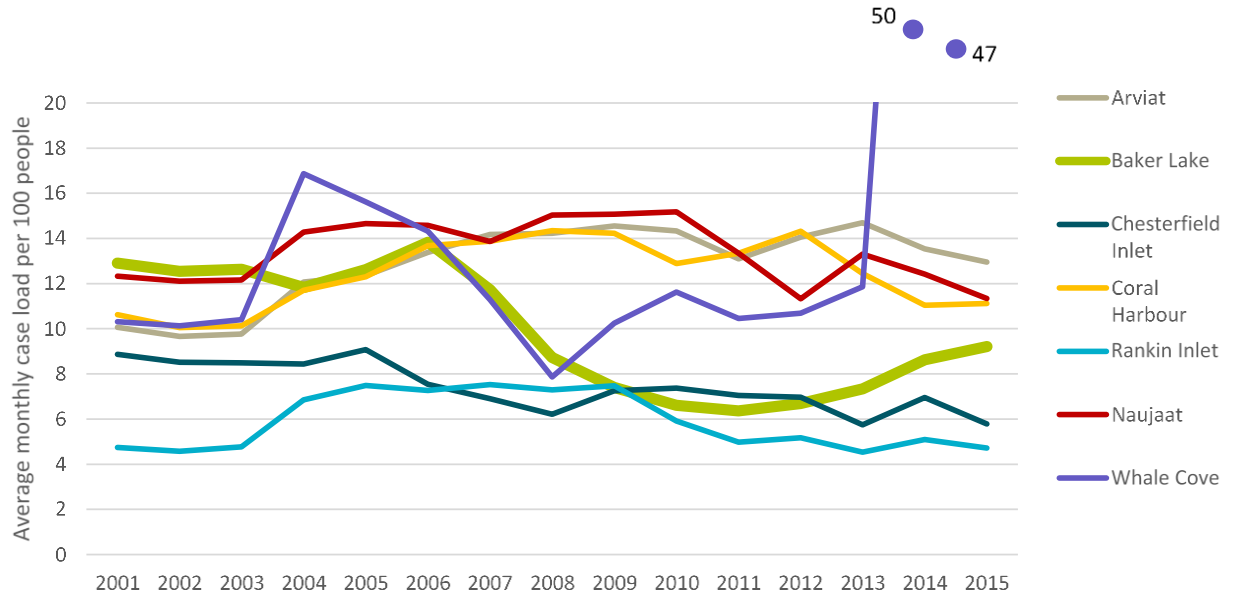


Figure 63. SEMP Chart 35 - Department of Family Services average monthly social assistance case load by Kivalliq community (per 100 people), 2001 – 2015 (sources: Department of Family Services, 2016).

Observed impacts as compared to FEIS predictions:

- The use of public physical infrastructure by Meadowbank and its employees consists primarily of the use of airports and has been relatively consistent since operation began in 2010. There are no indications of significant positive or negative impacts on this infrastructure.
- Per capita health centre visits in communities with the most Meadowbank employees (Baker Lake, Rankin Inlet, and Arviat are beginning to show an upward trend, most notably in Baker Lake and Arviat. The number of employees referred to their community health centres for personal or work-related reasons ranges from 14 to 58 people per year, though it is difficult to draw a relationship between movement of this indicator and use of GN Health Services.
- Currently, the available data alone does not indicate:
    - Whether a Meadowbank worker, on average, is a higher user of health care services than other workers or unemployed people or if there is a counter effect where employees use on-site medical services in lieu of GN health services while on rotation.
    - To what extent these referrals are for work related reasons
- Despite declines from historical highs, social assistance data does not show a clear correlation between Meadowbank-related employment and social assistance requirements in Baker Lake or Arviat. Data suggests that both expenditures and percentage of households receiving social assistance have been declining in Rankin Inlet since the mine opened.

12.6.1.9 Individual and Community Wellness

Predicted Impact (as in FEIS):

- Potential impacts on individual and community wellness are complex, far reaching, and given human nature, difficult to predict with certainty. Individual and community wellness is intimately associated with potential impacts on traditional ways of life as discussed above. In addition, however, individual decisions on the use of increased income, household management in relation to rotational employment, migration, public health and safety, disturbance particularly during the construction phase, and Cumberland's support for community initiatives are being negotiated in the IIBA are [sic] the other drivers that have the potential to effect individual and community wellness.

Metrics: Since no specific quantitative impact predictions were made regarding individual and community wellness, the following metrics were used to assess the impact of the project on this VSEC.

- Counselling programs and usage at Meadowbank
- Criminal violations
- Suicide

Monitoring Conducted: Number of employees/families accessing counselling programs, 2011 – 2016 (SEMP Table 12); Criminal violations per Hundred People, by Kivalliq Community, 2006-2015 (SEMP Chart 27); Inuit Suicide Rates by Region per Ten Thousand People, 2000 – 2016 (SEMP Chart 29).

Table 12.12. SEMP Table 12 - Number of employees/families accessing family counselling programs, 2011 – 2016 (source: Agnico Eagle). Records are only maintained for 4 of 6 programs.

Family Counselling Program	2011	2012	2013	2014	2015	2016
Family Employee Assistance Program	2	2	3	6	6	52
Elder Visitation Program	N/A*	12	12	8	4	N/A
Work Readiness Program	N/A	N/A	N/A	N/A	155	151
Coping with FIFO Program (formerly called Making it Work Program)	N/A*	N/A	N/A	24	64	12

** N/A indicates programs not having been in operation in respective year.*

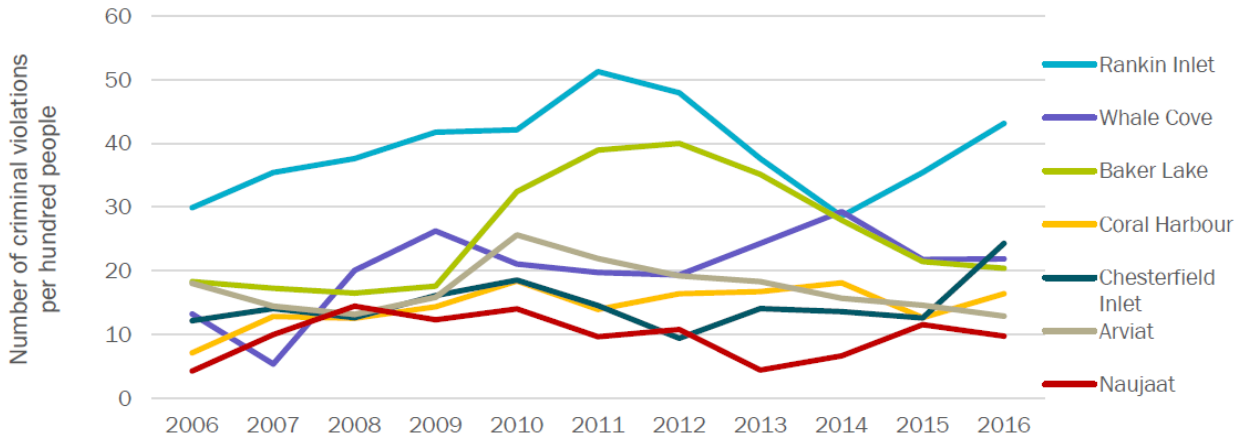


Figure 64. SEMP Chart 27 - Criminal violations per hundred people, by Kivalliq community, 2006 – 2015 (sources: (Statistics Canada, 2016; Nunavut Bureau of Statistics, 2016)).

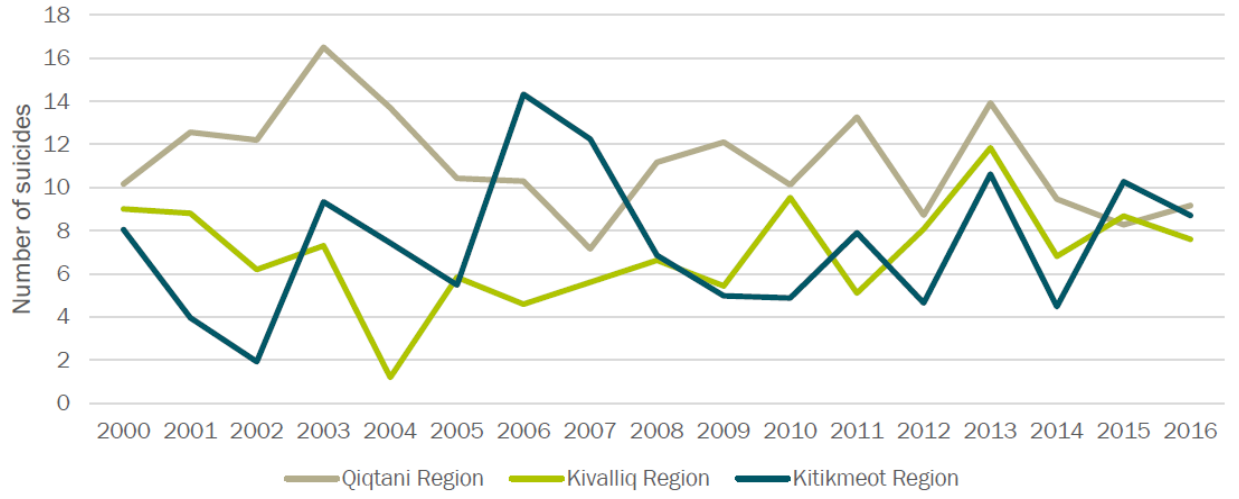


Figure 65. SEMP Chart 29 - Inuit suicides by per 10,000 people by community, 2000 – 2016 (source: (Nunavut Bureau of Statistics, 2016)).

Observed impacts as compared to FEIS predictions:

- Meadowbank has six ongoing programs that offer counselling and support to employees and their families. There is currently insufficient data available to assess program usage trends.
- Total criminal violation rates in Baker Lake and Rankin Inlet reached historic high levels in 2011 and 2012, following the opening of the mine. Recent data (2016) indicates a continuing downward trend (since 2012) in criminal violations in Baker Lake, along with Arviat and Chesterfield Inlet. However, Rankin Inlet and Chesterfield Inlet have seen sharp rises in criminal violations over the past one to two years.
- There is a persistent and territory-wide suicide crisis in Nunavut. The factors contributing to suicide are numerous and complex, so it is difficult to assess impacts of Meadowbank on suicide rates. Community suicide rates (e.g. for Baker Lake) are highly variable from year to year. Trends are more apparent in long-term and/or regional data.
- The 2015 Baker Lake Wellness Report outlined other impacts from the mine including:
    - Planning and management of personal and family finances continues to be a challenge; many people reportedly live “one paycheque behind”, and do not budget for food, housing or household expenses (e.g. clothing, furniture)
    - Many people are generous with their money, sharing with a wide network of family and friends
    - It was reported that a number of people have increased their spending on alcohol and drugs now that their large purchases (e.g. ATVs, trucks) have already been made
    - Poor financial management contributes to high usage of expensive credit and debt (e.g. very high-cost personal loans, on-line paycheque lending services, and the “We” card at the Northern store)
    - Jobs and income contribute to an increased hierarchical structure in the community, weakening community bonds;
    - Increased disposable income increases access to alcohol and drugs;
    - The work schedule and work stress impact individual and family mental health;
    - Employees can struggle to adapt to work stress and schedule, leading to impact on their families
    - Some Employees feel conflicted between keeping a job and dealing with family issues and responsibilities (e.g. parenting, caring for sick family members)
    - Relationship issues driven by actual or suspected extra-marital affairs, and a resulting lack of trust; increase in sexually transmitted infections (STIs)

12.6.2 Effectiveness of Monitoring

Since most FEIS predictions for valued socio-economic components are not quantitative or specific, it is difficult to make conclusions regarding the effectiveness of the monitoring programs at assessing these predictions. However, through the implementation of the Socio-economic Monitoring Program, and Baker Lake Wellness Report, Agnico Eagle believes they are able to effectively assess the overall impacts of the project on the VSECs.

Several specific potential impacts with predicted non-negligible significance prior to implementation of mitigation were not assessed in 2016/2017, and will be further investigated if possible in future years as a component of the Socio-Economic Monitoring Report (SEMR):

- Widening of distribution of income in community
- Traffic accidents
- Emergencies

Several other potential impacts were not able to be assessed due to lack of available current data (e.g. trends in use of counselling programs), but will continue to be reviewed and discussed in the SEMR.

For future reports, Agnico Eagle looks forward to working with the SEMC to improve data (in both government and Agnico Eagle data sets) and to refine indicator selection and analysis to more clearly identify potential links between socio-economic impacts and Agnico Eagle activities and/or other factors.

Recommendations for Additional Mitigation or Adaptive Management

No specific additional mitigation or adaptive management actions are recommended. Agnico Eagle will continue to implement, support and improve the existing management and mitigation activities described in the SEMR. Agnico Eagle is also working together with the community of Baker Lake to improve community wellness through the Baker Lake Wellness Report and Implementation Plan, as well as working closely with the Kivalliq Inuit Association in the implementation of the 2017 Meadowbank IIBA. This report, along with the Baker Lake Wellness Report and Implementation Plan and IIBA Implementation Report, informs Agnico Eagle's efforts in fulfilling best practices in social responsibility, and acting as a resource for communities and other stakeholders, as indicated in the purpose section of this report.

12.6.3 Contributions to Regional Monitoring

In September 2017, Agnico Eagle participated in a meeting with GN and other mining companies operating in Nunavut to discuss the evolution of socio-economic reporting in the territory and to identify core indicators that could be reported by all projects. With the construction of Agnico Eagle's Meliadine mine and the approval of its Whale Tail project, Agnico Eagle will be moving to an integrated socio-economic monitoring report for all sites for the 2017 reporting year and thereafter, while meeting the requirements for presenting site-specific data. This approach is supported by the GN and INAC, and will be reflected in revised Socio-Economic Monitoring Working Group Terms of Reference.