AGNICO EAGLE

MELIADINE GOLD PROJECT

2018 Annual Report

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

Prepared by:
Agnico Eagle Mines Limited – Meliadine 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
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
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
KHTO	Kangiqliniq Hunter Trapping Organization
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
MPA	Maximum Potential Acidity
MDMER	Metal and Diamond Mining Effluent Regulations
NIRB	Nunavut Impact Review Board
NF	Near-Field
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
PHC	Petroleum Hydrocarbon
QAQC	Quality Assurance Quality Control
RDP	Relative Percent Difference
RIME	Research Institute in Mine and Environment
RSA	Regional Study Area
RSF	Rock Storage Facility
SWTP	Saline Water Treatment Plant
TDS	Total Dissolved Solids

TMS	Training Management System
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
Sta.	Station
STP	Sewage Treatment Plan
VECs	Valued Ecosystem Components
WSLRA	Wildlife Screening Level Risk Assessment
WTP	Water Treatment Plan
W/D	Wet/Dry

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Comment
1	2019/03/31	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: Meliadine Environment Department

Approved By: 

Nancy Duquet Harvey
Environmental Superintendent

SECTION 1. INTRODUCTION

As required by water license 2AM-MEL1631 Part B Item 2 The Licensee shall file an annual report with the Board no later than March 31st in the year following the calendar year being reported. The annual report shall be developed in accordance with Schedule B.

And

As required by water license 2BB-MEL-1424 Part B Item 6 The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than March 31st of the year following the calendar year being reported,

The Meliadine Gold Project operated by Agnico Eagle Mines Limited - Meliadine Division (Agnico Eagle) is located approximately 25 kilometres (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson's Bay, the Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8''N, 92°13'6.42''W), on Inuit owned land. The project components include the 28 km All Weather Access Road (AWAR) between Rankin Inlet and Meliadine, the Itivia fuel farm and laydown area, and the 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), Environment and Climate Change Canada (ECCC), Metal and Diamond Mining Effluent Regulations (MDMER); Department of Fisheries and Oceans Canada (DFO), Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC); Kivalliq Inuit Association (KIA) and the Nunavut Impact Review Board (NIRB).

This report is written to address all of the 2018 annual reporting requirements of the project under these authorizations:

- NWB Type A water license 2AM-MEL1631;
- NWB Type B Water License 2BB-MEL1424;
- NIRB Project Certificate No. 6;
- KIA Permit KVCA07Q08;
- KIA Permit KVCA11Q01;
- KIA Production Lease KVPL11D01; and
- The Meliadine IIBA:

Reporting requirements for the MDMER have been submitted directly to ECCC; results are presented herein to comply with the NWB Type A Water License.

SECTION 2. SUMMARY OF ACTIVITIES

2.1 2018 ACTIVITIES

2.1.1 Exploration activities

As required by water license 2BB-MEL-1424 Part B Item 6i: A summary of drilling/trenching activities and progressive reclamation of drill/trench sites;

No trenches were dug in 2018 under this water licence and 19 holes were drilled. The contractor for the drilling was Sarliaq Orbit Garant and it was conducted using a diamond drill between March and August 2018. Activities included both on ice and on land drilling. Drill sites reclamation included the removal of remaining material and drill casings at each site once drilling was completed. Casings were cut at ground level when they could not be removed.

Table 2.1: Drill site locations 2018:

Hole Number	Latitude	Longitude
M18-2439	63° 1' 5.618" N	92° 17' 50.569" W
M18-2440	63° 1' 7.649" N	92° 18' 14.296" W
M18-2442	63° 2' 11.860" N	92° 20' 51.739" W
M18-2443	63° 2' 40.320" N	92° 21' 31.229" W
M18-2444	63° 2' 42.304" N	92° 21' 29.876" W
M18-2445	63° 2' 56.984" N	92° 20' 49.698" W
M18-2446	63° 2' 26.221" N	92° 20' 21.397" W
M18-2447	63° 1' 7.055" N	92° 18' 14.424" W
M18-2448	63° 1' 19.583" N	92° 18' 44.248" W
M18-2451	63° 1' 4.768" N	92° 18' 4.166" W
M18-2453	63° 2' 40.139" N	92° 21' 25.681" W
M18-2456	63° 2' 42.962" N	92° 21' 38.261" W
M18-2457	63° 2' 40.274" N	92° 21' 21.150" W
M18-2458	63° 0' 10.073" N	92° 10' 9.140" W
M18-2460	63° 0' 15.191" N	92° 11' 2.295" W
M18-2461	63° 0' 7.677" N	92° 9' 44.180" W
M18-2464	63° 0' 6.476" N	92° 9' 29.181" W
M18-2495	63° 5' 50.976" N	92° 12' 55.262" W
M18-2496	63° 5' 54.137" N	92° 13' 58.006" W

2.1.2 Construction activities

In 2018 Meliadine was in the active construction stage, with production expected to commence in 2019. Construction activities are summarized in table 2.2 below:

Table 2.2: Summary of the construction, undertaken in 2018:

Activity	Status as of Dec 31, 2018
Effluent Water Treatment Plant Diffusor into Meliadine Lake	Completed Completed
Construction of CP-1 and CP-5 Jetties (pumping stations)	Completed
Construction of permanent Landfarm	Completed
Construction of permanent Landfill	Completed
Emulsion Plant construction Commissioning and construction of the service road to the Emulsion Plant	Completed Completed
Start multi-year construction of Permanent Power Plant	Completed
Start multi-year construction of Process Plant	To be completed 2019
Start multi-year construction of Paste Plant	To be completed 2019
Start multi-year construction of multi-services building	Completed
Construction of ventilation and emergency egress East intake West exhaust	 Completed To be completed in 2019
Construction of Channels 1 and 5	Completed 2017-2018
Construction of Channels 7 and 8	To be completed in 2019
Construction of Berm 1	To be completed in 2019
Construction of Berms 2 and 3	Completed
Construction of CP-3 Pond	Completed
Construction of CP-4 Pond	To be completed 2019
Construction of CP-3 Channel	Completed
Construction of CP-4 Channel	To be completed 2019
Construction of Ore Pad 2 (OP-2)	To be completed 2019
Installation of Culverts 1, 2, 3, 4, 13, 15, 16 and 18	Completed
Installation of Culverts 7, 8, 10, 11, 14 and 19	To be completed in 2019
Construction of gazboy	Completed
Construction of Meliadine site fuel farm storage facilities	Completed
Installation of Telecommunication Tower	Completed
Portal ramp advancement	Completed
Construction of Portal 2	Completed
Construction of the Rankin Inlet Bypass road	Completed
Fuel farm and laydown area [Itivia]	Completed

2.1.3 Mining Activities

In 2018, the Meliadine Gold Project was still in the construction phase, developing the underground in preparation to operate the Tiriganiaq underground mine. A total of 688,069 tonnes of waste was

excavated, 3,134 tonnes was used as underground rockfill and the rest was used for construction purposes. A total of 39,216 tonnes of marginal and 60,846 tonnes of ore was excavated and stored at the surface ore pad 1 and 2.

Figure 2.1 2018 Meliadine Site

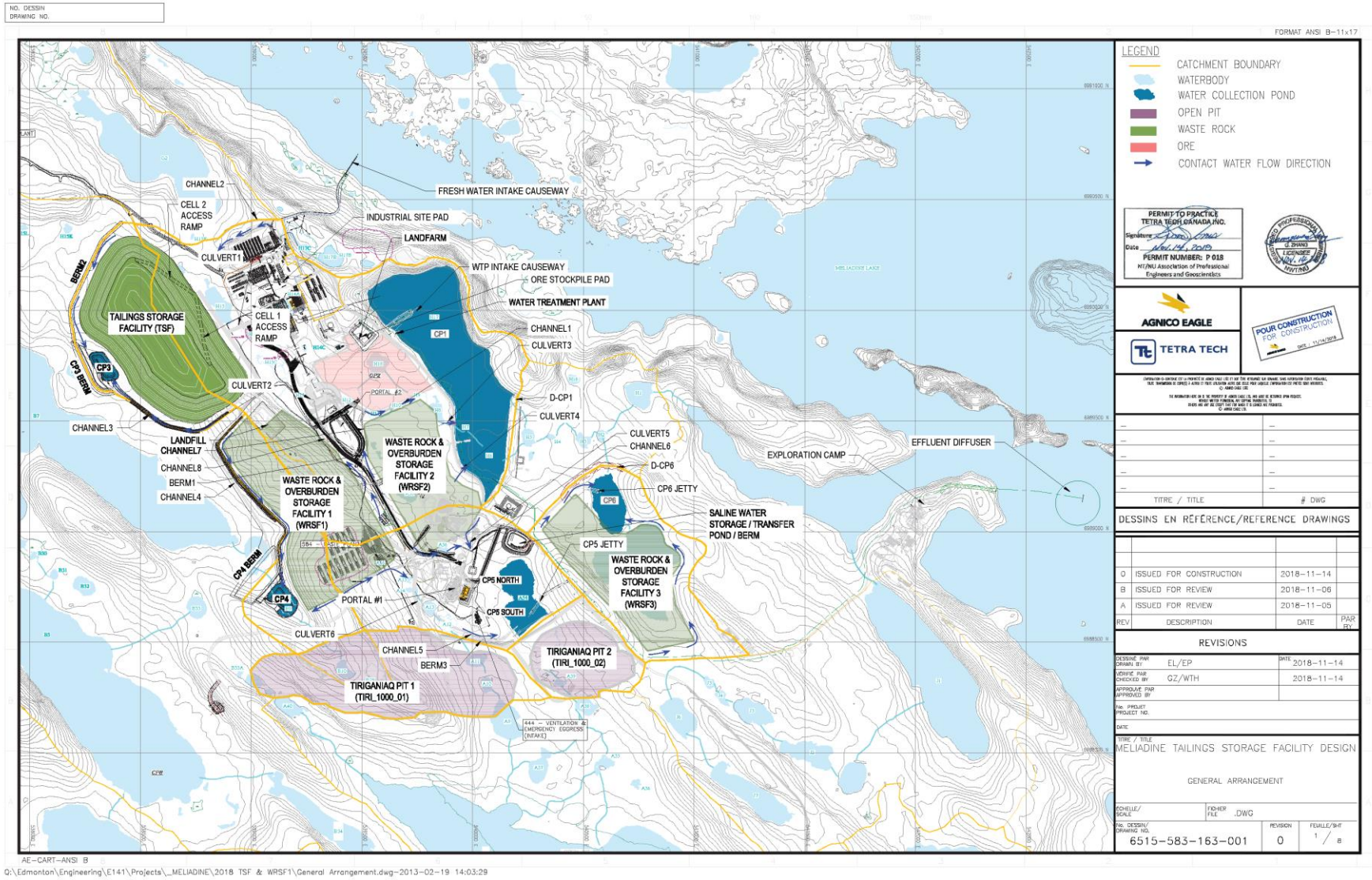


Figure 2.2 2018 Meliadine Site Sampling Locations

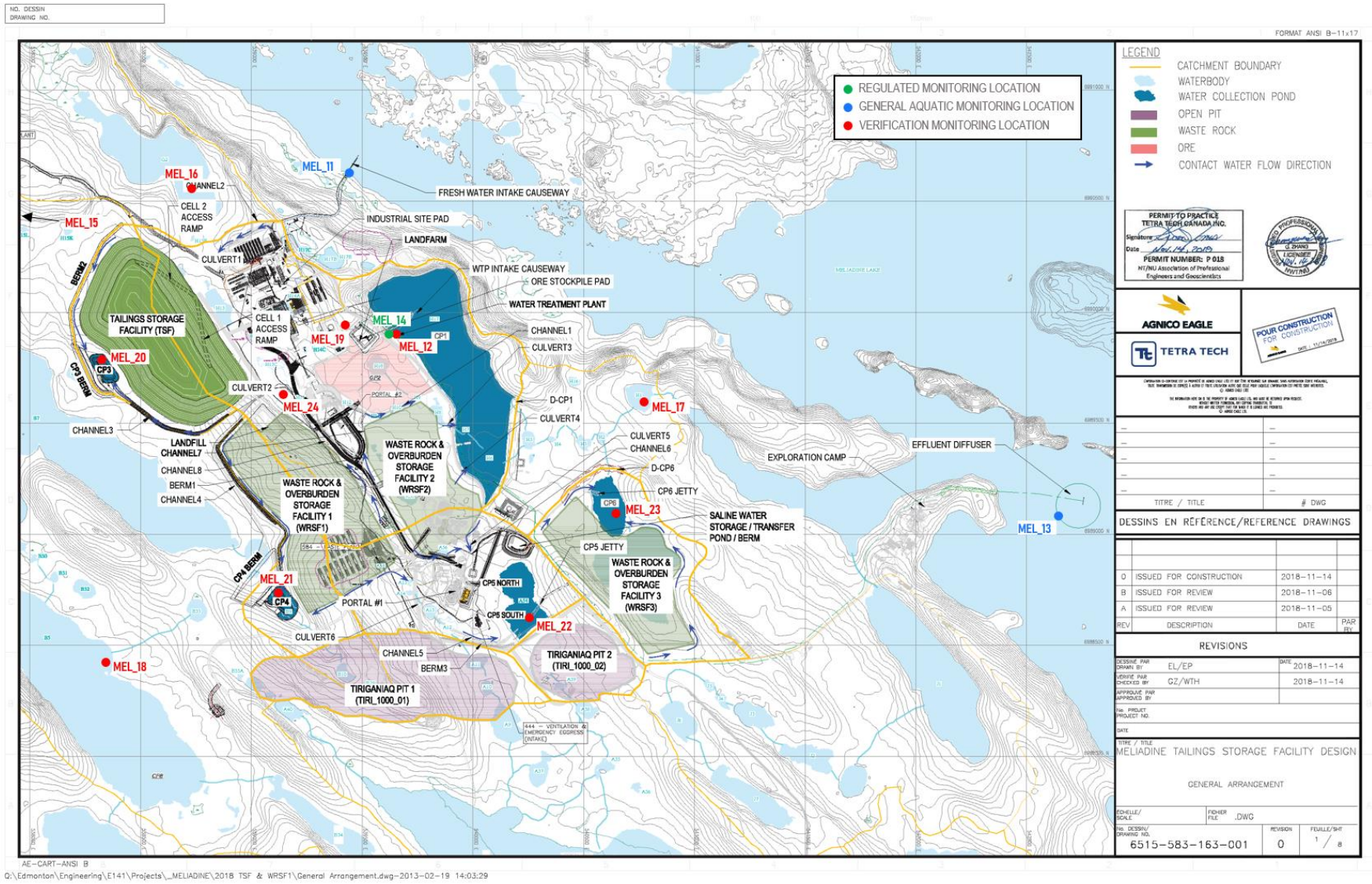
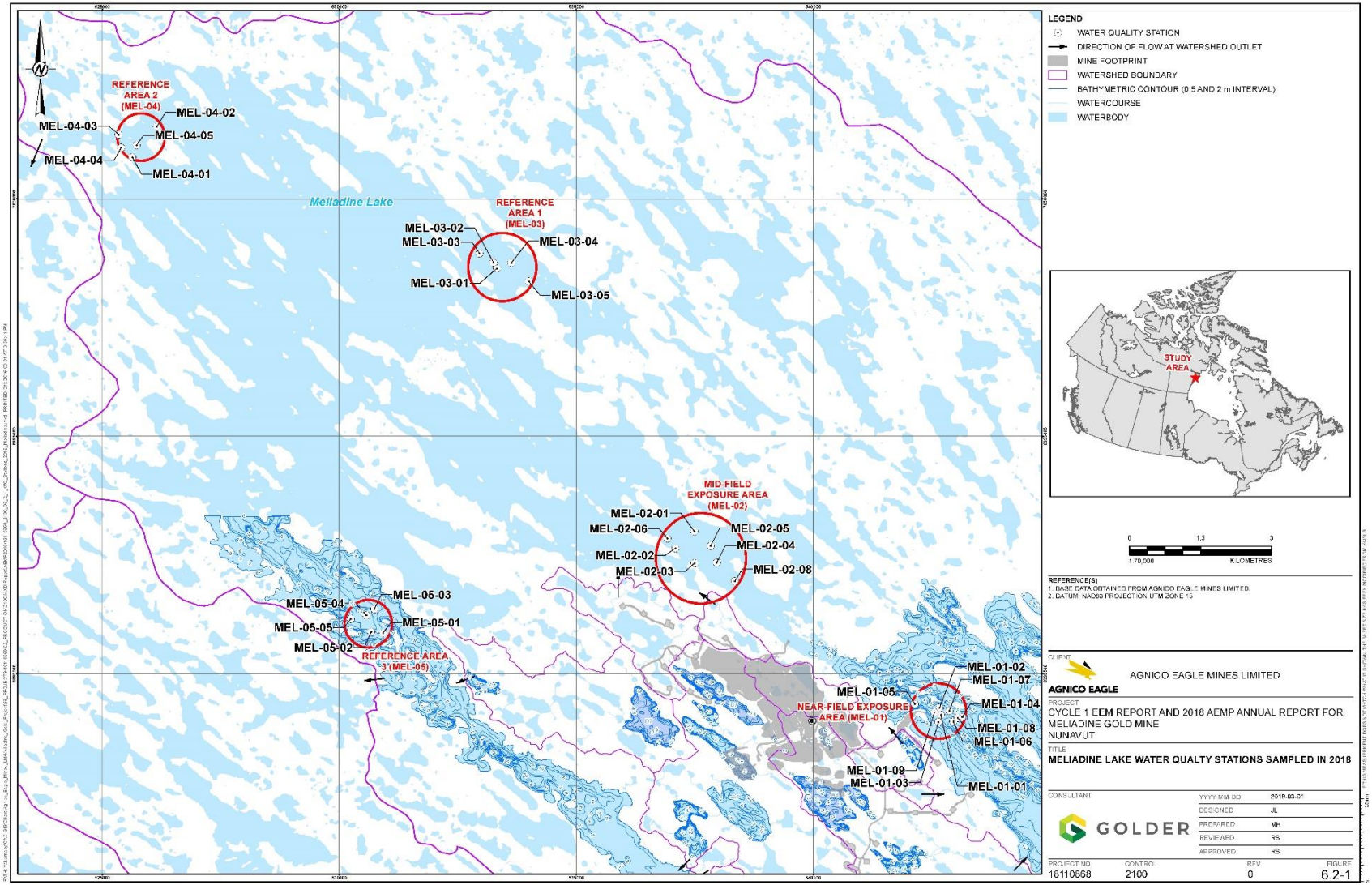


Figure 1.3 EEM Receiving Environment Sampling Locations



2.2 2019 MINE WORK PLAN

The 2019 Mine Plan for the Meliadine Gold Project, prepared for the Kivalliq Inuit Association as required by Production Lease KVPL11D01 was submitted to the KIA on January 22nd, 2019 and outlines the activities planned for the project throughout the 2019 year.

In 2019 the Meliadine gold mine will begin the operation phase of the project by mining the underground Tiriganiaq deposit. A total of 1 858 000 tonnes of rock will be extracted from the mine over the year. The mine plan consists of hauling 678 000 tonnes of waste rock, 135 000 tonnes of marginal ore and 1 045 000 tonnes of ore to the surface. Furthermore, approximately 380 000 tonnes of tailings will be returned underground, along with 60 000 tonnes of waste rock which will be used as rockfill. Waste rock and overburden will be trucked to the waste rock storage facilities (WRSFs) until the end of mine operation, with distribution according to an operation schedule. In 2019, 962 543 tonnes of solid tailings will be generated from the Mill. 380 517 tonnes of solid tailings will be used as underground backfill and 582 026 tonnes will be placed in the dry stacked Tailings Storage Facility (TSF).

Environmental monitoring (wildlife, aquatic effects, groundwater, noise and air) will continue through 2019 in support of all operational undertakings at the Meliadine site as required by the NWB Type A Water License 2AM-MEL1631, NWB Type B Water License 2BB-MEL1424, NIRB Amended Project Certificate No.006, and MDMER regulations.

In 2019, Agnico Eagle is planning to conduct the following construction projects that will be undertaken near the main mine site area and also on municipal and territorial leased land:

- Construction of Pond CP4 and associated infrastructure (Berm CP4, Channel 4);
- Finalize Portal 2 backfilling activities and associated water management structures;
- Complete construction of the Industrial Pad;
- Complete construction of Ore Storage Pad 2;
- Complete construction of Saline Pond 2;
- Finalize existing site roads;
- Finalize construction of the Paste Plant and;
- Construction and operation of the Saline Water Discharge tank at Itivia.

2.3 QUARRIES

In 2018, no material was taken from the quarries under permit KVCA11Q01. The total amount of material taken to date under this permit is 413,747 m^3 and the maximum allowed quantity to be taken is 650,000 m^3.

In 2018, 62,879 m^3 was taken from quarries under permit KVCA07Q08 for a total of 403,639 m^3. The maximum allowed quantity is 690,000 m^3.

As required under condition 16 for permit KVCA11Q01 and KVCA07Q08, monthly reports and payments were completed in 2018.

SECTION 3. WATER MANAGEMENT ACTIVITIES

3.1 WATER MOVEMENT

3.1.1 Fresh water obtained from Meliadine Lake

***As required by water license 2AM-MEA1631, Schedule B, Item 2: Monthly and annual volume of fresh Water obtained from Meliadine Lake*.**

Monthly and annual volume of fresh Water obtained from Meliadine Lake (MEL-11 and A-8) under License type A.

A total of 29,255 m³ of freshwater was withdrawn from Meliadine Lake in 2018, or approximately 47% of the maximum allowed (62,000 m³) under the License and indicated in Table 3.1.

Table 3.1: Volume of Fresh Water, withdrawn from Meliadine Lake and A8 in 2018

	January	February	March	April	May	June	July	August	September	October	November	December	**2018 Total**
Water withdrawn, m³	1,601	1,634	2,002	1,872	2,409	2,608	2,662	2,771	3,054	3,096	2,855	2,691	**29,255**

As required by Water License 2BB-MEL1424 Part B, Item 6a The Licensee shall obtain the daily, monthly and annual quantities in cubic meters of all freshwater obtained from Meliadine Lake at Monitoring Station MEL-1 and MEL-2;

Monthly and annual volumes of fresh Water obtained from Meliadine Lake (MEL-1 and MEL-2) under License type B.

Daily freshwater consumption details from Meliadine Lake (MEL-1 and MEL-2) under License type B can be found in Appendix A-1.

The monthly and annual water usage volumes are summarized in Table 3.2 below; a total of 20,651 m³ or 19% of the authorized amount (290 m³/ day ~ 106,000 m³/ year) was consumed in 2018.

Table 3.2 Monthly and annual quantities of freshwater in m^3, obtained from Meliadine lake at monitoring stations MEL-1 and MEL-2 in 2018.

	January	February	March	April	May	June	July	August	September	October	November	December	**2018 Total**
Water withdrawn, m^3	1,196	1,095	1,837	2,138	2,364	2,017	1,710	1,685	1,581	1,758	2,120	1,150	**20,651**

3.1.2 Fresh water obtained from Meliadine River.

As required by Water License 2AM-MEL1631 Schedule B, Item 4: Monthly and annual volume of fresh Water obtained from Meliadine River for road dust suppression activities.

In 2018, no water was obtained from the Meliadine River for road dust suppression activities; instead, water (240 m^3) was withdrawn from small ponds, proximal to the All-Weather Access Road (AWAR) as indicated in Table 3.3.

Table 3.3 Monthly and annual quantities of freshwater in m^3, obtained for road dust suppression activities.

	January	February	March	April	May	June	July	August	September	October	November	December	**2018 Total**
Water obtained, m^3	-	-	-	-	-	-	70	90	80	-	-	-	**240**

As required by Water License 2AM-MEL1631 Schedule B, Item 3: Monthly and annual volume of fresh Water transferred to Meliadine Lake as a result of dewatering activities.

No dewatering activities where water was transferred to Meliadine Lake took place in 2018.

3.1.3 Mine Water pumped from underground

As required by Water License 2BB-MEL1424 Part B, Item 6b The Licensee shall obtain the daily, monthly and annual quantities, in cubic meters, of Mine water pumped from the underground;

And

As required by Water License 2BB-MEL1424 Part B, Item 6j: Report all artesian flow occurrences

The daily, monthly, and annual flow volume quantities, in cubic meters (m^3), of mine water pumped from underground to surface during 2018 is summarized in Appendix A-2. There was no occurrences of artesian flow in 2018. The monthly and annual volumes of mine water pumped from the underground is summarized in Table 3.4 below with the water discharged from CP-1 to Meliadine Lake reported in Table 3.5.

Table 3.4 2018 Monthly and Annual flow volumes of underground mine water pumped to surface

	January	February	March	April	May	June	July	August	September	October	November	December	**2018 Total**
Water pumped, m^3	-	-	-	-	-	2,417	10,337	7,711	9,615	3,453	3,346	891	**37,766**

3.1.4 Water discharged from CP-1 to Meliadine Lake

Table 3.5 2018 Monthly and Annual volumes of water discharged from CP-1 to Meliadine lake

	January	February	March	April	May	June	July	August	September	October	November	December	**2018 Total**
Water pumped, m^3	-	-	-	-	-	134,272	352,551	153,066	2,632	-	-	-	**642,521**

3.2 WATER BALANCE WATER QUALITY MODEL REPORTING SUMMARY

As required by Water License 2AM-MEL1631 Schedule B, Item 5: Summary of reporting results for the Water Balance and Water Quality model as required in Part E Items 11-12.

Water Quantity

The Meliadine water balance model was updated in January 2019 to provide a forecast of monthly inflows, outflows, and cumulative volumes for the 2019 calendar year in CP1, CP3, CP5, Saline Pond, Underground Mine, and P-Area (P1, P2, and P3). The update to the model occurred prior to Agnico Eagle receiving

ministry approval for saline effluent discharge to sea at the Meliadine site (reference). As such, the framework of the model does not account for saline water originating from the underground mine that will be removed from the site via discharge to Melvin Bay. The model is undergoing further revision to account for these and other changes to the water management strategies in place, and an update will be provided with the 2019 Annual Report.

None of the forecasted monthly cumulative volumes (end of months volume) in each containment facility exceed their respective operational maximum storage capacities. A summary of the reporting results of the water balance forecast are in Table 3.6. The numbers in brackets represent the maximum capacity for each pond.

Table 3.6 Summary of water balance model predictions generated in the January 2019 model update

	Maximum Capacity	January	February	March	April	May	June	July	August	September	October	November	December
CP1 m³	742,075	112,247	119,396	126,734	131,650	136,730	235,124	262,240	314,478	365,790	390,387	398,064	405,745
CP3 m³	28,000	-	-	-	-	-	25,454	25,454	25,454	25,454	25,454	25,454	25,454
CP5 m³	46,674	21,482	21,482	21,482	21,482	21,482	10,000	10,000	10,000	13,591	16,965	16,965	16,965
SP1 m³	32,686	13,743	13,743	13,743	13,743	13,743	24,628	22,920	23,451	22,715	22,851	22,851	22,851
Underground m³	129,213	6,760	4,184	1,931	1,931	1,931	2,098	3,283	9,184	14,374	16,000	17,170	17,170
P-Area m³	33,909	12,368	12,368	12,368	12,368	12,368	21,866	20,975	23,309	25,780	27,707	27,707	27,707

Water Quality

The water quality model was updated in January 2019 to provide a forecast of monthly average TDS concentrations for the 2019 calendar year in CP1, CP3, CP5, Saline Pond, Underground Mine, and P-Area (P1, P2, and P3). This update was generated by means of a mass balance applied to the water balance model update. As such, the water quality results are limited to the framework of the model and therefore do not account for saline water originating from the underground mine that will be removed from the site via discharge to Melvin Bay.

The presented TDS concentrations are the result of overly-conservative assumptions applied to the model update. As such, both the water balance and water quality model are undergoing revision in 2019 to address these deficiencies. Reporting results of the water quality forecast are presented in Table 3.7.

More information regarding the TDS concentration results presented can be found in Section 7.3 of the 2019 Water Management Plan

Table 3.7 Summary of water quality model predictions generated in the January 2019 model update.

	January	February	March	April	May	June	July	August	September	October	November	December
CP1 mg/L	1,970	1,879	1,797	1,746	1,710	1,805	2,330	2,786	3,027	3,175	3,223	3,171
CP3 mg/L	-	-	-	-	-	4,873	5,159	5,441	5,460	5,387	5,350	5,350
CP5 mg/L	12,200	12,200	12,200	12,200	12,200	5,593	4,334	5,706	5,630	6,914	7,950	7,950
Saline Pond 1 mg/L	14,809	13,903	13,903	13,903	13,903	20,261	19,989	19,071	18,078	17,786	17,737	17,737
Underground mg/L	55,798	55,791	56,058	55,800	55,800	55,800	55,800	55,800	55,800	55,800	55,800	55,800
P-Area mg/L	20,523	20,760	20,996	21,240	21,485	32,828	136,951	167,754	193,116	143,667	91,735	92,205

3.3 ADDITIONAL INFORMATION

As required by Water License 2AM-MEL1631 Schedule B, Item 23: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

And

As required by water license 2BB-MEL-1424 Part B Item 6n: Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported

No additional information was requested in 2018.

SECTION 4. WASTE ROCK MANAGEMENT ACTIVITIES

4.1 GEOTECHNICAL MONITORING

As required by water license 2AM-MEL1631 Part I, Item 15: ***The Licensee shall submit to the Board as part of the Annual Report required by Part B, Item 2, a Geotechnical Engineer's Inspection Report. The Report shall include a cover letter from the Licensee outlining an implementation plan addressing each of the Geotechnical Engineer's recommendations.***

And

As required by water license 2AM-MEA1631, Schedule B, Item 1:

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

The performance of the permanent dikes (D-CP1 and D-CP5) is assessed according to the guidelines provided in the Operation, Maintenance and Surveillance (OMS) manual for the facilities. This program consists of both documented visual inspections and geotechnical instrumentation monitoring. In 2018, visual inspections were conducted according to the following schedule:

- Bi-daily (every two days) - Conducted during freshet by a qualified engineer or technician;
- Weekly - Conducted during open water season by a qualified engineer or technician;
- Monthly – Conducted during open water season by the Agnico Eagle Geotechnical Engineer; and
- Annual – Conducted by a third party consulting engineer (Golder Associates Ltd.) during open water season.

All visual inspections are documented and include observations of cracking, settlement, seepage and deformation in addition to photographs. Any areas of movement are marked both physically on the dikes themselves by spray painting the locations and on plan drawings of the facilities in order to track changes in conditions.

In addition to the monthly documented visual inspection (during open water), a review of the operational performance and assessment of the geotechnical monitoring instrumentation is conducted every month by the Geotechnical Engineer. The schedule of collecting monitoring data in 2018 generally followed the OMS guidelines and is summarized in Table 4.1.

Table 4.1: Summary of 2018 Permanent Dike Geotechnical Monitoring Program

Instrumentation	Frequency of Data Collection
Thermistors	Bi-daily (freshet); Weekly (Open water); Monthly (Ice)
Survey Monuments	Monthly
Upstream Water/Ice Elevations	Daily (Open water); Monthly (Ice)

In addition to the permanent dikes, a geotechnical inspection and instrumentation monitoring program for the P-Area berms was also implemented by Agnico Eagle in 2018. Documented monthly inspections by the Agnico Eagle Geotechnical Engineer were conducted twice during open water season using the same

format and evaluation criteria as for the permanent dikes and the infrastructure in this area was also evaluated during the annual geotechnical inspection. Thermistor data was obtained and evaluated twice per week (freshet), weekly (remainder of open water) and monthly (winter). Water elevations were recorded daily throughout open water season.
The performance of all other water management and earthworks structures were assessed in 2018 during the Annual Geotechnical Inspection conducted by Golder Associates Ltd. The results of this inspection is available in Appendix B.

b. A comparison of measured versus predicted performance;

Based on the visual inspections and geotechnical monitoring data, the permanent water retention dikes (D-CP1 and D-CP5) are generally performing as expected, with no significant geotechnical concerns identified in 2018. Deformation, seepage and geothermal response will continue to be monitored as per the OMS guidelines throughout 2019. No significant geotechnical concerns were noted with any other water management or earthworks infrastructure during the annual inspection. The results of this inspection and detailed analysis is available in Appendix B.

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

During dewatering activities in CP1 during the 2018 open water season, it was observed that the former H6 basin (immediately next to D-CP1) is at a higher elevation than the former H17 basin (at Jetty 1). Therefore, the maximum operating level for end of October (as per design and OMS requirements) could be achieved at the jetty but not near the dike. To connect the two systems and drain water away from the dike foundation towards the jetty, a small trench was mechanically excavated between the former H6 and former H17 basins on September 3 and 4, 2018.

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

The as-built drawing of the trench between the former H6 and former H17 basins within the CP1 catchment area is located in Appendix B-3.

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

As-built condition was evaluated during the Annual Geotechnical Inspection (refer to Appendix B). Any deviations from design and the potential impact of those deviations are discussed during the construction record (as-built) reporting completed by the Design Engineer and submitted for review as per regulatory requirements.

In November 2017, Agnico Eagle determined that a reverse osmosis (RO) treatment system was required to manage TDS levels in water being transferred from CP5 to CP1. This requirement was due to an increasing trend of CP5 (MEL-22) TDS levels from 2016 (mean TDS = 2,579 mg/L; n = 19) to 2017 (mean TDS = 4,706 mg/L; n = 13). The RO system was procured in Q1 of 2018 and installed approximately 50 metres to the northeast of CP5 as a means to manage the increased TDS levels prior to moving water from CP5 to CP1, and eventually Meliadine Lake. Commissioning of the RO plant was completed on June

13, 2018, and the first transfer of treated CP5 water to CP1 took place on June 14, 2018. The RO system will continue to be used at CP5 for as long as TDS levels require treatment prior to transferring to CP1.

Although not a change to the design or as-built condition, the OMS for D-CP1 and D-CP5 was modified to reflect the actual as-built conditions of the Jetty 5 pumping station. The original version of the document had assumed that the invert of the lowest intake pipe had been installed to design elevation. During pumping activities from CP5 to CP1 however, it was observed that the elevation of the lowest intake pipe had been installed above the design elevation and that the maximum operating level before/after freshet was unachievable. Discussions with the Design Engineer (Tetra Tech) led to a revision of the OMS and increased maximum operating final elevation level for D-CP5 by 0.3 m.

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

4.1.1 Thermistors in the vicinity of the project

Thermistor cables have been installed to monitor natural ground temperatures in the vicinity of the Project. Data are presented in Appendix B along with plan views of thermistor installation locations. Several of these thermistors have stopped working over the last several years, mainly due to damage as construction of mine facilities expands into the areas where these thermistors have been installed. Readings taken in 2018 in the remaining operational thermistors are generally consistent with previous trends. There were some erroneous readings that have been removed from the plots for GT09-07, GT09-08, GT11-02, GT14-03, and GT14-27. These thermistors showed large jumps in temperature for one set of readings, which then returned to be in line with previous temperatures when they were read the next month. Most of the erroneous readings were on 6 September 2018. Thermistor GT14-03 also had erroneous readings on 19 June 2018 and GT14-27 had erroneous readings on 25 May 2018 and was then reported to be damaged.

Priorities and frequencies for reading these thermistors are summarized in AEM (2015c) and are based on the development sequence for the mine. Thermistors located in close proximity to the process plant and other mine infrastructure have the highest priority and are read more often. Thermistors located in the Tiriganiaq open pit area are given the next priority. The thermistors installed to monitor the deep permafrost are given the lowest priority as the conditions within the deep permafrost do not fluctuate seasonally, so fewer readings are required.

4.1.2 Thermistors in the P-area

DP1B thermistor (DP1B-1 and DP1B-2) data shows a maximum depth of temperatures above 0℃ of 2.8m (elevation 68.0 m) recorded on 30 September 2018. The nodes within the dike foundation remained below -1℃ during 2018.

DP2A thermistor (DP2A-1) data shows a maximum depth of temperatures above 0℃ of 3.6 m (66.04 m) recorded on 30 September 2018. The nodes within the dike foundation remained below -1℃ in 2018.

DP3A thermistor data (DP3A-1, DP3A-2, and DP3A-3) shows the maximum depth of temperatures above 0℃ varies between the three instruments. The data indicates that the greatest depth of 0℃ was measured at the central thermistor (DP3A-2 at station 0+150); this thermistor recorded temperatures

greater than 0℃ to its full depth (4.5 m) for four readings during the month of September 2018. Thermistors DP3A-1 (station 0+050) and DP3A-3 (station 0+250) identify a maximum depth of 0℃ measured at 4.4 m (elevation 64.67 m), and 2.7 m (elevation 66.37 m), respectively. The data from DP3-3 on 17 September 2018 is considered erroneous based on the readings collected before and after. The nodes within the dike foundation remained below 0℃ at DP3A-3, but temperatures rose above 0℃ to a depth of approximately 1.4m into the foundation below DP3A-1. Data from thermistor DP3A-2 shows that temperatures above 0℃ extend into the foundation from 19 July to 4 November 2018

In general, all thermistors showed all beads at or below 0℃ by 4 November 2018. The exception is thermistor DP1B-1 in which the last recording provided was for 30 September 2018; node 4 of this thermistor located within the dike fills remained at 1.0℃. This may be an erroneous reading as the nodes within the dike above and below node 4 showed consistent temperatures near 0℃.

4.1.3 Thermistors at D-CP1

The horizontal ground temperature cable plots (Appendix C2) were indicating a warming trend in the base of the key trench in 2017. They cooled over the winter with most of the nodes approaching temperatures near -10 °C in early June 2018. Temperatures measured from early June to late August 2018 showed a warming trend of about 2 to 3 °C, indicating influence of ambient temperatures and/or ponded water within CP1. Winter readings were not collected between January and June 2018 for three of the instruments, HGTC-1, HGTC-3, and HGTC-5. All horizontal ground temperature cable nodes at the base of the key trench have remained frozen based on the data provided. Some of the nodes that are located on the downstream slope of the key trench and along the foundation of the dike below the downstream slope had temperatures that rose above 0 °C, particularly HGTC-5 which has beads that extend below and possibly downstream of the rockfill shell. These nodes have less cover and are therefore more influenced by ambient temperatures Maximum temperatures may not have been reached as of the last readings provided for 1 September 2018.

Vertical ground temperature cable plots (Appendix C2) indicate that the dike and foundation remained below 0 °C after November 2017 throughout the winter until about April/June of 2018. The maximum depth of 0 °C temperature readings ranged from approximately 1.2 m to 2.7 m in the summer and early fall of 2018. The final readings received (1 September 2018) identified the greatest depth of 0 °C temperature readings at 2.7 m observed in VGTC-01, located upstream of the liner and key trench. The maximum depth of 0 °C temperature readings may not have been reached as of the last readings on 1 September 2018. The maximum depth of 0 °C temperature readings in 2017 was equal to the depths measured in 2018 or 0.5 m lower, with the exception of VGTC-05 which had a maximum depth of 0 °C 1.2 m lower than what was measured in 2018. All the vertical thermistors indicate that the foundation and the lower 1 to 2 m of the dike (both upstream and downstream of the liner) remained below 0 °C during the reporting period.

D-CP1 survey monitoring points M-1 to M-6 indicate a range of total vertical displacement between 29 and 40 mm between the baseline survey using the total station on 19 September 2017 to the last reading received for the reporting period on 13 August 2018. The range of total vertical displacement from the last reading in 2017 on 25 October to the last reading received for 2018 on 13 August was 18 to 25 mm. The maximum vertical displacement was observed at survey marker M-6 (station 1+510) and the minimum

vertical displacement was observed at survey marker M-2 (station 1+230). The OMS manual indicates that total vertical settlement less than 120 mm is an acceptable (green) condition.

4.1.4 Thermistors at D-CP5

The horizontal ground temperature cable plots initially indicated a warming trend after installation in the spring 2017. Beginning in January 2018, the data began showing a cooling trend. The cooling trend continued until about April 2018 and then started to warm as ambient temperatures increased. All thermistor nodes within the key trench remained at or below 0 °C throughout the reporting period (April 2017 to September 2018) and ranged from -3 to -10 °C. Maximum temperatures may not have been reached by the last readings on 1 September 2018.

Vertical ground temperature cables VGTC-01 and VGTC-02 are located upstream of the liner and key trench in D-CP5. The data from these instruments indicates that the upstream dike fills were below 0 °C from October 2017 until April 2018. The maximum depth of temperatures above 0 °C extended approximately 3.5 m to near the interface between the base of the dike fills and original ground at VGTC-01 and 3.0 m at VGTC-02. The depth of 0 °C temperatures appeared to be stabilizing in September but may not have reached the maximum depth. In 2017, the maximum depth of 0 °C temperature readings was 4 m at VGTC-01 and 3.5 m at VGTC-02. Up to the last reading on 1 September 2018, the foundation below the dike remained below -1 °C and -2 °C at the location of VGTC-01 and VGTC-02, respectively.

D-CP5 survey monitoring points M-1 and M-2 indicate total vertical displacement of approximately 20 mm between the baseline survey using the total station on 19 September 2017 to the last reading received for the reporting period on 21 July 2018. The range of total vertical displacement from the last reading in 2017 on 25 October to the last reading received for 2018 on 21 July was 9 to 12 mm. M-3 indicated a total vertical displacement of about 40 mm as of 25 October 2017. No additional readings were recorded for M-3 as it was reported as being destroyed. The OMS manual indicates that total settlement of less than 100 mm is an acceptable (green) condition

The 2018 Annual Geotechnical Inspection (Golder Associates Ltd., 2019) in Appendix B presents the complete instrumentation data

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

No maintenance work was undertaken in 2018 on any dikes, dams or berms.

h. The daily, monthly and annual flow volumes of any watercourse diverted during Construction activities

In September 2018, lake B8 and B9 were dewatered during three days for an average of 3,278 m³/day for a total of 9,834m³ which was transferred to CP-1 trough H13 and channel 1.

i. The daily, monthly and annual quantities of Seepage from dikes, dams and other structures in cubic metres.

Four seepages from dikes were visually observed along the dikes, downstream at DCP-1, DCP-5, DP-1 and DP-3 in 2018 and were captured by excavated trenches. The quantity of seepage is estimated from

flowmeter data; water, collected from trenches downstream from DCP-1 and DCP-5 dikes is metered and pumped back respectively to CP-1 and CP-5 while water, collected from trenches downstream from DP1 and DP3 dikes is metered and pumped back into P-Area ponds. The daily , monthly and annual quantities of seepage are provided in Appendix A-3

Table 4.2 Volumes of seepage, pumped from the trenches downstream from DCP1, DCP5, DP-1 and DP-3

	January	February	March	April	May	June	July	August	September	October	November	December	**2018 Total**
Pumped from DCP1, m³	0	0	0	0	0	10,704	533	0	0	0	0	0	**11,237**
Pumped from DCP5, m³	0	0	0	0	0	21,550	0	0	0	0	0	0	**21,550**
Pumped from DP-1, m³	0	0	0	0	0	432	806	8,050	0	0	0	0	**9,288**
Pumped from DP-3, m³	0	0	0	0	0	0	9,856	16,718	18,230	4,378	0	0	**49,182**
Total pumped m³	0	0	0	0	0	32,686	11,195	24,768	18,230	4,378	0	0	**91,257**

4.2 GEOCHEMICAL MONITORING

In accordance with Water License 2AM-MEL1631 Schedule B, Item 6: ***Geochemical monitoring results including:***

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

The acid/base accounting and paste pH test work used for waste rock designation is in the report located in Appendix C-1 and summarized below.

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;

All of the waste rock was used for construction in 2018 as the Waste Rock Storage Facilities were not built yet.

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

All data (mine site and quarries) can be found in the report located in Appendix C-1.

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

No leaching observations were found on dike exposure and no pit slope are present on site yet.

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

No environmental impact implied, as all test are NPAG, and within project predictions for no metal leaching impact.

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;

No tailings were produced in 2018.

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

All results related to the road quarries and the All Weather Private Access Road can be found in the report located in Appendix C-1.

In 2018 Agnico Eagle conducted geochemical testing on waste rock material from underground development and surface material from approved quarries and eskers. Representative samples of this material were analyzed for Acid Rock Drainage (ARD) and metal leaching at the accredited third-party laboratory (SGS). Geochemical sampling program at Meliadine is comprised of two parts: mine development waste rock and quarry material.

4.2.1 Mine development waste rock

ARD Potential

Neutralization Potential

Neutralization potential (NP) is expected to be primarily provided by calcite and dolomite, with some ankerite (Golder 2014). As a result, carbonate analysis alone would likely be appropriate for determining NP, although both methods were used (i.e. titration and direct carbonate analysis). Complete results are provided in Appendix C-1. Golder (2014) indicated that NP from carbonate analysis (NP-Ca) was the more conservative method to determine buffering capacity of the rock and this was used as input into the ARD calculation. The relationship was checked in 2018, and the relationship generally held, especially at low NP values and therefore the continued used of NP-Ca was considered conservative for estimating ARD potential.

Acid Potential

Project prediction studies indicated that the main sulphide minerals in the waste rock was pyrite, but also included arsenopyrite, lesser pyrrhotite, and chalcopyrite (Golder 2014). As a result, the main consideration for acid potential (AP) is the presence of sulphide minerals at Meliadine.

Project prediction studies were confirmed in 2018 sampling with acid-base accounting testing showing that sulphur is primarily present in the sulphide form. Sulphur ranged from below detection 0.01% to a maximum of 1.6%, with a median of 0.18%.

ARD Assessment

The potential for ARD was assessed using NP-Ca/AP ratios (or neutralization potential ratios, (NPR). AP was calculated from total sulphur. Ratios below 2 were used to indicate potential for ARD (PAG or potentially ARD generating), whereas ratios above 2 indicate low potential for ARD (NPAG).

The classification of all Meliadine waste rock samples from underground since testing began in 2017 are provided in Appendix C-1. As predicted by Golder (2014), the majority of operational muck samples collected to date were NPAG. Samples from 2017 have also been included for ease of comparison to historical results. The one exception was a sedimentary sample with an NPR of 1.8. This sample is not considered a risk as there is excess buffering in all other samples collected and it is only marginally below the NPAG criterion. Given the carbonate mineralogy of the Meliadine samples, the threshold for a sample to produce ARD is likely closer to an NPR of one and this sample is unlikely to produce ARD even without the buffering of any other samples.

Metal Leaching

Metal leaching was predicted by Golder (2014) to be low enough that management of waste rock to inhibit leaching was not required. However, based on project screening studies, arsenic was determined to be the main element of interest and analysis of this element (and all regulated elements) were part of operational monitoring since mining began. A statistical summary for arsenic with complete element composition results is provided in Appendix C-1. To ensure arsenic concentrations were within project predictions, results have been compiled and compared against average and maximum arsenic concentrations reported by Golder (2014). Solid phase arsenic concentrations mainly fall within or below the average concentration, with no samples exceeding the maximum concentration reported by Golder (2014).

4.2.2 Quarry Material

ARD Potential

The potential for ARD from Quarry samples collected in 2018 was assessed by the same approach described above for waste rock, whereby NP was provided by carbonate (NP-Ca) and AP was estimated based on total sulphur. Complete results are provided in Appendix C-1. NP-Ca ranged from 2 to 44 kg $CaCO_3$/t, with a median of 9.2 kg $CaCO_3$/t. Total sulphur ranged from near detection limits of 0.01% to a 0.1%, with a median of 0.02%. These are relatively low sulphur numbers as typically any rock with less than 0.1% sulphur will not generate acidity regardless of the carbonate content as other rock components such as alkaline silicates (e.g. feldspars) can neutralize the small amount of acid produced. The potential for quarry material to produce ARD was based on NPR ratios, but also a sulphur limit of 0.1%, meaning that any samples with 0.1% or less sulphur would be NPAG regardless of the NPR ratio. Based on the two criteria, none of the quarry samples collected were PAG. The 0.1% sulphur criterion affected 4 out of 30 samples.

Metal Leaching

The same approach taken for waste rock was applied to quarry samples in terms of comparing against project prediction studies. All regulated elements were analysed in solid samples and are included in

Appendix C-1. Arsenic concentrations ranged from a minimum of 0.58 mg/kg to a maximum of 58 mg/kg, with a median of 5.3 mg/kg. These values are relatively low compared to waste rock and were within project prediction studies as the maximum value reported by Golder (2010) was 121 mg/kg. A statistical summary of all results since sampling began in 2017 are provided in Appendix C-1.

Based on geochemical characterization results obtained to date for the waste rock and quarry samples, there is low risk for ARD or metal leaching from the materials. Results are within project prediction studies for the project. Sampling will continue in 2019, with results reviewed internally as soon as they are available and provided with the 2019 annual report.

The complete Geochemical report is in Appendix C-1

Table 4.3. Summary of ARD Guidelines used to classify Meliadine 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)

4.3 WASTE ROCK VOLUME

In accordance with Water License 2BB-MEL-1424 Part B Item 6c An estimate of the current volume of waste rock and ore stockpiled on site;

Table 4.4. 2018 Excavated volumes (Tonnes)

	Ore	Marginal	Waste	Total
January	0	0	61,771	61,771
February	0	0	58,324	58,324
March	582	0	64,462	65,044
April	578	0	62,153	62,731
May	4,229	2,802	60,386	67,417
June	6,147	6,870	53,761	66,778
July	3,514	2,226	39,587	45,327
August	3,017	1,970	49,303	54,289
September	8,273	9,963	46,520	64,756
October	5,345	9,055	58,321	72,721
November	9,080	1,699	68,970	79,749
December	20,080	4,633	64,510	89,224
TOTAL	**60,846**	**39,216**	**688,069**	**788,132**

4.4 TAILINGS STORAGE FACILITY

4.4.1 Tailings Storage Facility Capacity*

As required by Water License 2AM-MEL1631 Schedule B, Item 7: ***An update on the remaining capacity of the Tailings Storage Facility.***

In 2018, no tailings was sent to the tailings storage facility so the remaining capacity according to further construction is still 10.9Mt as stated in the Mine Waste Management Plan.

4.4.2 Tailings Freezeback and Capping Thickness

As required by Water License 2AM-MEL1631 Schedule B, Item 16: ***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.***

In 2018 no on-going field trials to determine effective capping thickness for the Tailings Storage Facility and Waste Rock Storage Facilities occurred as production has not started yet.

* TSF- Tailings Storage Facility

SECTION 5. WASTE MANAGEMENT ACTIVITIES

5.1 LANDFILL MONITORING, WASTE ROCK STORAGE FACILITY

As required by Water License 2AM-MEL1631 Schedule B, Item 8*: Summary of quantities and analysis of Seepage and runoff monitoring from the Landfill, Landfarm, Waste Rock Storage Facilities, Borrow pits and Quarries.*

Landfill and Landfarm were commissioned in November 2017. No seepage was observed from either facilities in 2018. Monitoring and inspection will continue on a regular frequency.

The Waste Rock Storage Facility infrastructures approved under water license 2AM-MEL1631 has not been built yet.

No seepage was observed around operating quarries and borrow pits located on site and along the AWAR as per regular inspections completed by the Environment Department.

5.2 GENERAL WASTE DISPOSAL ACTIVITY

As required by Water License 2AM-MEL1631 Schedule B, Item 9: A summary report of all general waste disposal activities including monthly and annual quantities in cubic metres of waste generated and locations of disposal.

All waste, produced at Meliadine, falls into 4 major categories:

1) Hazardous waste;
2) General (dry, non-hazardous) waste;
3) Food waste; and
4) Contaminated soil.

Hazardous waste, such as waste coolant, used oil filters, waste grease, used batteries, sewage sludge etc. is segregated according to material type, stored in sea containers, and shipped south during the sealift season. All hazardous waste on site was shipped by Nunavut Sealink and Supply Inc., to Qikiqtaaluq Environmental Services facility in Quebec, via Port of Bécancour.

In 2018 a total of 3,274 tonnes of hazardous waste was shipped south in 50 sea containers; documentation for the transfer of hazardous waste can be found in Appendix D-1.

General waste, such as glass, concrete, wood and ash was landfilled on-site and off-site. Type A landfill was commissioned in November 2017 with the volume of landfilled waste being estimated through periodic surveys. An estimated 5,868 m³ of waste was placed into Type A landfill during 2018. Monthly volumes are indicated in table 5.1. In September 2018, the landfill was expended to contain an extra 11,000 m³

(landfill stage 2). In 2018, some activities occurred in Landfarm A to remediate the soils. The material was screened, windrowed and nutrient amendment was done. Sampling and follow up will be done in 2019. The recycling wood option with the community is something Agnico Eagle will investigate in the future to lower the amount of material sent to the landfill.

Food waste, including food packaging, was incinerated to avoid landfilling the material, and attracting the wildlife. Produced ash was landfilled. Monthly quantities can be found in table 5.1

Contaminated soil was placed into landfarm A for treatment. Type A landfram was commissioned in November 2017 with an estimated 2,853 m³ of contaminated soil being placed there in 2018 mainly from the clean up of the fuel farm and exploration genset spills that occurred in 2017.

In 2018 a total of 1,676.4 tonnes of material was shipped south for recycling, including scrap metal, waste oil, batteries and electronic waste.

The incinerator approved under Water License 2AM-MEL1631 was commissioned at the end of November 2017; the incinerator test were undertaken in 2018.

Table 5.1. 2018 Volume of waste transferred to the incinerator, landfill and the landfarm

Month	Volume of waste send to incinerator (m³)	Volume of waste send to landfill (m³)	Volume of contaminated soil placed in Landfarm A (m³)
January	378	578	4
February	352.8	578	0
March	352.8	577	0
April	365.4	548	15
May	352.8	548	1,620
June	315	549	300
July	340.2	548	3
August	327.6	548	0
September	315	549	882
October	340.2	282	27.5
November	352.8	281	1
December	340.2	282	1
Total	**4,132.8**	**5,868**	**2,853.5**

5.3 INCINERATOR

As per Water License 2AM-MEL1631 Schedule B, Item 10: ***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.***

Agnico Eagle hired Consulair to sample the atmospheric emissions at the outflow of the incinerator. As can be observed in Table 5.2, the applicable standards for dioxins and furans (PCDD/F) were met for all tests, as well as the applicable standard for mercury (Hg). The standards originate from the "Environmental Guideline for the Burning and Incineration of Solid Waste" emitted by the Department of Environment of the Government of Nunavut based on the Canadian Council of Ministers of the Environment (CCME) Canada - Wide Standards for Dioxins and Furans and Mercury Emissions. The complete report can be found in Appendix E-1.

Agnico Eagle also proceeded with incinerator Ash testing. Unfortunately, analyses were requested for acid extractable instead of metals leachate Agnico Eagle followed up with the laboratory to see if re-analysis were available but unfortunately, the samples were disposed by the lab. A sample was taken early February 2019 and the analysis request was modified to ensure proper analyses is performed from now on. The results from this sample were significantly lower than the guideline for industrial waste discharge and are provided in the table 5.3. A sample will be taken every quarter to ensure compliance with the guideline in 2019.

Table 5.2. 2018 Stack Testing Mercury and Dioxine and Furane Results

Applicable Standards		
Contaminants	Test Results	Standards
Mercury (Hg)	0.23 µg / Rm³ @ 11 % v/v O_2	20 µg / Rm³ @ 11 % v/v O_2
Dioxins ans Furans (PCDD/F)	0.042 ng / Rm³ @ 11 % v/v O_2	0.08 ng TEQ / Rm³ @ 11 % v/v O_2

Table 5.3. 2018 Incinerator Ash Monitoring

Parameters	**Units**	2018/02/23	2018/03/17	2018/04/14	2018/05/13	2018/09/15	2018/10/15	**Guideline for Industrial Waste Discharge (mg/L)***	2019/02/10 (results are in mg/L)
Arsenic	mg/g	0.0027	0.007	0.0054	0.0051	0.00016	0.015	2.5	<0.2
Barium	mg/g	0.056	0.051	0.048	0.052	0.012	0.084	100	0.7
Cadmium	mg/g	0.000039	0.00017	0.000052	0.00001	0.000012	0.00004	0.5	<0.05
Chromium	mg/g	0.014	0.02	0.027	0.036	0.0022	0.033	5	3.3
Lead	mg/g	0.0061	0.0078	0.0032	0.0039	0.0013	0.0057	5	<0.1
Selenium	mg/g	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	1	<0.1
Silver	mg/g	0.00014	0.00047	0.0014	0.00031	<0.00002	22	5	<0.01
Vanadium	mg/g	0.0023	0.0041	0.0035	0.0038	0.0034	46	NA	NA
Zinc	mg/g	0.33	0.24	0.33	0.19	0.0051	2500	5	<0.1
Mercury	mg/g	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.1	<0.001

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

5.4 ADDITIONAL INFORMATION

As required by Water License 2AM-MEL1631 Schedule B, Item 23: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

And

As required by water license 2BB-MEL-1424 Part B Item 6n: Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported

The Board did not request any additional details on waste disposal in 2018.

SECTION 6. SPILL MANAGEMENT

As per Water License 2AM-MEL1631 Schedule B, Item 11 ***A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.***

And

As required by water license 2BB-MEL-1424 Part B Item 6f: A list of unauthorized discharges and a summary of follow-up actions taken

In 2018, a total of 22 reportable spills including 7 license exceedances (grey shade) occurred at Meliadine compared to 14 in 2017. All spills were reported to the 24-hour spill reporting line as required by the Government of Nunavut's, Environmental Protection Act, paragraph 5.1(a), the conditions under the Nunavut Water Board License 2AM-MEL1631 Water Licence, part H, item 8(b) or the conditions under the Nunavut Water Board License 2BB-MEL1424, Part H, item 4. For all reportable spills, a follow up report was submitted 30 days or less following the event as required under the Nunavut Water Board License 2AM-MEL1631 Water Licence, part H, item 8(c).

All reportable spills/exceedances are summarize in table 6.1. Complete reports and follow up reports can be found in Appendix F-3.

Table 6.1. 2018 Reportable spills or limit exceedances

Date of spill/exceedance	Hazardous Material	Quantity for spills or analyses results for exceedance	Location	Cause of the spill
January 31st, 2018	Sewage	~500L	Lift station	Equipment failure
February 2nd, 2018	Sewage	~120,000L	Retention tank	Human error
February 18th, 2018	Diesel fuel	2,578L	Genset Fuel tank	Human error
May 27th, 2018	TSS	500 mg/L	Itivia area	Freshet
June 3rd, 2018	TSS	420 mg/L	Itivia area	Freshet
June 8th, 2018	Hydraulic oil	N/A	Near Lake B8	Equipment failure
June 10th, 2018	TSS	160 mg/L	Itivia area	Freshet
June 12th, 2018	Sewage	~3,000L	Lift station	Ground thaw
June 17th, 2018	TSS	670 mg/L	Itivia area	Freshet
June 20th, 2018	TSS	260 mg/L	Itivia area	Freshet
July 8th, 2018	Sewage sludge	~200L	Sewage Treatment Plant	Equipment failure
July 11th, 2018	Hydraulic oil	~5L	Itivia area	Equipment failure
July 20th, 2018	Treated sewage	~3000L	Road between explo camp and main camp	Human error
July 23rd, 2018	Treated effluent	4.39 mg/L (Aluminum)	CP-1 discharge (MEL-14)	Assumed to be a laboratory error
August 2nd, 2018	Treated sewage	1600L	Retention tank	Human error
August 19th, 2018	Treated effluent	1430 mg/L (TDS)	CP-1 discharge (MEL-14)	Equipment failure/Human error
August 25th, 2018	Sewage	~200L	Retention tank	Equipment failure

September 20th, 2018	Treated sewage sludge	100L	Old landfarm area	Human error
October 4th, 2018	Diesel fuel	844L	Refueling station	Human error
October 30th, 2018	Sewage	~1000L	Retention tank	Equipment failure
November 17th, 2018	Treated sewage water	100L	Retention tank	Weather
December 11th, 2018	Boiler system water	200L	Main camp area	Equipment failure

A risk assessment for spills has been initiated; AEM has identified and rectified deficiencies related to fuel spills. In areas of higher risk for spills, such as the fuel dispensing system at Itivia, a lined secondary containment was put in place to lower the risk of spills causing an offsite impact. Another example of AEM lowering the risk of exceedances is that all treated effluent from the Exploration camp STP is trucked to CP1 – a containment system. The risk assessment process is ongoing as new systems are commissioned.

AEM has noted that although the number of spills has increased in 2018, the severity has decreased which confirms procedures have improved. In addition, an improved training program has led to an increased understanding of spill reporting and an overall level of improved general awareness with regards to spills and spill reporting. Based on this, it is believed that more spills are being reported on site by employees.

To prevent and ensure all spills are reported internally, spill prevention training was provided to employees in 2018. 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.

- Department toolbox meetings were completed in 2018 regarding environmental situations including spills prevention. The presentation and the attendance sheets can be found in Appendix F-1.

- A mock spill exercise was completed on August 4th, 2018 at the Itivia tank farm. The mock scenario involved a broken fuel line fitting at the onshore receiving manifold during refueling (from offshore ship) at the fuel storage tanks at Itivia. Agnico Eagle's Environmental staff lead the exercise, which included AEM emergency response (ERT) members, Orbit Garant Environmental/health representative, safety, AEM warehouse staff, AEM Site Service/KHTO vice president and AEM community relations personnel. AEM environmental technician 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. Mock scenario complete report can be found in Appendix F-2.

Table 6.2. 2018 Non-reportable spills

Date of spill	Hazardous Material	Quantity (l)	Location	Cause of the spill	Describe immediate corrective actions
January 13, 2018	Engine Oil	10	Industrial Pad	Hose or seal broken	Contaminated snow picked up and disposed of adequately.
January 21, 2018	Anti-Freeze	2	Explo Parking Lot	Mechanical leak	Contaminated snow was removed.
January 22, 2018	Sewage	50	Portal	Shut off valve was left open	Spill was contained and contaminated soil picked up and disposed of appropriately.
February 3, 2018	Hydraulic Oil	8	Esker	Mechanical leak	Spill was contained and contaminated snow picked up and disposed of appropriately.
February 12, 2018	Hydraulic Oil	4	Fuel Farm Tank 32	Mechanical leak	Used absorbent to clean the oil, shoveled the contaminated snow and brought into the landfarm.
February 12, 2018	Hydraulic Oil	4	Fuel Farm Tank 30	Mechanical leak	Used absorbent to clean the oil, shoveled the contaminated snow and brought into the landfarm.
February 21, 2018	Engine Oil	3	Exploration Camp	Mechanical leak	Spill was contained and contaminated snow picked up and disposed of appropriately.
February 21, 2018	Hydraulic Oil	2	Industrial Pad	Mechanical leak	Contaminated snow picked up and disposed of adequately.
March 3, 2018	Steering Fluid	6	Site Roads	Broken Hose	Contaminated snow picked up and disposed of appropriately.
March 4, 2018	Steering Fluid	1	Industrial Pad	Leaking hose	Contaminated snow picked up and disposed of appropriately.
March 6, 2018	Engine Oil	3	AWAR	Engine fail	Contaminated snow picked up and disposed of appropriately.
March 8, 2018	Diesel Exhaust Fluid	3	Warehouse yard	Mechanical leak	spill pads were put in place and the snow picked up and disposed of appropriately.
March 11, 2018	Oil	1	Audit & Knight yard	Frozen hose	They did some modification on the unit so that the issue was resolved.
March 13, 2018	Grey Water	40	Camp	Hose left unsecured	Spill was contained and contaminated soil picked up and disposed of appropriately.

March 14, 2018	Hydraulic Oil	7	Industrial Pad	Hydraulic hose failure	Spill was contained and contaminated soil picked up and disposed of appropriately.
March 26, 2018	Torqueless (non-contaminant)	10	Drill SH:84	Product transfer	Material has been cleaned with a vacuum.
March 30, 2018	Coffee	0	Camp	Coffee poured outside	Contaminated snow picked up and disposed of adequately.
March 31, 2018	Steering Fluid	0	Explo Camp parking lot	Leaking hose	scooped up snow fluid and put in pail and disposed of appropriately.
April 7, 2018	contaminated water with glycol	4	New camp	Radiator blew up	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
April 8, 2018	Waste oil	10	FRONT DOME 2	Leaking hose	They put the spill pad under the equipment ,they fix the problem and move the equipment , they clean all the waste oil and put it in the hazmat.
April 13, 2018	Hydraulic oil	19	Construction Pad	The valve manifold cap seal has blown	Replace the seal and contaminated material picked up and disposed of appropriately.
April 21, 2018	Engine Oil	1	Other	Pump leak	Contaminated snow picked up and disposed of adequately.
April 22, 2018	Hydraulic Oil	10	Industrial Pad	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately.
April 25, 2018	Hydraulic Oil	2	Maintenance Shop	Mechanical leak	Spill was contained and contaminated soil picked up and disposed of appropriately.
April 26, 2018	Hydraulic Oil	8	Industrial Pad	Broken Hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
May 5, 2018	Differential oil gear case	3	Batch plant	Gear case oil leak	Remove contaminated snow and ice put it in 2 x 5 gallons pale and disposed of appropriately.
May 5, 2018	Hydraulic oil leak	1	Dion Parking lot	Leaking hose	We shoveled material into a bucket and brought the contaminated material to the landfarm.
May 6, 2018	Hydraulic Oil	10	South Side of A&K Dome	Mechanical leak	Chipped contaminated ice and put into land farm.
May 12, 2018	Diesel	10	DCP1 Road Side	Fuel Tank leak	Contaminated material picked up and disposed of appropriately.

May 20, 2018	Other - unknown oil type	30	Maintenance Shop	Equipment failure	Contaminated soil picked up and disposed of in the landfarm.
May 22, 2018	Diesel	5	Itivia Area	Mechanical leak	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
May 22, 2018	Hydraulic Oil	1	Orbit Yard - Explo Camp	Broken oil tank	They cleaned the oily sport with matting.
May 27, 2018	Fuel	5	SH:84 Surface Drill 2	Leaking hose	Contaminated material picked up and disposed of appropriately.
May 28, 2018	Waste Oil	60	In front of MSB building	Leaking Tote	Contaminated material picked up and disposed of appropriately.
June 1, 2018	Oil	2	By pass road culvert installation	Leaking hose	1 cu ft of contaminated material was recovered and properly disposed of.
June 6, 2018	Coolant	1	North side of construction office	Mechanical leak	Contaminated soil picked up and disposed of in the landfarm.
June 9, 2018	Diesel Fuel	3	Other	Mechanical leak	Install booms in water puddles- soak up material with rags.
June 14, 2018	Diesel	95	Industrial Pad	Overfilling	Contaminated soil picked up and disposed of in the landfarm.
June 14, 2018	Diesel	25	Industrial Pad	Overfilling	Contaminated soil picked up and disposed of in the landfarm.
June 15, 2018	Diesel	3	Process Plant	Leaking tank	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
June 18, 2018	Diesel Fuel	5	Itivia	Broken seal	Contaminated soil picked up and disposed of in the landfarm.
June 18, 2018	Hydraulic Oil	10	Industrial Pad	Mechanical leak	Contaminated soil picked up and disposed of in the landfarm.
June 30, 2018	Oil	3	Site road	Broken oil pan	Install matting tow equipment to the garage, spill been cleaned.
July 4, 2018	Hydraulic Oil	20	Industrial Pad	Leaking hose	Contained the spill and disposed of absorbent pads.
July 4, 2018	Hydraulic Oil	8	Ouest side portal 2	Hose failure.	Installed a new hose and contaminated material picked up and disposed of appropriately.
July 4, 2018	Hydraulic Oil	10	Hydraulic Oil	Hose failure.	Installed new hose and contaminated material picked up and disposed of appropriately.

July 9, 2018	Gasoline	2	Electrical laydown	Leaking tank	used spill pads to soak up fuel and then removed berm and disposed of soil used for berm to landfarm (~4 m3).
July 11, 2018	Hydraulic Oil	5	Other	Leaking hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
July 17, 2018	Hydraulic	10	375 RP3	leaking hose	Contaminated soil picked up and disposed of in the landfarm.
July 26, 2018	Diesel	1	Industrial Pad	Leaking tank	Spill was contained and contaminated soil picked up and disposed of appropriately.
July 31, 2018	Diesel	20	Itivia Area	leaking tank	Grave was scooped with a loader and was brought to the landfarm.
August 4, 2018	Diesel	5	Industrial Pad	Fuel nozzle issue	Spill was contained and contaminated soil picked up and disposed of appropriately.
August 13, 2018	Hydraulic fluid	58	Entrance 375 West	Broken Hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
August 17, 2018	Hydraulic fluid	40	FW2-425-E	Broken Hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
August 20, 2018	Hydraulic Oil	2	Other	Broken O'ring	Spill was contained and contaminated soil picked up and disposed of appropriately.
August 24, 2018	Transmission oil	15	In front of MSB door	Filter casing failed	pick up oil with dedicated absorbent pads brought to HAZMAT.
August 28, 2018	Diesel	2	Site Roads	Left over in piping	Spill was contained and contaminated soil picked up and disposed of appropriately.
September 21, 2018	Transmission Oil	2	WASTE PAD Portal 1	Leaking hose	used spill kit to clean and contain the spill with another operator.
September 24, 2018	Engine Oil	1	Industrial Pad	Mechanical leak	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
October 4, 2018	Hydraulic Oil	5	Transfer Pad	Mechanical leak	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
October 4, 2018	Diesel	50	Other	Tank overflow	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
October 6, 2018	Engine Oil	60	Industrial Pad	Oil Filter came loose	Spill was contained and contaminated soil picked up and disposed of in the landfarm.

October 7, 2018	Coolant	4	Site Roads	Broken radiator	Spill was contained and contaminated soil picked up and disposed of appropriately.
October 24, 2018	Hydraulic Oil	30	Industrial Pad	Broken Hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
October 24, 2018	Antifreeze	10	In front of MSB	Mechanical leak	Spill was contained and contaminated soil picked up and disposed of appropriately.
October 25, 2018	Other	1	Ore Storage	Leaking hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
October 29, 2018	Diesel	40	Paste Plant Bore Hole	Fuel transfer	Spill was contained and contaminated soil picked up and disposed of appropriately.
November 2, 2018	Windshield washer fluid	1	Site Roads	tank overflow	Contaminated snow picked up and disposed of adequately.
November 9, 2018	Antifreeze	3	parking area warehouse office Itivia Site	Mechanical leak	Warehouse clerk removed contaminated snow into drum.
November 16, 2018	Diesel	50	Gas boy	Fuel cap improperly screwed	Spill was contained and contaminated soil picked up and disposed of appropriately.
November 17, 2018	Diesel	25	Tiriganiaq Esker	Frozen trigger valve on nozzle	Spill was contained and contaminated soil picked up and disposed of in the landfarm.
November 19, 2018	Coolant	11	In front of MSB door #5	Coolant leaked from the radiator	Picked up the coolant with dedicated absorbent pads.
December 6, 2018	0w/40	12	M182506	Cracked Hydraulic Cooler	Absorbent pads were put down and contaminated snow picked up and disposed of appropriately.
December 7, 2018	0W/40	10	M182506	Hydraulic hose connection failed	Hose was changed. Material picked up and disposed of properly.
December 15, 2018	Diesel	40	Vent Raise	Frozen trigger valve on nozzle	Contaminated snow picked up and disposed of adequately.
December 28, 2018	Waste Oil	5	Explo Laydown	Leaking tote	Spill was contained and contaminated soil picked up and disposed of in the landfarm,
December 31, 2018	Hydraulic oil	20	Batch Plant	Loose hydraulic hose	Spill was contained and contaminated soil picked up and disposed of in the landfarm.

SECTION 7. MONITORING

As required by Water License 2AM-MEL1631 Schedule B, Item 14:
The results of monitoring related to the Environmental Management and Protection including:

a. Aquatic Effects Monitoring Program;

Refer to section 7.1, all results can be found in Appendix G-1.

b. Metal and Diamond Mining Effluent Regulation (MDMER) Monitoring;

Refer to section 7.2, all results can be found in Appendices H-1 and H-2.

c. Mine site Water quality monitoring, including groundwater monitoring; and

Refer to section 7.3, all results can be found in Appendix H-3.

d. Visual AWAR Water quality monitoring

Refer to section 7.4.

and

As required by Water License 2BB-MEL-1424 Part B Item 6d: ***Tabular summary of all data generated under the Monitoring Program,***

Sampling is no longer required from the water Licence 2BB-MEL-1424, explanation is provided in section 7.3.1.

7.1 AQUATIC ECOSYSTEM MONITORING PROGRAM (AEMP)

Volume 7 of the FEIS for the Meliadine Gold Project (Mine) predicted inputs of nutrients, metals, and major ions to Meliadine and Peninsula Lakes. It was predicted that these inputs would result in minor changes to water and sediment quality in Meliadine Lake, and that any corresponding effects on fish and fish habitat would be negligible (Agnico Eagle 2014). The component sections of the annual AEMP report are designed to characterize changes in measures related to contaminant and nutrient input, and related responses in phytoplankton, benthos, and fish. The purpose of the integrated summary is to synthesize the results for each component to evaluate the overall direction of change to the aquatic ecosystem. The objective of the synthesis is to:

- integrate AEMP findings from all components
- determine the strength of support for each impact hypothesis and effects on the ecosystem
- support decision making for management responses

The integrated summary is part of the overall objective of the AEMP to assess potential mine-related effects on the aquatic ecosystem and to meet regulatory requirements outlined in the Type A Water

License (2AM-MEL1631) and MDMER, while also meeting commitments made during the environmental permitting process. The specific objectives of the AEMP are to:

- determine the short- and long-term effects of the Project on the aquatic receiving environment
- evaluate the accuracy of predictions made in the FEIS, including the final significance statements regarding impact to the aquatic ecosystem
- assess the efficacy of planned mitigation incorporated into the Project design
- collect data required to identify the need for potential additional mitigation of Project effects within a management response framework

The 2018 AEMP program consisted of water quality, sediment quality, benthic invertebrate community, and a phytoplankton targeted study in Meliadine Lake, and water quality monitoring in selected peninsula lakes. The 2018 fish health survey was implemented to meet EEM sampling requirements and was not intended to meet the specific requirements of the Mine's AEMP fish health component (Section 10.1). However, the 2018 fish health results are discussed as part of this integrated summary to evaluate potential mine-related effects on biological components. The next AEMP fish health and fish tissue chemistry program is scheduled for 2021.

The results of the 2018 AEMP study in Meliadine Lake and the peninsula lakes (water quality and phytoplankton only) were evaluated in the context of the key questions proposed for each core component in the AEMP Design Plan (Golder 2016). The key questions and a summary of the results for each component are presented in Table 12.2-3 and discussed below. The results of the effluent chemistry and toxicity testing program are also discussed in the context of the results of the AEMP components, where relevant.

7.1.1 Peninsula Lakes Summary and Conclusions

Changes in some water quality parameters over time were observed in Lakes A8, B7, and D7. However, all parameter concentrations were less than their respective water quality guidelines, were within normal ranges, and aligned with FEIS predictions. The water quality dataset for the peninsula lakes for the pre-construction and construction phase was limited, and potential factors accounting for temporal trends were not identified in this report. A phytoplankton targeted study was also conducted in the peninsula Lakes in 2018, with collection of chlorophyll α data. No findings of significance were identified as part of the 2018 phytoplankton study of the peninsula lakes.

7.1.2 Meliadine Lake Summary

Potential mine-related changes in water quality in Meliadine Lake were observed in the Near-field area in 2018 for specific conductivity, TDS, hardness, several major ions, and a number of total metals; concentrations exceeded the upper bound of their respective normal range and increased in the Near-field and relative to reference areas over time. Water Licence exceedances in the effluent were observed for TDS and total aluminum. However, the exceedance of total aluminum WL limit occurred only in one sample, with other effluent samples noticeably lower in concentration, suggesting that the measured

value may be anomalous. In addition, although total aluminum concentrations were higher in the Near-field area, there was no indication of declining concentrations with distance from the diffuser. Concentrations of a few metals in bottom sediments exceeded the upper bound of their respective normal range, but exceedances were marginal and sediment metal concentrations in the Near-field area did not increase relative to the reference areas over time. Concentrations of water quality parameters were less than it's guidelines.

The 2018 AEMP results indicated that the benthic community was not measurably affected by potential Mine-related changes in water or sediment quality in Meliadine Lake. Lower density and BCI values were observed in the Near-field area (relative to pooled reference areas), but values were within the normal range. Therefore, differences among these areas may be attributed to pre-discharge differences in sediment composition and natural spatial variation. Effects on fish health were not observed in 2018, with the exception of an effect on female condition in the Near-field area relative to Reference Area 1. The magnitude of effect on female condition did not exceed the 10% critical effect size and a similar difference was not observed in supporting energy storage endpoints. No other effects on fish health were reported in 2018. The comprehensive AEMP fish health program was not conducted in 2018 as it is scheduled in 20121 and as such an evaluation of fish tissue was not conducted.

Low Action Levels for toxicological impairment or nutrient enrichment were not triggered by the 2018 AEMP results.

7.1.3 Meliadine Lake Conclusions

The results of the water quality monitoring program suggest a Mine-related effect on water quality in the Near-field and Mid-field areas. Baseline (pre-2015) and pre-construction and construction phase (2015 to 2017) water quality data were evaluated as part of the normal range screening (Appendix 6B). The assessment indicated a change in major ion concentrations in the Near-field area, and a potential change in the Mid-field area compared to the 2015 to 2017 data, relative to pre-2015 data collected periodically between 1995 and 2013 in Meliadine Lake. This evaluation, in combination with the qualitative temporal analysis conducted as part of the 2018 AEMP water quality program (Section 6.4.5), suggest a potential pre-construction effect on water quality, as well as a potential effect on water quality for selected parameters during treated mine effluent discharge in 2018. However, the changes in water quality in Meliadine Lake were within the conditions predicted by FEIS. Mine-related effects on sediment quality were not observed in 2018.

Observed changes in key water quality parameters in 2018 did not translate into effects in the biological components in 2018, with respect to major ions and total metals. However, the nutrient enrichment effect observed in prior AEMP monitoring years continued to be observed in some biological components in 2018. A phytoplankton targeted study was conducted as part of the 2018 AEMP monitoring program; this program is not a formal component under the AEMP Design Plan (Golder 2016) but was planned as a targeted study prior to 2019 to evaluate the usefulness of plankton monitoring for future monitoring. Higher chlorophyll α concentrations and phytoplankton biomass, and unique phytoplankton community structure were observed in the Near-field area (relative to Mid-field and reference areas), indicating potential nutrient enrichment originating from the exploration camp STP discharge. Chlorophyll α and phytoplankton biomass were within the ranges observed during the pre-construction phase of the Mine,

suggesting that nutrient enrichment may have begun prior to the discharge of treated mine effluent from MEL-14.
Mine-related effects on the benthic invertebrate community were not observed in 2018. However in 2016, mean density fell outside of the upper bound of the normal range in the Near-field area, potentially due to the influence of exploration camp STP discharge. Total phosphorus loadings approximately doubled in sewage effluent in 2016 (corresponding to an increase in Mine population), and held steady in 2017, prior to declining in 2018 (Section 2.6.2). Total Phosphorus (TP) loadings did not correspond to observed spatial or temporal TP water quality trends in the Near-field area but median TP concentrations were slightly elevated in 2016 and 2017, relative to 2015 and 2018. An effect on female condition factor observed during the fish health program also aligns with potential nutrient enrichment in the Near-field area.

Overall, nutrient enrichment in Meliadine Lake may have begun in 2016 with expansion of the Mine population and increased STP nutrient loading into the lake. Effects observed in phytoplankton, benthos and fish biological components are consistent with mild nutrient enrichment. Although effects in benthos were not observed in 2018, effects on phytoplankton were evident in the Near-field area despite a reduction in sewage TP loadings; TP loadings in 2018 were lower relative to 2016/2017 loadings and relative to baseline (i.e., 2013 and 2015). Additionally in 2018, a stimulatory effect on freshwater algae growth (*Pseudokirchneriella subcapitata*) was observed during sublethal toxicity testing with effluent; this further supports the potential for nutrient enrichment in Meliadine Lake as a result of Mine effluent discharge. Lastly, increased major ion and some total metal concentrations in lake water in the Near-field area were observed, and are indicative of a Mine-related effect.

Similar to nutrient enrichment, major ion concentrations and increases in selected total metal concentrations were observed in the Near-field area during pre-construction and continued to increase during the construction phase. It is likely that the exploration camp STP discharge contributed to increases in these parameters. However, concentrations are within the range of FEIS predictions and have not translated into increased concentrations in the sediment, or effects on biological components. Future AEMP monitoring programs will continue to monitor for spatial and temporal trends.
The complete AEMP/EEM cycle 1 report can be found in Appendix G-1.

7.2 MDMER AND EEM SAMPLING

This section relates to the monitoring programs conducted under the Metal and Diamond Mining Effluent Regulations (MDMER) and its Environmental Effects Monitoring (EEM) Studies. Reporting requirements for MDMER have been submitted directly to Environment and Climate Change Canada; results are presented herein to comply with the NWB Type A Water License A list of the sampling location GPS coordinates can be found in table 7.1. Certificates of Analysis for EEM are included in Appendix H1.

Table 7.1 MDMER and EEM GPS coordinates

Station ID	GPS coordinates
MEL-14 (Effluent characterization)	63˚2'15.5"N 92˚13'06.3"W
MEL-13 (Water Quality Monitoring Exposure Area)	63˚01'44.6"N 92˚09'14.6"W
MEL-03-01 (Water Quality Monitoring Reference Area)	63˚06'52.2"N 92˚20'23.6"W

Discharge of treated effluent from CP-1 to Meliadine Lake started June 21st and ended September 3rd 2018. A total of 642,521 m^3 of water was discharged. As requested in Schedule 6 of the Metal and Diamond Mining Effluent Regulations, monthly mean concentrations, pH range and volume of effluent (generated) can be found in Appendix H-2. Monitoring results for MDMER discharge are in the table 7.2 below. No exceedance occurred in 2018 for the MDMER and EEM sampling

Table 7.2 2018 Effluent characterization results

		As	Cu	Cn	Pb	Ni	Zn	TSS	Ra 226	pH
Date	units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
	Limits for grab samples	1.00	0.60	2.00	0.40	1.00	1.00	30	1.11	
24/06		0.00205	0.00225	<0.0005	0.0003	0.0031	0.0075	5	<0.005	7.59
01/07		0.00110	0.00129	<0.0005	<0.0002	0.0025	0.0054	10	<0.005	7.11
10/07		0.00117	0.00139	<0.0005	<0.0002	0.0025	0.0055	5	<0.005	7.51
15/07		0.00129	0.00130	<0.0005	<0.0002	0.0022	<0.005	9	<0.005	7.32
23/07		0.00178	0.00207	<0.0005	<0.0002	0.0025	0.0086	21	0.007	7.34
29/07		0.00185	0.00104	<0.0005	<0.0002	0.0023	<0.005	8	<0.005	7.00
05/08		0.00210	0.00112	<0.0005	<0.0002	0.0028	<0.005	8	<0.005	7.26
13/08		0.00222	0.00850	<0.0005	0.00022	0.003	0.0085	10	<0.005	7.37
19/08		0.00295	0.00099	<0.0005	<0.0002	0.0034	0.0067	11	0.008	7.18
26/08		0.00028	<0.0005	<0.0005	<0.0002	<0.001	<0.005	1	<0.005	6.80
03/09		0.00237	0.00062	<0.0005	<0.0002	0.0027	<0.005	14	<0.005	7.08

Table 7.3 Monthly Mean Concentrations, pH Range and Volume of Effluent (Generated)

Month	As (mg/L)	Cu (mg/L)	Cn (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TSS (mg/L)	Ra 226 (Bq/L)
Limits	0.50	0.30	1.00	0.20	0.50	0.50	15.00	0.37
January	ND	ND	ND	ND	ND	ND	ND	ND
February	ND	ND	ND	ND	ND	ND	ND	ND
March	ND	ND	ND	ND	ND	ND	ND	ND
April	ND	ND	ND	ND	ND	ND	ND	ND
May	ND	ND	ND	ND	ND	ND	ND	ND
June	0.00205	0.00225	0.00025	0.0003	0.0031	0.0075	5	0.0025
July	0.001438	0.001418	0.0025	0.000146	0.0024	0.0049	10.6	0.0034
August	0.001888	0.002715	0.0025	0.00013	0.002425	0.00505	7.375	0.003875
September	0.00237	0.00062	0.0025	0.0001	0.0027	0.0025	14	0.0025
October	ND	ND	ND	ND	ND	ND	ND	ND
November	ND	ND	ND	ND	ND	ND	ND	ND
December	ND	ND	ND	ND	ND	ND	ND	ND

ND: No discharge

7.3 MINE SITE WATER QUALITY

As required by Water License 2AM-MEL Schedule B-13: The results and interpretation of the Monitoring Program in accordance with Part D and Part I and Schedule I.

7.3.1 ***Licensed Water Sampling Stations***

Below is the monitoring stations from water Licence 2AM-MEL1631 and 2BB-MEL-1424. All sampling results can be found in Appendix G-3. For each station a summary is provided and for stations with sufficient data, an interpretation of the data is given. Also, for all stations regulated by MDMER or Licence limits, a graph with critical parameters was added. All monitoring stations results can be found in Appendix H-3.

7.3.1.1 ***MEL-1 Raw water supply intake at Meliadine Lake***

MEL-1 is the raw water supply intake at Meliadine Lake for the exploration camp. No sampling is required only volume as provided in section 4.

7.3.1.2 ***MEL-2 Raw water supply intake at Pump, A8 or other Lakes***

MEL-2 is the raw water supply intake at A8 or other lakes. No sampling is required only volume as provided in section 4.

7.3.1.3 ***MEL-5 Bermed Fuel Containment Facilities***

MEL-5 was the point of discharge for the bermed fuel containment facilities for the exploration camp. It was decommissioned so no sampling is required anymore.

7.3.1.4 ***MEL-6 Landfarm Treatment Facility***

MEL-6 is the effluent from the Landfarm Treatment Facility prior to release. The landfarm is not decommissioned yet but no water was released since 2016 as the water is transferred to the landfarm oil separator system and treated before being discharged in CP-1.

7.3.1.5 ***MEL-7 Effluent from Exploration camp STP***

MEL-7 is the final effluent discharge from the biodisk at the exploration camp. Since November 2017, the treated water from the exploration STP is trucked to CP-1. Monitoring for this station still occurs to ensure the efficiency of the treatment system but no discharge occurs anymore directly to Meliadine Lake.

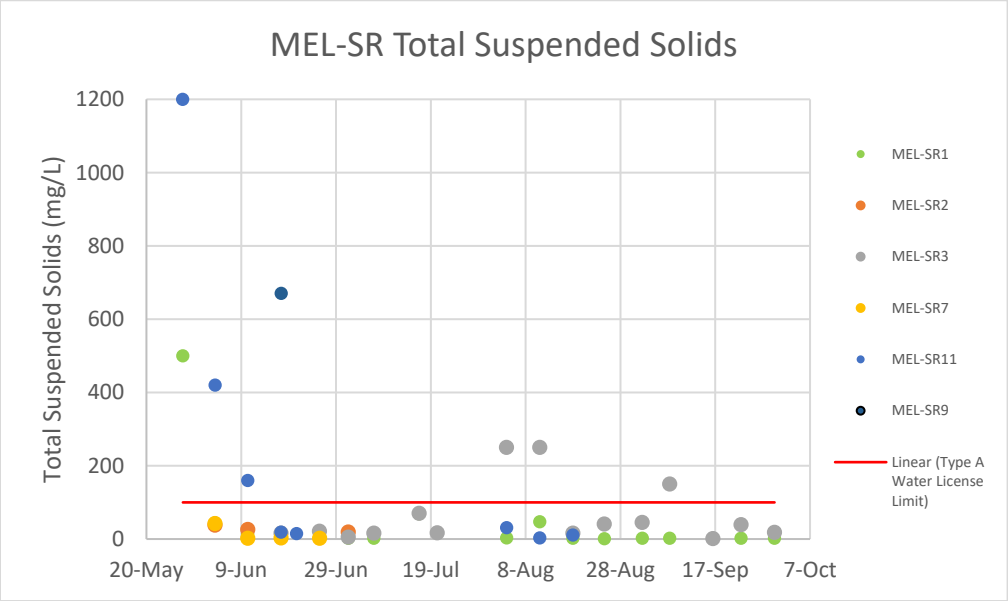
7.3.1.6 ***MEL-8 Point of discharge or runoff from the Non-Hazardous Waste Landfill***

MEL-8 was the point of discharge from the non-hazardous waste landfill for the exploration camp. It was decommissioned so no sampling is required anymore.

7.3.1.7 ***MEL-SR-1-TBD***

MEL-SR-TBD are surface runoff – runoff downstream of construction areas at Meliadine Site and Itivia Site, seeps in contact with roads, earthworks and any runoff and/or discharge from borrow pits and quarries. These are regulated monitoring stations in the water licence which includes discharge limits that must be achieved to maintain compliance.

Figure 7.1 TSS results for MEL-SR samples



In 2018, a few TSS exceedances occurred at the Itivia laydown area during freshet. A sediment trap has been built to minimize additional TSS flow and this area will be further investigated in 2019. Silt fences and straw logs have also been installed upstream and downstream of the site and were inspected weekly. A third party consultant has inspected the area to recommend improvements to mitigate and reduce erosion and sediment control. The snow management plan has been revised and some work is planned to improve the TSS management in 2019.

However, it's important to note that sampling also occurred upstream of Agnico Eagle Lease showing the upstream contribution of TSS prior to arriving on Agnico Eagle site exceeded licence requirements. It is believed that the majority of the TSS that was observed downstream of Agnico Eagle Lease was a result of sediment generated upstream of the lease boundary. Monitoring of the area will be done during freshet and a reassessment will be done to see if other stakeholders need to be included in this project. Samples were also taken from the shore in the bay (MEL-SR-03) as a background sample to allow for comparison in between the surface runoff and the bay itself.

7.3.1.8 ***MEL-11 Water Intake***

MEL-11 is the water intake from Meliadine Lake. It is an aquatic monitoring location which is subject to compliance assessment to confirm that sampling is carried out using established protocols, including quality assurance/quality control provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB.

7.3.1.9 ***MEL-12 Water treatment plant (Pre-treatment)***

MEL-12 is sampled in the effluent water treatment plant (EWTP) (pre-treatment) sampling port with the water coming from CP1. The sample is not taken directly in the pond. It is a verification monitoring program location which is to be carried out for operational and management purposes by the Licensee.

Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.1 ***MEL-03-01 Reference area in Meliadine Lake (MDMER reference station)***

MEL-03-01 is sampled in Meliadine Lake. It is also the MDMER reference station for final discharge. It is a general aquatic monitoring location which is subject to compliance assessment to confirm sampling is carried out using established protocols, including quality assurance/quality control provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB. Figure 7.2 to 7.4 below show the analytical trends of interest for MEL-03-01 for 2018

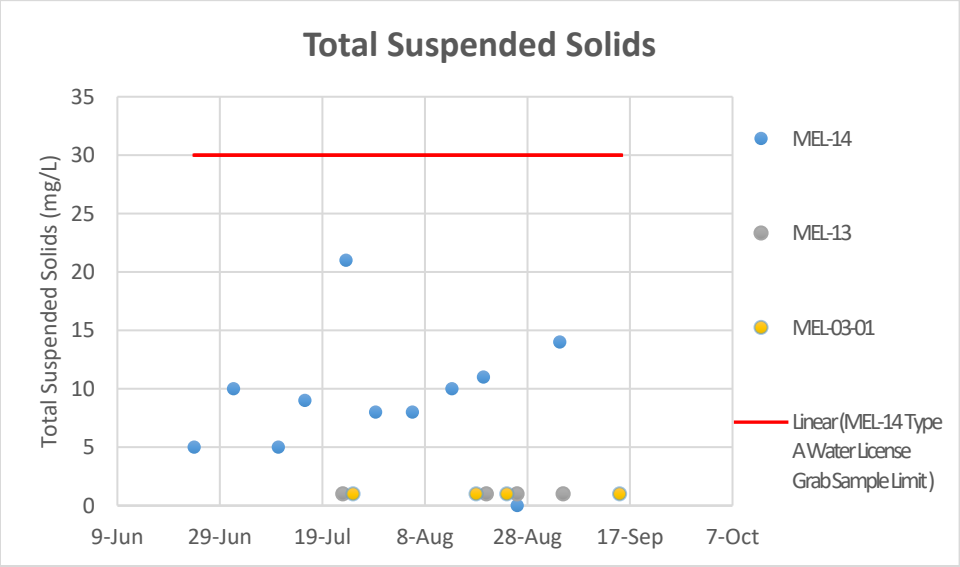
7.3.1.2 ***MEL-13 Mixing Zone in Meliadine Lake (MDMER exposure station)***

MEL-13 is sampled in the mixing zone in Meliadine Lake. It is also the MDMER exposure station for final discharge. It is a general aquatic monitoring location which is subject to compliance assessment to confirm sampling is carried out using established protocols, including quality assurance/quality control provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB. Figure 7.2 to 7.4 below show the analytical trends of interest for MEL-13 for 2018

7.3.1.3 ***MEL-14 Water treatment plant (Post-treatment)***

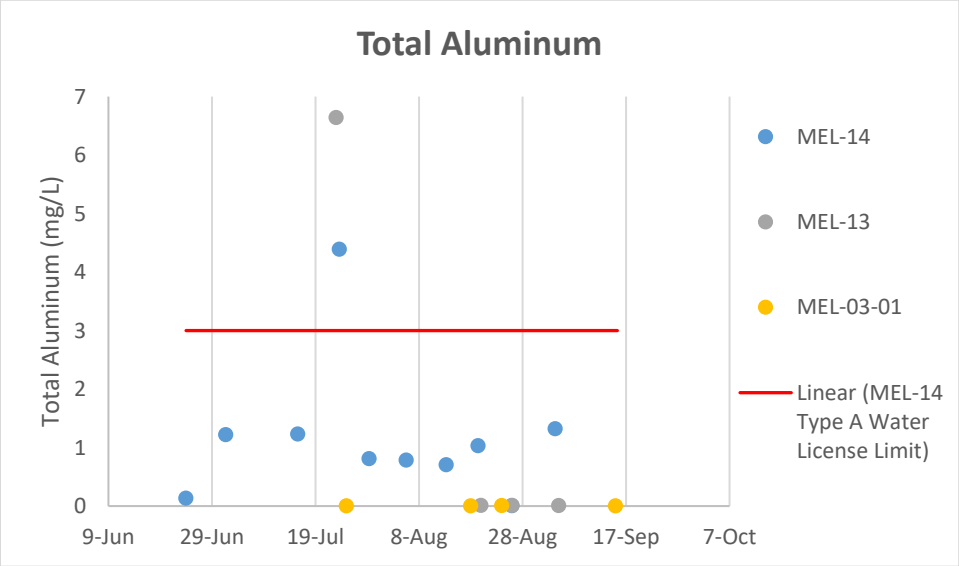
MEL-14 water originates from CP-1 and is sampled in the effluent water treatment plant (EWTP) (post-treatment) prior to the water being discharged to the environment. It is a regulated monitoring station in the water licence and in the MDMER regulation. It includes discharge limits that must be achieved to maintain compliance. Figure 7.2 to 7.4 below show the analytical trends of interest for MEL-14 for 2018.

Figure 7.2 TSS results for MEL-03-01, MEL-13 and MEL-14 samples



In 2018, the TSS results for MEL-14 were stable with no significant increase or decrease of concentration. The yearly average concentration was 9.27 mg/L and the highest result was 21 mg/L. No exceedance occurred in 2018 for this parameter with all daily and monthly results within permitted limits. For MEL-13, all TSS results were 1 mg/L and for MEL-03-01, all results were below the detection limit of 1 mg/L.

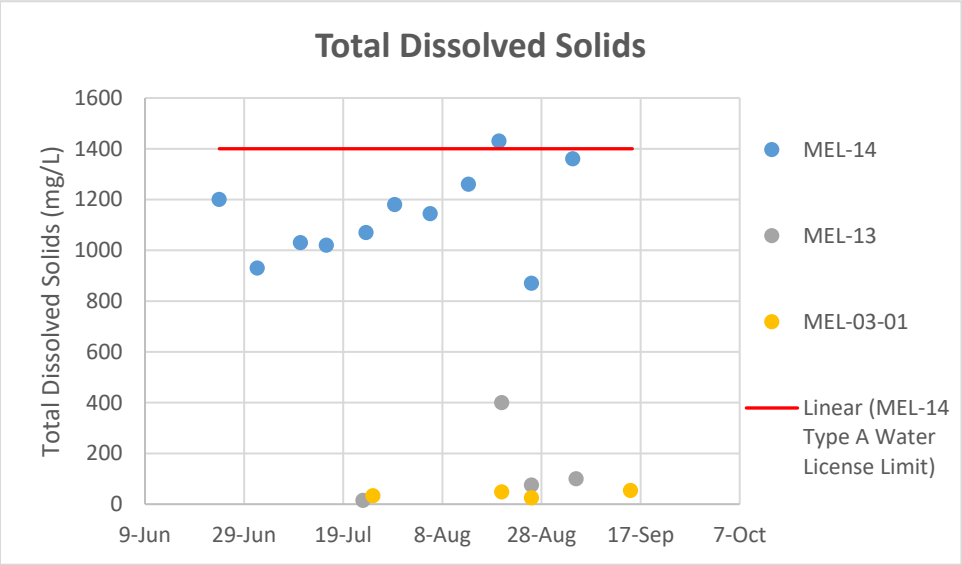
Figure 7.3 Aluminum results for MEL-03-01, MEL-13 and MEL-14 samples



In 2018, the aluminum results for MEL-14 were stable with no significant increase or decrease of concentration except for one sample. On July 23rd, a sample from the final discharge point (MEL-14) was collected and sent for analysis. The results were received and the total Aluminum concentration exceeded those outlined in the 2AM-MEL-1631 Type A Water Licence Part F Item 3. The result was 4.39 mg/L, which exceeds the Licence limit of 3 mg/L. The result for dissolved aluminum for the same sample is 0.0994 mg/L. The exceedance for final effluent discharge for total aluminum concentration is assumed to be a laboratory error. When the exceeded criteria was observed, the lab was requested to re-analyze the sample to determine if the reported concentration was a result of laboratory error; however, the sample had been disposed of and re-analysis was not possible at the date of the request. A uncharacteristically high result (6.64 mg/L) for the same parameter was obtain the same day for a sample taken in Meliadine Lake (MEL-13) which is more than 600 times the average of the other sampling results for the same location.

The average concentration for aluminum at MEL-14 in 2018 was 1.1 mg/L and the highest result was 4.39 mg/L. The average concentration for aluminum at MEL-13 in 2018 was 1.67 mg/L (due to the uncharacteristically high result of 6.64 mg/L. The average concentration for aluminum at MEL-03-01 in 2018 was 0.004 mg/L and the highest result was 0.007 mg/L

Figure 7.4 TDS results for MEL-03-01, MEL-13 and MEL-14 samples



In 2018, the TDS results for MEL-14 increased progressively during summer as expected. The dry and windy conditions amplified the evaporation process which increased the TDS concentration. The stratification between saline and freshwater likely also affected the TDS concentration as pumping occurred. On August 19th a sample from the final discharge point (MEL-14) was collected and sent for analysis. The results were received and the total dissolve solid (TDS) concentration exceeded those outlined in the 2AM-MEL-1631 Type A Water Licence Part F Item 3. The result was 1430 mg/L, which exceeds the Licence limit of 1400 mg/L. A duplicate was taken that day and the result was 1400 mg/L.

The average concentration for TDS at MEL-14 in 2018 was 1135 mg/L and the highest result was 1430 mg/L. For MEL-13 the average concentration in 2018 was 148 mg/L and the highest result was 400 mg/L. The average concentration at MEL-03-01 in 2018 was 40 mg/L and the highest result was 54 mg/L.

All exceedances mentioned above were reported to the 24-hour spill reporting line as required by the Government of Nunavut's, Environmental Protection Act, paragraph 5.1(a), the conditions under the Nunavut Water Board License 2AM-MEL1631 Water Licence, part H, item 8(b).

The Environment Department at Meliadine implemented in 2018 a data management system for laboratory results. The system should mitigate delays with reporting criteria exceedances and improve the timing for requests that may be made if re-analysis is required at the laboratory.

7.3.1.4 ***MEL-15 Local Lake E3***

MEL-15 is sampled in lake E3 located west of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.5 ***MEL-16 Local Lake G2***

MEL-16 is sampled in lake G2 located north west from the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.6 ***MEL-17 Local Pond H1***

MEL-17 is sampled in lake H1 located east from the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.7 ***MEL-18 Local Lake B5***

MEL-18 is sampled in lake B5 located south-west from the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.8 ***MEL-19 CP-2***

MEL-19 is sampled in CP-2 (collection pond) which is the collection of the natural catchment drainage from the outer berm slopes of the Landfarm and industrial pad. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee. No water accumulate in this area in 2018, therefor no sample was taken.

7.3.1.9 ***MEL-20 CP-3***

MEL-20 is sampled in lake B28 and will be sampled in CP-3 (collection pond) once construction is completed. CP-3 will be the collection of drainage from dry stacked tailings located west of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.10 ***MEL-21 CP-4***

MEL-21 is sampled in lake B8 and will be sampled in CP-4 (collection pond) once construction is completed. CP-4 will consist of the drainage collection from the Waste Rock Storage Facility (WRSF1) located west of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.11 ***MEL-22 CP-5***

MEL-22 is sampled in CP-5 (collection pond) which consists of the drainage from WRSF1 and WRSF 2. CP-5 previously was lake A54 and is located south of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.12 ***MEL-23 CP-6***

MEL-23 is sampled in lake H19 and will be sampled in CP-6 (collection pond) once construction is completed. CP-6 will consist of the drainage from WRSF3 located east of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

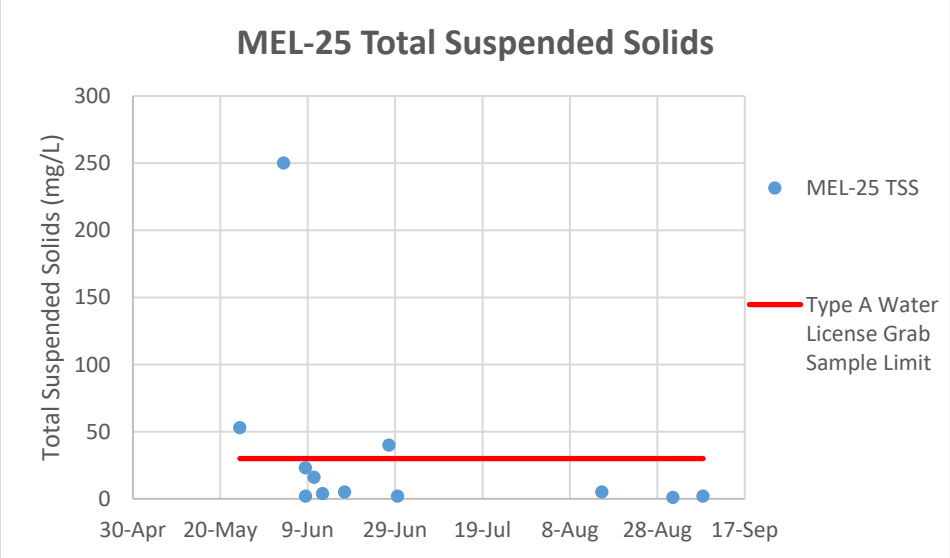
7.3.1.13 ***MEL-24 Seepage from the landfill***

MEL-24 is seepage from the landfill between the landfill and Pond H3. The natural depression at this location can also drain water not related to seepage from the landfill. It is a verification monitoring location which is sampled for operational and management purposes by Licensee. Monitoring parameters may vary between locations. Monitoring parameters and locations are internal for Licensee.

7.3.1.14 ***MEL-25 Secondary Containment at the Itivia Fuel Storage Facility***

MEL-25 is sampled from the secondary containment area at the Itivia Site Fuel Storage and Containment Facility. It is a regulated monitoring station in the water licence. It includes discharge limits that must be achieved to maintain compliance.

Figure 7.5 TSS results for MEL-25 samples



Two notices for discharge from MEL-25 were sent in 2018 to the appropriate agencies. The first notice was sent on May 24th pending water quality. Due to high TSS results, the discharge was postponed until the maximum average concentration respected for the License requirement was achieved. A total of 2,205 m³ was discharged using a filtration bag for TSS removal. Another notice was sent on August 20th once again pending on water quality. All results met license criteria due to an internal misunderstanding, the water was trucked and discharge in CP-1.

7.3.2 Underground sampling

Water samples collected in 2018 in the underground mine include those taken from DDHs intersecting the fractured rock groundwater network and sumps.

DDH water samples were collected and analyzed for a full suite of water quality parameters to provide a representation of the background “non-contact” groundwater quality, which is the primary contributor of water received by the underground mine. Additional to these samples was the collection of 6 monthly water samples from unique DDHs located in lower elevation zones of the mine within the cryopeg. These samples were analyzed for fish toxicity, measuring LC50 of Gasterosteus aculeatus (Threespine stickleback).

Sump water samples were collected monthly for water quality analysis from level 75 and level 125 of the underground mine. These samples represent a combination of the contact water generated by the underground mine, including groundwater, make-up water, drilling water, and freshet inflow.

Underground mine sampling is a verification monitoring program carried out for operational and management purposes by the Licensee.

The Saline Water Treatment Plant (SWTP) treats water from the underground and was commissioned during the 4th quarter of 2018. Monitoring stations (SWTP-IN and SWTP-OUT) exist at the inlet and outlet to the SWTP. This is a verification monitoring program carried out for operational and management purposes by the Licensee.

7.3.3 QAQC Sampling

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 analytical chemistry analyses are performed by an accredited laboratory. In most cases, these analyses will be performed by Maxxam, an accredited facility located in Ottawa, Ontario. Agnico Eagle may also require the services of other laboratories, such as Maxxam in Edmonton, AB, SGS in Lakefield, ON and H2Lab in Val d’Or, QC. All data from these labs undergoes a rigorous internal QA/QC process, including the use of spiked samples and duplicate samples.

All sublethal 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.

Field blanks are 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.

- MDMER and EEM monitoring programs consisted of: 3 duplicate samples and 3 field blanks which were collected from a total of 24 samples, representing 12.5% of samples taken;
- STP monitoring program consisted of: 8 duplicate samples and 8 field blanks which were collected from a total of 54 sampling events, representing 14.8% of samples taken; and
- Surface water monitoring programs consisted of: 24 duplicate samples and 11 field blanks which were collected during the year.

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 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 method 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 QA/QC 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.

For field measurements, the following equipment is used:

- Hach Meter (turbidity);
- Oakton PCS35 Meter (pH and conductivity); and
- Eureka Mantha 20+ Meter (pH, dissolved oxygen, temperature and conductivity).

QA/QC methods and results for specific field programs are discussed separately in their respective reports.

7.4 SEEPAGE

As required by Water License 2AM-MEL1631 Schedule B, Item 8*: Summary of quantities and analysis of Seepage and runoff monitoring from the Landfill, Landfarm, Waste Rock Storage Facilities, Borrow pits and Quarries.

In 2018, no seepage was observed from the landfill or the landfarm. The Tailing Storage Facility and the Waste Rock Storage Facility are not built yet and no seepage was observed from borrow pits or quarries

7.5 VISUAL AWAR WATER QUALITY MONITORING

Pre-freshet and freshet inspections were conducted at crossings along the AWAR and the Bypass road at Itivia in 2018. These inspections are conducted to document potential hazards like blockages impeding free flow of water resulting in ponding, washing out of roads and unintentional rerouting of flow, detecting the presence/absence of flow, erosional concerns and turbidity plumes. The clearing of the Char River, Meliadine River and M5 crossing started on May 4th. No issues were observed during the inspections conducted on May 17th, 27th and June 1st and 3rd, 2018. Starting June 6th, some straw logs were installed on the downstream side of the road at km 24 and 28 to prevent TSS migration. Inspections occurred daily from June 9th to June 14th and straw logs were added at km 19 and 22. A sample was taken on June 10th to monitor the water near the Itivia by-pass road. The TSS result was very low, 2 mg/L.

Weekly inspections were also conducted along the AWAR throughout the year. During the freshet and open water season, any visual turbidity plumes or erosion along the AWAR, culverts or bridges are documented by Environmental Technicians. No issue was raised in 2018

7.6 BLAST MONITORING

During the 2017 surface blasting campaign, the mine utilized an Instantel Minimate Pro4 seismograph to record blast vibration. This device was tested in 2018, but due to a technical issue, the device was required to be sent south for repair and calibration. Agnico Eagle then rented two (2) Nomis Mini Supergraph II from Geophysique GPR International Inc. which arrived on site in December 2018. Hence no blast monitoring was able to be completed during 2018 as all blasts were already performed. In 2018, 13 surface blasts occurred (5 at Itivia and 8 at mine site). At Itivia's quarry, blast size were conducted according to the seismograph monitoring conducted in 2017 where no exceedance were recorded. All blast conducted in 2018 used less powder and the blast were smaller in size. For the mine site blast, monitoring started in January 2019. As of March 2019, the average peak particle velocity (mm/s) for Meliadine lake is 3.2, for Lake B5 1.8 and for Lake B7 2.0. These readings are taken from the shore closest to the blast for each lake which is very conservative regarding the exact peak particle velocity in a spawning bed. The average pressure (kPa) for Meliadine lake is 4.14, for Lake B5 2.41 and for Lake B7 2.60. Monitoring for surface and underground blast will continue in 2019 and a monitoring report will be included in the 2019 annual report

7.7 NOISE MONITORING

The objective of the noise monitoring program at Meliadine is to measure noise levels at four previously determined monitoring locations over at least two 24 h periods. In 2018 Agnico Eagle conducted two successful rounds of monitoring for stations NPOR006 and NPOR017, and one successful round of monitoring for NPOR008 and NPOR014. However, high winds (both measured and audible) and frequent bird calls in close proximity to the noise meter substantially reduced the quality of the data for comparison to FEIS predictions.

A summary of the available noise monitoring results is provided in Table 7.3. For station NPOR006 and NPOR017, insufficient valid data was available after initial and/or secondary filtering to calculate 24-h or night-time L_{eq} values. For station NPOR008, only a night-time L_{eq} could be calculated after initial filtering, and the data exceeded the design target of 40 dBA. However, sound recordings were dominated by wind and wave action, and no human-associated activities were audible, so a secondary filtering was not

performed. The calculated L_{eq} value is not considered comparable to FEIS predictions or design targets, which assume limited background noise. Similarly for NPOR014, the measured 24-h and night-time L_{eq} values exceeded noise monitoring criteria and the design target, respectively, but no mine-related activity is ongoing in this area, and sound recordings were dominated by wind, waves, and near-continuous bird calls for significant portions of the dataset.

Table 7.4 Summary of noise monitoring results in 2018

Location	Monitoring Start	Monitoring End	Noise Monitoring Criterion - $L_{eq(24\ h)}$ (dBA)	FEIS Prediction - $L_{eq(24\ h)}$ (dBA)	Measured $L_{eq(24\ h)}$ (dBA)	Measured $L_{eq\ (nighttime)}$ (dBA)
NPOR006	08/22 11:08	08/22 21:44	45	39.8	NA	NA
	09/04 11:38	09/07 16:37	45	39.8	NA	NA
NPOR008	08/28 17:42	08/29 5:53	45	41.7	NA	*64.5**
NPOR014	08/25 16:26	08/28 16:27	45	44.7	*63.5**	*49.9**
NPOR017	08/10 12:07	08/12 23:59	45	43.4	NA	NA
	09/09 10:11	09/09 21:50	45	43.4	NA	NA

"NA" indicates insufficient valid data was available after filtering. *No mine activity is audible at these remote sites, so measured values are assumed representative of baseline; no filtering on the basis of sound recordings was performed.

Overall, a very limited dataset was available for calculation of 24-h and night-time L_{eq} values in 2018. This was generally due to a tendency towards sub-optimal weather conditions, and subsequent filtration of the data. The data collected in 2018 suggests that measured background sound levels in this area may regularly exceed those assumed during the FEIS (35 dBA), likely due to predominant high winds and wave action on the shore of Meliadine Lake. Particular care will be taken in the future to ensure monitoring is conducted when wind speeds are at their lowest, to reduce the significant wind and wave noises contributing to background sounds. Timing monitoring events earlier in the season may also help reduce the frequency of bird calls which were especially dominant in recordings this year, and which consistently contributed to recorded sound peaks. Continued use of a far-field reference station such as NPOR014 will be considered, in order to better define background noise levels in this area.

The following actions were planned for 2018 and responses of Agnico are indicated:

- Additional efforts will be made to conduct monitoring at NPOR006 while the cabin is unoccupied.
    - Attempts were made to fulfill this objective, but the cabin at NPOR006 is regularly occupied and was in use at the time of noise surveys. Agnico will conduct reconnaissance at nearby station NPOR005 (according to the Noise Abatement and Monitoring Plan) in 2019 to determine occupancy rates, and will conduct monitoring at this station if feasible.

The following actions are planned for 2019:

- Noise monitoring surveys will be conducted earlier in the ice-free season when wind speeds and animal interference (bird calls) are minimized.

- Weather data will be reviewed during or immediately following noise monitoring events to estimate the proportion of usable data and the need for supplemental monitoring.
- Reconnaissance and monitoring (if feasible based on occupancy) will be conducted at NPOR005, since high occupancy rates at NPOR006 tend to interfere with assessments of mine-related noise in this location. Monitoring will also be conducted at NPOR006.
- Monitoring will focus on NPOR005, NPOR006, NPOR008 and NPOR017. Since activities at the Discovery Pit are not ongoing, monitoring is not required at NPOR014. However, data will be collected at this station if time and weather conditions permit.

The complete Noise report can be found in Appendix H-4.

7.8 AIR

7.8.1 Air Quality monitoring

Through ambient air quality monitoring program, Agnico Eagle aims to measure airborne particulates, dustfall, and the gaseous compounds (NO_2 and SO_2) using a combination of active and passive sampling methods. In accordance with the Air Quality Monitoring Plan, monitoring in 2018 included analysis of dustfall in seven locations, as well as NO_2 and SO_2 in two locations, over one month averaging periods throughout the year. Active sampling of total suspended particulates (TSP), $PM_{2.5}$, and PM_{10} began in December 2018. Available results for all parameters were compared to regulatory guidelines and Final Environmental Impact Statement (FEIS) predictions, and spatial and temporal trends were assessed.

Dustfall results are compared to Alberta's Ambient Air Quality Guidelines (June, 2016) for recreational and industrial areas, for context. In 2018, 2 of 36 samples exceeded the recreational area guideline (DF-3, 25 m from the All Weather Access Road), but no samples exceeded the industrial area guideline. Results indicate very low rates of dustfall overall, despite elevated traffic compared to FEIS predictions. No quantitative predictions were made for dustfall in the FEIS.

Suspended particulates (TSP, $PM_{2.5}$, and PM_{10}) were analyzed in two locations using Partisol air samplers beginning in December, 2018. All available results were below regulatory guidelines (Government of Nunavut Ambient Air Quality Standards/CCME Canadian Ambient Air Quality Standards /BC Ambient Air Quality Objectives) and were below maximum concentrations predicted in the FEIS.

Calculated annual average concentrations of NO_2 and SO_2 were well below the Government of Nunavut Ambient Air Quality Standards, and were below FEIS maximum predicted values. This was the second full year of monitoring for gaseous compounds, and no clear spatial or temporal trends were observed. As described in the Air Quality Monitoring Plan, a permanent weather station was installed at the Meliadine site, and daily averages for wind speed, direction, temperature, solar radiation, and rainfall are provided.

Since monitoring results in 2018 were within applicable air quality criteria and FEIS predictions, no additional adaptive management measures are planned.

Air quality monitoring discussion for the AWAR is provided in section 10.3. As for onsite air monitoring, during landfill activities such as topping and capping, visual monitoring will occur and if deemed necessary, water will be applied as a mitigation measure for dust. Snowpack survey is planned to be conducted during the 2018-2019 winter. Early 2019, as agreed with a senior engineer from the GN, samples for diesel exhaust particulate underground were completed as an indicator for both acrolein and aldehyde and all samples came back well below the occupational exposure limits. This is a good indication of low concentrations of all other contaminants associated with underground work. Samples will be collected for aldehydes in 2019. Acrolein is very unlikely to be present therefore it is deemed unnecessary to sample for it unless there is some indicator that it may be present in the mine.

The air monitoring full report can be found in Appendix H-5.

7.8.2 Greenhouse Gas Emissions

Estimated greenhouse gas emissions for the Meliadine site as reported to Environment Canada's Greenhouse Gas Emissions Reporting Program in 2018 was 62.05 kt/yr of CO_2e, which is lower than the FEIS maximum predicted emission rate of 304 kt/yr of CO_2e. Estimated GHG emissions from the additional marine operations at Rankin Inlet was approximately 13 kt/yr of CO_2e in 2018 (included in the 2018 total). The estimated greenhouse gas emissions for the Meliadine in 2018 is higher than the value obtained in 2017 (39.48 kt/yr of CO_2e) due to the increased activities on site. This amount is based on the amount of fuel consumed from the project reserves and therefore only project-related traffic is calculated. The amount of fuel oil, diesel, gasoline, explosives and propane are calculated and adjusted with emission factors to transfer in tonnes of CO_2, CH_4 and N_2O. These are combined to give the amount in kt/yr of CO_2e. A Greenhouse Gas Reduction Plan was submitted to the NIRB in 2019 including:

- An estimate of the Project's GHG baseline emissions;
- A description of monitoring measures to be undertaken, including the methods, frequency, parameters, and a description the analysis; and
- A description of reduction initiatives planned and taken, to reduce project-related GHG emissions over the Project lifecycle.

The Greenhouse Gas Reduction Plan can be found in Appendix I-1.

7.8.3 Climate

A permanent weather station was installed at the Meliadine site. The station records monthly data for the average, maximum and minimum temperature, the average and maximum wind speed and the total, daily average and maximum precipitation which can be found in table 7.4.

Table 7.5 2018 Monthly climate data

Date	Temperature Average	Temperature Max	Temperature Min	Wind Speed Average	Wind Speed Max	Total Precipitation	Daily Average Precipitation	Max Daily Precipitation
	°C	°C	°C	m/s	m/s	mm	mm	mm
January	-28.8	-14.6	-37.0	17.4	68.0	7.9	0.25	3.0
February	-35.2	-16.9	-46.8	15.3	58.7	10.6	0.38	3.8
March	-21.6	-4.2	-36.4	17.6	67.7	13.2	0.43	4.6
April	-17.3	1.8	-33.7	20.1	72.0	8.8	0.29	2.8
May	-9.4	1.7	-23.2	22.7	73.6	38	1.23	8.6
June	3.6	17.1	-8.4	16.6	62.4	28.4	0.95	20
July	13.0	27.5	-0.1	15.6	66.9	15.8	0.51	6
August	9.7	20.7	2.0	23.3	88.7	52.8	1.70	16
September	2.2	13.4	-5.8	18.2	70.3	19	0.63	5.4
October	-6.9	2.9	-27.1	17.5	66.5	24.6	0.79	6.8
November	-21.8	-1.0	-37.9	16.8	54.8	19.6	0.65	9.2
December	-24.6	-7.2	-38.4	15.4	61.0	8.6	0.28	2.2

7.9 WILDLIFE MONITORING

All Meliadine employees and contractors are required to report wildlife sightings. All supervisors ask their employees to report wildlife sightings; wildlife logs are posted throughout the Meliadine camp and are easily accessible to employees to facilitate wildlife reporting after work shifts. All observations, problematic interactions, wildlife surveys conducted weekly along the AWAR, caribou migration, operation shut downs related to caribou migration, aerial observations when helicopters are active, onsite audits (i.e for wildlife attractants) conducted by third parties, and mitigation actions taken following problematic issues are reported in the monthly report to the Government of Nunavut, the Kangiqliniq Hunters and Trappers Organization and Kivalliq Inuit Association. Department toolbox meetings were completed in 2018 for environmental subjects including wildlife and caribou migration. The presentation and the attendance sheets can be found in Appendix F1

7.9.1 TEMMP

In 2018, Agnico Eagle retained Golder Associates to undertake the wildlife and vegetation monitoring programs, in accordance with the Terrestrial Ecosystem Monitoring and Management Plan (TEMMP). The purpose of this report is to summarize the 2018 data collected from wildlife and vegetation monitoring programs, and to describe natural variation and potential mine-related changes in wildlife populations within and adjacent to the Mine. The 2018 report describes monitoring objectives and methodology, 2018 annual results, mitigation activities, and management recommendations based on 2018 monitoring results. Below is a summary of the monitoring/findings from the 2018 TEMMP. Full text of the 2018 annual TEMMP report can be found in Appendix H-6.

Incorporation of Inuit Quajimajatuquangit

When possible, field programs in 2018 were guided by Inuit Qaujimajatuqangit (IQ), including the assistance of local field assistants.

Direct Habitat Loss

In 2018, a total area of 484 ha has been altered due to Project construction, representing 29% of the Predicted Project footprint (1,682 ha). Of the total project impacted habitat, 343 ha is vegetated heath types (36% of the predicted impacts), 95 ha is wetland riparian types (22% of the predicted impacts) and 6 ha of un-vegetated sand community (75% of predicted impacts).

The project has altered 46 ha of unvegetated areas, representing 16% of the Predicted Project footprint. Of these, 40 ha (14% of the predicted project footprint) are associated with waterbodies and watercourses

Indirect Habitat Loss

Indirect habitat loss for caribou and wildlife habitat (soils and vegetation) was not assessed in 2018.

Wildlife Observations

Between 4 January and 27 November there were incidental observations of 13 different species and over 214 observations of approximately 7,187 individual animals.

Wildlife Track Surveys

On-site wildlife track surveys were conducted on November 3rd and 23rd and on December 8th, 15th and 25th. All observations were limited to arctic fox and hare tracks - no caribou tracks were observed. A predatory mammal observation report was completed for wolf tracks which were observed on the main camp site on April 10th and for two polar bears observed on November 10th.

Nest Relocation

In July, an active Common Redpoll nest was observed within an active construction zone. A Damage or Danger Permit was issued under the Environment Canada Migratory Birds Regulations (MBR), which authorized the relocation of the migratory birds, eggs (3) and nest. The nest and eggs were successfully relocated, allowing the birds to fledge.

Incidents and Mortalities

A gosling was found deceased near the Meliadine Lake gen set area. It is believed to have died on the lake of unknown causes and was brought to shore through wave action. A total of 22 arctic foxes were trapped and dispatched by GN DoE officers in 2018

Wildlife Deterrents

Bird deterrent canons were initially deployed on P1 and P3 dykes on June 21, 2018. Shortly after deployment, a deterrent canon was moved to the landfarm at the request of the NIRB. Concerns were raised about the canons impacts on caribou and other wildlife at which point canons were removed on July 2nd. Other deterrent (snow owls and predatory birds kites) will be monitored in 2019. No wildlife deterrents were used to deter caribou in 2018.

Barren-ground Caribou

Caribou Advisory

Mass migration through the Project and AWAR took place between 5 July and 22 July 2018. The caribou work suspension protocol (complete work stoppage) was in effect for periods from 8 July to 17 July. Closure and restrictions on AWAR took place on 7-20 July. There was a complete work stoppage for 191 hours and restricted duties for 93 hours in 2018 (Mine and AWAR).

Caribou Behavior

Caribou behavior observations were completed on seven groups of caribou in 2018. Observations showed no obvious behavioral response to mine activity.

Hunter Harvest

A Memorandum of Understanding (M.O.U.) was recently signed with the Rankin Inlet KHTO and involved the hunter harvest studies.

Birds

Shoreline Surveys

All waterbodies within 200 m of mining related infrastructure (excluding the AWAR) were surveyed on foot by trained biologists to locate and identify nesting waterbirds from June 12th to 18th. A total of eight different species were observed. No fledglings were observed, all observations were nesting adults, and eggs observed in nests. In total, 56 adult birds were recorded with 27 eggs observed among eight different species. Waterbodies within 200 m of the AWAR were not completed due to time constraints.

Point Counts

Avian point count locations were chosen to be within 1 km on either side of the AWAR (2 km in total) with the first point counts occurring at 50 m from the road on either side, with subsequent plots spaced 100 m from the preceding plot. A total of 6 transects were completed for a total of 72 point count surveys. The survey method is described in more detail in the TEMMP (Golder 2015).

In total, seven passerine (i.e. songbird) species were recorded on the point count surveys. The most abundant species was horned lark (*Eremophila alpestris*) and the least abundant species was American robin (*Turdis migratorius*).

PRISM

Agnico Eagle contributed to the Environment and Climate Change Canada (ECCC) PRISM surveys in 2018 and will continue to do so every three years. For the 2018 surveys, a representative from ECCC, Golder biologists, and two local assistants completed PRISM surveys at the Project at randomly chosen locations (by ECCC). Observers recorded the species encountered, estimated their breeding status, and recorded habitat conditions. A total of ten PRISM survey plots were surveyed with a total of fourteen bird species observed. The most common bird species observed in the plots were Lapland longspur (*Calcarius lapponicus*), savannah sparrow (*Passerculus sandwichensis*) and horned lark (n=6). No species-at-risk were observed on survey plots. Breeding evidence of three species of shorebirds was found during the surveys. Due to the late spring in 2018, and the relatively early timing of the field work, no actively nesting songbirds were found during PRISM surveys.

Soil and Vegetation Monitoring

Invasive Plant surveys were completed along the AWAR and Project footprint. Two occurrences of common dandelion were recorded along the AWAR. Common dandelion was not observed in the Project footprint or ship loading areas.
Soil and vegetation contamination (metals and dust) will be monitored in 2019.

Environmental Variables

The max annual temperature of 27.5°C was recorded on July 11, 2018 and the minimum annual temperature -46.8°C was recorded on February 19, 2018. Snowmelt began June 9, 2018 when the average daily air temperature exceeded 0°C. Environmental variables will continue to be monitored on an on-going basis.

7.9.2 Marine Environment

A Marine Mammal and Seabirds Observation (MMSO) report was completed for all observations done during the 2017 and 2018 sealift season. The purpose of the MMSO program is to mitigate interactions between marine mammals and seabirds and Project vessels and to collect information on marine wildlife presence. This report provides an interpretation and discussion of the MMSO data collected in 2017 and 2018 by the shipping contractor Transport Desgagnés.

In 2018 the marine mammal observations were conducted from the Acadia Desgagnés. Marine mammal observations were reported between 26 June to 24 July 2018. There were no marine mammals observed in 2018. A maximum of 12 seabird species were recorded during moving and stationary platform surveys in 2018 (June to October). The density of seabirds reported was generally low, although densities estimated from 2018 moving platform data were significantly higher than in 2017. No marine mammal-vessel interactions or birds-vessel interactions (e.g., strikes) were recorded in 2018. The complete report can be found in appendix H-7.

7.10 ARCHAEOLOGY

In 2018, Agnico Eagle requested Golder to provide updated information in years that changes have occurred to the Meliadine Gold Project (Project) footprint. In 2018, a Nunavut Archaeologist Permit was issued to Golder. The assessment focussed on examining expansion to the Meliadine East Esker borrow pit located north of Lake H17, as well as baseline studies for potential infrastructure under consideration. No issues were raised, recommendations were made to continue avoidance by 30 meters buffer for some sites. The memo from the assessment can be found in appendix H-8.

7.11 VEGETATION

On June 1, 2018 Agnico Eagle Mines and the University of Saskatchewan were successful in receiving a Natural Sciences and Engineering Research Council (NSERC) Collaborative Research and Development grant. The grant entitled “Tundra Restoration: Niche construction in early successional plant-soil systems” will support on-site and laboratory research from June 2018 to June 2022. The primary objective of this research is to address Term and Condition no. 41 of the Project Certificate for the Meliadine site: “Prior to the commencement of operations, the Proponent shall develop a progressive re-vegetation program for disturbed areas that are no longer required for operations, such program to incorporate measures for the

use of test plots, reseeding and replanting of native plants as necessary." The specific objective is the characterization of initial and realized niches of biological soil crusts and tundra vascular plants across a chronosequence of naturally recolonized drilling waste dumps. This work was completed during the 2018 summer.

A total of 25 drilling waste sites were examined across a range of ecotypes including low-lying hummock-hollow complexes dominated by sedges, upland hummock-hollow complexes dominated by heath and upland lichen-heath often with frost boil features. Following delineation of each drilling waste site, a transect was placed along the long axis of the waste site and three survey plots (1 m^2) were placed at the center of this transect. In addition, at each site a control transect was placed at least 10 m from the edge of the drilling waste and three adjacent 1 m^2 plots were placed in undisturbed vegetation of the same type, slope and aspect as the disturbed area. The percent cover of all vegetation species present was estimated by eye and the drilling waste and organic matter depth was measured in the center of each plot.

It was found that natural revegetation of drilling wastes is occurring at the Meliadine site. The community composition between drilling wastes and the paired undisturbed tundra was similar 20-25 years post disturbance and species richness recovered within 6 years. Due to the different life history characteristics of tundra plants, individual species responses to disturbance were observed. While sedges and mosses may recover more rapidly on these drilling wastes, dwarf shrubs and lichens may require longer to recover. These trends in natural recovery are important for guiding future restoration efforts and techniques. Specifically, targeting sedge and moss species for transplanting and/or seeding of disturbed substrates may be a highly effective strategy for initiating the development of early successional tundra communities.

Based on the findings, suggestions to improve and/or maintain the relatively rapid natural revegetation of the drilling wastes was provided: i) Placement of drilling wastes on the landscape that allow for remnant patches or islands of intact tundra throughout the disturbed area; ii) Apply drilling wastes in thin layers to allow for vegetative establishment; and iii) Promote establishment of bryophyte communities in the early stages of revegetation to support long-term ecosystem recovery.

Given the findings of this study it is suggested that active restoration of the drilling wastes is likely not required for the recovery of the tundra plant communities, if the timeline for recovery is ~20 years. Therefore, in the on-going work to develop tundra restoration techniques, it is suggested to develop active restoration trials at other disturbed areas on the Meliadine site during the 2019 summer.

The complete report can be found in Appendix I-1. More information regarding the vegetation can be found in the TEMMP report in Appendix H-6

SECTION 8. CLOSURE

8.1 PROGRESSIVE RECLAMATION

8.1.1 Mine Site

As required by Water License 2AM-MEL1631 Schedule B, Item 15: ***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 Water License 2BB-MEL1424 Part B, Item 6k: A description of all progressive and/or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;

Construction was underway at Meliadine in 2018, no progressive closure or reclamation work was undertaken during the year on the mine site.

8.1.2 AWAR

No progressive closure or reclamation work was undertaken during the year on the AWAR.

8.1.3 Quarries

In 2018, reclamation work occured at the Itivia quarry. Agnico Eagle proceeded to the reclamation according to the quarry conditions by removing all equipment and material, stabilizing and gently sloping the walls. Once the reclamation work was completed, a GN Regional Lands Administrator and a Hamlet foreman inspected the quarry and confirmed that they were satisfied with the current state of the Itivia quarry site. No other reclamation occurred in 2018.

8.2 RECLAMATION COSTS

As required by Water License 2AM-MEL1631 Schedule B, Item 17: ***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 Water License 2BB-MEL-1424 Part B Item 6h: An updated estimate of the current Meliadine West Gold Project restoration and liability, as required under Part B, Item 3, based upon the results of the restoration research, project development monitoring, and any modifications to the site plan;

A permanent closure and reclamation financial security cost estimate was prepared in March 2014 using the RECLAIM model, version 7.0. According to that estimate, the closure and

reclamation of all Project facilities amounted to $47,449,337. This estimate was included in the Preliminary Closure and Reclamation Plan (April 2015) prepared as part of the Type A Water License application. In negotiations between CIRNAC, Agnico Eagle and KIA the quantum of security was increased to $49,555,000.

On July 1, 2017, the Production Lease KVPL11D01 between KIA and Agnico Eagle came into effect; the security was confirmed at $49,555,000. Agnico Eagle posted a Reclamation Security Deposit, equal to 50% of this estimate ($24,777,500) with KIA.

In 2019 , an Interim Closure and Reclamation Plan will be prepared in accordance with the Mine Site Reclamation Guidelines for the Northwest Territories, 2007 and consistent with the CIRNAC Mine Site Reclamation Policy for Nunavut, 2002. An updated reclamation cost estimate, using the CIRNAC RECLAIM Reclamation Cost Estimating Model (Version 7.0 or the most current version at the time the updated reclamation cost estimate is submitted to the Board) will also be completed in 2019.

SECTION 9. STUDIES/REVISIONS/MODIFICATIONS

9.1 SUMMARY OF STUDIES

As required by Water License 2AM-MEL1631 Schedule B, Item 18: ***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.***

And

As required by Water License 2BB-MEL1424 Part B, Item 6l summary of any specific studies or reports requested by the Board, and a brief description of any future studies planned or proposed;

No studies were requested by the NWB in 2018.

However, Agnico Eagle in partnership with the University of Saskatchewan started a tundra revegetation/restoration study in the summer of 2018. Both past mineral exploration drilling and proposed operations have and will impact the tundra environment at Meladine; with over 3000 drilling sites in the regional area and further drilling and mine site development expected, there is a strong need for site-specific tundra restoration techniques. Seeding and fertilization is commonly used in many revegetation efforts.

With the objective to eventually discharge excess groundwater effluent into Melvin Bay, Golder was retained by Agnico Eagle to conduct marine environmental reconnaissance surveys in Melvin Bay to establish appropriate reference areas and collect preliminary baseline data on physical properties of the water column, water and sediment quality, benthic substrate, benthic communities and marine mammal occurrence.

9.2 SUMMARY OF REVISIONS

As required by Water License 2AM-MEL1631 Schedule B, Item 19: ***Where applicable, revisions will be completed as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals.***

And

As required by Water License 2BB-MEL-1424 Part B Item 6g: Any revisions to the Spill Contingency Plan, Site Water Management Plan, Used Water Management Plan, Waste Management Plan, Waste Rock and Ore Storage Plan, Landfill and Landfarm Management Plans, Abandonment and Restoration Plan, as required by Part B, Item 12, submitted in the form of an Addendum;

The following monitoring and management plans were created or updated and are include in Appendix I-1:

- Analysis of Risk of Temporary Closure
- Greenhouse Gas Reduction Plan
- Natural Recovery of Tundra Vegetation Following Exploration Drilling at Meliadine

- Shipping Management Plan
- Wildlife Protection and Response Plan
- Oil Pollution Emergency Plan
- Environmental Management and Protection Plan
- Landfill Waste Management Plan
- Landfarm Management Plan
- Freshet Action Plan (appended to Water Management Plan)
- Incineration Management Plan
- Mine Waste Management Plan
- QAQC plan
- Road Management Plan
- Dust Management Plan
- Sediment and Erosion Management Plan
- Spill Contingency Plan
- Groundwater management Plan
- Water Management Plan
- Water Quality and Flow Monitoring Plan

9.3 MODIFICATIONS

As required by Water License 2AM-MEL1631 Schedule B, Item 12: ***A summary of modifications and/or major maintenance work carried out on all water and waste related structures and facilities.***

And

As required by Water License 2BB-MEL-1424 Part B Item 6e: ***A summary of modification and/or major maintenance work carried out on the Water Supply Facilities, Bulk Fuel Storage Facility, Bermed Fuel Containment Facilities, and Wastewater Treatment Facility, including all associated structures, and an outline of any work anticipated for the next year***

No modifications and/or major maintenance work was carried out on water supply facilities and waste related structures and facilities. However, Agnico Eagle requested in 2018 the approval from the Nunavut Water Board (NWB) to keep the snow cell as a temporary structure until the decommissioning of the P-area is completed which was approved.

SECTION 10. OTHERS

10.1 ACTIVE PERMITS

Below is the list of all active permits and authorizations for Meliadine

Table 10.1: List of all active permits and authorizations for Meliadine

Issued By	ID	Description	Issue	Expiry
KIA	KVPL11D01	Production lease	2017/06/30	2029/06/30
KIA	KVCA07Q08	Tiriganiaq/Westmeg/Meliadine quarry permit	2016/09/12	2021/09/12
KIA	KVCA11Q01	Exploration road quarries	2015/08/31	2021/04/19
KIA	KVRW11F02	Exploration road right-of-way	2012/04/19	2027/06/29
KIA	n/a	Water Compensation Agreement	2016/02/11	2031/03/31
NWB	2BB-MEL1424	Bulk Sampling and exploration drilling water license	2009/07/31	2024/07/21
NWB	2AM-MEL1631	Mining undertaking water license	2016/04/01	2031/03/31
NIRB	006	Project certificate	2015/02/26	N/A
NIRB	16QN071	Screening decision (Itivia Quarry)		
GN-NAD	102631	Land lease, laydown Itivia		2021/07/01
GN-CGS	01-600-18	Quarry permit - site D	2017/03/22	2019/05/01
GN-CGS	01-600-21	Quarry permit - site D	2017/05/01	2019/08/01
GN-CGS	L-51809T	Right-of-Way permit AWAR on Municipal land	2017/06/01	2027/05/31
GN-CGS	L-51808T	Right-of-Way Lease Bypass Road km 2-7	2017/06/01	2027/05/31
GN-NAD	102893	Right-of-way lease bypass road km 1-2	2017/07/01	2027/07/01
GN-ENV	2018-058	Wildlife Research Permit	2018/10/01	2019/09/30

10.2 INSPECTIONS

As required by Water License 2AM-MEL1631 Schedule B, Item 21: ***A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.***

Table 10.2: Inspections and site visits by regulators

Month	Authority	Topic	Feedback/Outcome
Feb 2nd and 5th	CIRNAC, KIA, ECCC	Spill follow up from the exploration camp sewage treatment plant	Lab results were requested and provided by Agico Eagle
May 22nd	CIRNAC	Inspection of the Itivia site and bypass road construction	Inspection report with observations, no non-compliance
May 25th	CIRNAC	Inspection of the Itivia site and surface water management	Observations, no non-compliance
June 6th, 7th and 8th	CIRNAC	Inspection for activities at site related to the Nunavut Water Board Water Licence No. 2AM-MEL1631 and 2BB-MEL1424.	Inspection report requesting a response regarding two failures to comply. Response was sent to the inspector.
July 11	CIRNAC	Inspection of the bypass road and Itivia site	Observations, no non-compliance
July 18th	TC	Inspection of the Itivia site and audit emergency spill response equipment, training and regulatory compliance.	The OPEP document was emailed to Philip Levesque at Transport Canada and a hard copy was placed at the Itivia site office, as requested
August 17th	NIRB	Inspection of the Meliadine and Itivia sites, to assess compliance with NIRB project certificate 006	Inspection report with comments and recommendations, comments were addressed, no non-compliance
September 11th	KIA	General overview of the site	No deficiencies
September 19th	TC, TDG	Site inspection and document validations	All requested documents were provided, no non-compliance
September 20th, 21st	CIRNAC and ECCC	Inspection for activities at site related to the Nunavut Water Board Water Licence No. 2AM-MEL1631 and 2BB-MEL1424.	Inspection report with observations, observations were addressed, no non-compliance

10.3 AWAR

The traffic volume to date exceeds what was expected and stated in the FEIS. As a result, there has been an increased emphasis put on safety when travelling on the road. This includes required radio communication when approaching “blind hills” and when smaller vehicles such as pickups are approaching larger vehicles including road maintenance equipment, transport trucks, buses, etc. In addition, AEM requires smaller vehicles to pull over when large vehicles are approaching. Speeding on the AWAR is not tolerated. As a result, in 2018, there were no safety issues brought forward to Meliadine management. A meeting was held in Rankin Inlet with the community regarding the safety rules on the AWAR and this will be done every year to increase awareness.

Agnico Eagle would also like to clarify that the proposed ATV/snowmobile detour trail is being considered however, it is still in the planning phase. In 2018, there were 1944 users of the AWAR for traditional activities recorded which correspond to 8 % of the 24,870 total users of the AWAR.

In 2018 actual traffic exceeded predicted under Road Management Plan (RMP) and FEIS by 94% and 84% respectively. Construction at Meliadine is underway, which involves large movement of material, fuel and personnel.

Despite higher than anticipated traffic volume, no exceedances of Alberta’s Ambient Air Quality Guidelines (June 2016) for industrial areas occurred for any sample location. These results indicate low rates of dustfall overall, as discussed in Air Quality Monitoring Report in Appendix H-5.
In 2018, water, Dust Stop and calcium chloride were used as dust suppressants on the AWAR. AEM visually monitored the road to study the effectiveness of the products and observed better results with the usage of calcium chloride. Dust Stop required special equipment for application that was not available at the time the dust suppression was required. Agnico notes that there were no quantitative predictions made in the FEIS however, it is AEM’s intent to continue applying dust suppressant (calcium chloride or other products) on the AWAR and on roads associated with vehicular traffic related to the mine site including applicable roads in Rankin Inlet. Dust suppressant was applied to the entire length of the AWAR beginning on July 30, 2018. AEM interprets these results as a positive effect of the use of calcium chloride as a dust suppressant. The daily log for AWAR users can be found in Appendix J-1.

As requested by the NIRB, Agnico Eagle and the Hamlet met on February 20th to discuss about the signage, dust suppression and the plan for working together in 2019.

The Hamlet feels at this time that the signs are sufficient on the road, there are signs on the bypass road indicating it’s a private road. The roads under the control of the Hamlet will have signs put up by the Hamlet if they feel it is appropriate. Agnico Eagle is looking at the possibility to add signs, one at the gatehouse to inform if the AWAR is open or close and also signs with emergency numbers.

With the bypass road being built and used, the Hamlet feels that the traffic/dust issues that previously occurred should be mitigated. They did indicate that they still expect to get dust complaints but since Agnico Eagle will be using the bypass road the complaints should be less and the dust being generated from the road around Nipissar Lake will be there responsibility. A discussion occurred around the dust suppression on the bypass road. Agnico Eagle indicated that Calcium Chloride could not be used because community members were concerned for potential impact on Nipissar Lake. The Hamlet

indicated that they would have more concerns regarding dust on the Bypass road than getting calcium chloride in Nipissar Lake because of the distance in between the Bypass road and Nipissar Lake. The Hamlet has purchased some dust control equipment and at this point they do not feel they need any assistance from AEM. That may change if they have issues with their equipment. AEM has agreed to provide support if they can. At this point the Hamlet does not require assistance.

Table 10.3: Project-related and non project-related vehicles counts on AWAR

Month	Project related-vehicles on AWAR	Non project-related vehicles on AWAR	Total traffic
January	1146	10	1156
February	1203	0	1203
March	940	4	944
April	946	5	951
May	1361	8	1369
June	2159	239	2398
July	2653	593	3246
August	3449	435	3884
September	3023	388	3411
October	2612	207	2819
November	1942	55	1997
December	1492	0	1405
Total	22926	1944	24870

Table 10.4 Estimated versus predicted traffic on the All-Weather Access Road in 2018

Month	Actual traffic	Predicted traffic (RMP)	Predicted traffic (FEIS)
January	1156	845	1178
February	1203	764	1064
March	944	851	1178
April	951	810	1140
May	1369	851	1178
June	2398	1528	1062
July	3246	1572	1087
August	3884	1580	1099
September	3411	1524	1056
October	2819	845	1178
November	1997	822	1140
December	1405	839	1178
Total 2018	24870	12831	13538

10.4 MARITIME TRANSPORTATION

In 2018, 2 marine-based fuel transfers occurred at Rankin Inlet related to the Meliadine project. The first one occurred from July 27th to July 29th and the second one between October 10th and 18th. Both events occurred when the Melvin Bay was free of ice and the weather was not a risk to the activity The shipping related to the Meliadine project, including the boats and dates, can be found in table 10-5. No incident was reported during the 2018 maritime transportation.

Table 10.5 2018 ship related to the Meliadine project

		ETA	ETD
NORDIKA DESGAGNÉS	Bécancour	14/06	19/06
	Rankin Inlet	01/07	18/07
	Bécancour	26/07	
HHL New York	Bécancour	26/06	06/07
	Rankin Inlet	14/07	26/07
	Bécancour	03/08	
ACADIA DESGAGNÉS	Bécancour	10/07	14/07
	Rankin Inlet	25/07	26/07
	Bécancour	11/08	
NORDIKA DESGAGNÉS	Bécancour	24/07	30/07
	Rankin Inlet	07/08	09/08
	Bécancour	27/08	
HHL New York	Bécancour	02/08	11/08
	Rankin Inlet	19/08	22/08
	Bécancour	09/09	
NORDIKA DESGAGNÉS	Bécancour	27/08	02/09
	Rankin Inlet	11/09	14/09
	Bécancour	28/09	
ACADIA DESGAGNÉS	Bécancour	30/08	03/09
	Rankin Inlet	13/09	19/09
	Bécancour	28/09	
HHL New York	Bécancour	10/09	18/09
	Rankin Inlet	26/09	30/09
	Bécancour	16/10	
NORDIKA DESGAGNÉS	Bécancour	28/09	04/10
	Rankin Inlet	12/10	19/10
	Bécancour	27/10	
MIENA DESGAGNÉS	Bécancour	10/10	16/10
	Rankin inlet	24/10	27/10
	Bécancour	10/11	

SECTION 11. PUBLIC CONSULTATION

As required by Water License 2AM-MEL1631 Schedule B, Item 22: ***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.***

And

As required by Water License 2BB-MEL1424 Part B, Item 6m: A summary of public consultation/participation, describing consultation with local organizations and residents of the nearby communities, if any were conducted;

11.1 COMMUNITY MEETINGS IN CHESTERFIELD INLET

Agnico Eagle conducted its annual community meeting in Chesterfield Inlet on September 17, 2018, in which Hamlet representatives and Chesterfield Inlet HTO were involved. Agnico Eagle collected the following concerns and Inuit Quajimajatunqangit from the meeting:

- Migration patterns of the caribou herds were being affected by the noise of the barges
- There are less seals than in the past, possibly due to shipping traffic
- Concerned about oil spills and the clean-up protocol
- Concerned about compensation (ex. wildlife fatality) and distribution of benefits from the mine

In order to continue to address these concerns, the following outcomes were decided upon:

- The shipping company Desgagnes will share environmental logs with the Hamlet and Chesterfield Inlet HTO
- Possibility of having a wildlife monitor on board from Chesterfield to Baker Lake
- More detailed information on number of barge trips to be provided

Additionally, as part of the Inuit Workforce Barriers Study (IWBS), interviews were conducted with Elders in Kivalliq communities. In Chesterfield, Elders voiced similar concerns about environmental and marine life impact as listed above.

11.2 COMMUNITY MEETINGS IN RANKIN INLET

Agnico held a community meeting in Rankin Inlet on June 13th, 2018 focusing on the AWAR and included discussions on safety rules, procedures to access road, wildlife and road closure. Additionally, Agnico Eagle held a meeting specifically on the diffuser project on March 18th, 2018.

In 2018, Agnico Eagle started its work towards International Cyanide Management Code (ICMC) certification. As part of that work, Agnico Eagle held a community meeting on August 30th, 2018 on cyanide use, management and transportation.

More details regarding Community meetings can be found in in the Appendix K-1.

11.3 MEETINGS WITH RANKIN KHTO

In 2018, four (4) meetings were held with the Rankin Inlet KHTO. General topics included wildlife monitoring and sediment control, however the focus in 2018 was working to establish a funding agreement with the KHTO. This funding agreement is intended to develop a collaboration that results in the capacity building of KHTO staff to undertake research, monitoring and analysis of wildlife, through the development and implementation of hands-on skill development and theory-based training. Additionally, it creates a Wildlife Coordinator position within the KHTO which participates in monitoring activities at the Projects. The funding agreement is expected to be finalized in 2019.

The Hunter Harvest Agreement is incorporated into the funding agreement with the KHTO. A work plan is expected to be established in 2019.

11.4 COMMUNITY LIAISON COMMITTEE MEETINGS

In 2018, Agnico Eagle continued to attend meetings with the Meliadine Community Liaison Committee in Rankin Inlet, 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 is currently facilitated and chaired by the Hamlet of Rankin Inlet as a specific working group of the hamlet, and does sometimes include representation from various groups and organizations, however Agnico Eagle will look at establishing its own Community Liaison Committee in 2019 to ensure that groups such as Elders, youth, Hunters and Trappers Organizations, RCMP, etc. are regularly consulted on the operations. Agnico Eagle would continue to participate in the hamlet's working group.

Meetings are scheduled quarterly in both English and Inuktitut, with the understanding that the minimum number of meetings is two (2) annually. In 2018, three (3) Community Liaison Committee meetings were held.

11.5 ELDERS

In 2018, as part of the Inuit Workforce Barriers Study (IWBS), interviews were conducted with Elders in Kivalliq communities on a variety of topics. Feedback was incorporated into the recommendations of the IWBS.

11.6 SITE TOURS FOR RANKIN INLET RESIDENTS

Each year, Agnico Eagle offers a variety of ways for the residents of Rankin Inlet, as well as various other groups or individuals from the Kivalliq, to visit Meliadine site. The list below outlines the major visits to the site during 2018:

- Agnico Eagle invited residents of Rankin Inlet to come on a site tour. On October 20, 2018, Agnico Eagle organized the regular tour for residents with five (5) buses from Rankin Inlet. Concurrently, Agnico Eagle held a contest and a group of residents were invited to do an underground tour additional to the regular site visit.
- On November 9, 2018, Agnico Eagle also welcomed a group of high school students on site to do a tour and receive a presentation on job opportunities.

More details on site visits in 2018 are summarized in the Appendix K-1.

11.7 COMMUNITY ENGAGEMENT INITIATIVES

Community initiatives that Agnico Eagle participated in during 2018 are summarized in the Appendix K-1.

11.8 COMMUNITY COORDINATORS PROGRAM

The Community Coordinators program consists of full or part-time Agnico Eagle Coordinators in all Hamlets in the Kivalliq Region, including in Agnico Eagle's offices in the communities of Rankin Inlet and Baker Lake.

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; and
- 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.

11.9 COMMUNICATION

In 2018, Agnico Eagle launched a facebook page for Meliadine which acts as another method with which it can inform the Kivalliq communities of important information, including road closures, recruitment information, and public meetings. This additional medium of communication was suggested by multiple stakeholder groups, including the Kivalliq Socio-Economic Monitoring Committee.

SECTION 12. SOCIO ECONOMIC

The Socio-Economic Monitoring Report (SEMR) is the annual report on the SEMP. It is a comprehensive socio-economic monitoring report that contains Project-level data (data collected by Agnico Eagle at each Project site or regionally) and community-level data (data provided by or in communities), including those data that are mandated by the Project Certificate. It is reviewed by both the SEMWG and the KvSEMC prior to its submission, to allow for those groups to provide insight or data. It is submitted to NIRB on or by June 30 annually as per the SEMWG Terms of Reference. The 2017 SEMR was submitted to NIRB on July 4, 2018 and can be found in Appendix M-1.

The section below represents a subset of Agnico Eagle's socio-economic reporting, related primarily to employment and training. For the full report on the Project's socio-economic monitoring, including those monitoring requirements of Agnico Eagle's Project Certificates for the Meliadine Project, please refer to the 2018 Agnico Eagle Kivalliq Projects Socio-Economic Monitoring Report, which will be submitted to NIRB on or by June 30, 2019.

Reports can also be viewed on the Socio-Economic Monitoring Committee website www.nunavutsemc.com or on Agnico Eagle's website http://aemnunavut.ca/media/documents/.

12.1 WORKFORCE

Agnico Eagle calculates the workforce based on headcount (snapshot of active employees taken at the end of the year, which includes full-time and part-time employees) and full-time equivalents (number of full-time positions based on hours worked, where one full time position is equivalent to 2,184 hours worked in a year).

The number of active Agnico Eagle employees working at Meliadine on December 31, 2018 was 488, of which 62 employees were Inuit employees. (The respective full-time equivalencies were 363 Agnico Eagle employees in total, with 45 full-time (FTE) Inuit Agnico Eagle employees).

The number of contractors employed at the project is only calculated using full-time equivalents (FTEs) due to the cyclical nature of contractor work. Therefore, during 2018 there were 736 full time equivalent (FTE) contractor positions.

Taken together, there were 1,224 active employees (Agnico Eagle permanent, temporary, on-call, students and contractors), working full- and part-time jobs, at the end of 2018.

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.

12.1.1 Employment Demographics for Nunavut Based Employees

The following tables shows the employment demographics for community of hire by headcount and full-time equivalents.

Table 12.1: Home communities of Agnico Eagle Inuit employees (by headcount)

Community of Hire	2017 Agnico Eagle headcount	2018 Agnico Eagle headcount
Arviat	2	5
Baker Lake	1	5
Naujaat	0	2
Rankin Inlet	14	31
Chesterfield Inlet	1	2
Whale Cove	0	1
Coral Harbour	3	7
Outside of Kivalliq	3	9
Total	**24**	**62**

Table 12.2: Home communities of Agnico Eagle Inuit employees by FTE

Community of Hire	2017 Agnico Eagle FTE	2018 Agnico Eagle FTE
Arviat	1	3
Baker Lake	1	4
Naujaat	0	1
Rankin Inlet	11	23
Chesterfield Inlet	0	2
Whale Cove	0	0
Coral Harbour	1	5
Outside of Kivalliq	1	7
Total	**15**	**45**

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 to Rankin Inlet. For employees coming from Coral Harbour and/or Naujaat, a commercial ticket is bought from their home communities to the Rankin Inlet airport. All employees are then driven by bus to site. 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.

12.1.2 **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

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 (optional)
- Employment with Agnico Eagle or contractors

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))

In 2018, Agnico Eagle Meliadine had a total turnover of 13%. Non-Inuit turnover was 10% and Inuit turnover was 30%.

12.1.3 Summer Student Employment Program

Agnico Eagle offers two summer employment programs that are accessible to students. Firstly, Agnico Eagle's company-wide policy offers a summer employment program to the children of all Agnico employees (both Inuit and non-Inuit) that are undertaking postsecondary education. Secondly, in 2018 Agnico Eagle also offered the Inuit Summer Employment Opportunities postings, which is targeted to Inuit students in high school or post-secondary and tries to match students to positions in their areas of interest. In 2018, Agnico Eagle had one (1) Inuk employee hired through this posting. Agnico Eagle will continue to offer both programs in 2019 and continue to work in collaboration with the KIA to encourage Kivalliq applicants to apply for the programs.

As per Agnico Eagle policies, students must be 18 years or over to work at the Operation, and over 16 years old to work in the offices in Baker Lake or Rankin Inlet.

12.2 TRAINING

Agnico Eagle's Training Management System (TMS) and the Learning Management System (LMS) tracks and reports on training activities. The list of training provided can be found in Appendix L-1.

12.2.1 Pre-employment training

The Labour Pool Process (formerly 'Labour Pool Initiative'), implemented in 2014 and revised in 2015, is based on an agreement between Agnico Eagle and the KIA through the IIBAs to offer pre-employment opportunities to Inuit from all Kivalliq communities.

The goal of the program is to pre-qualify candidates from Kivalliq communities through 5 steps: employment information sessions, online application (facilitated by Employment Information Sessions), the Work Readiness Program, mandatory trainings (more details provided below), and the Labour Pool List (facilitated by the Labour Pool Coordinator).

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.

Figure 12.1 Labour Pool Process

12.2.2 **Work Readiness Training Program**

Agnico Eagle continues to utilize the Work Readiness Training program that was developed as a pre-employment initiative. In 2018, the Work Readiness Training was delivered in collaboration between Aglu Consulting and Training and Northern College. The Work Readiness program is the first step of the Labour Pool Process for those individuals who have applied online who do not have work experience relevant to the positions for which Agnico Eagle hires.

The objective of the program is for Inuit applicants to be better prepared for the work environment in an industrial setting. Graduates of the program are eligible to continue the Labour Pool Process and attend the mandatory trainings given on-site. The program provides coaching on a range of issues including: awareness of employers' unspoken expectations, communication in the workplace, and problem-solving skills for resolving workplace issues.

The program was implemented in April 2013. The program is delivered over a five-day period at the community level and is scheduled throughout the year. In 2018, the program was delivered by a visiting instructor in all seven Kivalliq communities resulting in 183 participants from various communities, from which 85% successfully completed the program.

In 2018, Agnico Eagle partnered with PMC Renewal and the Nunavummi Disabilities Makinnasuaqtiit Society (NDMS); two organizations that delivered Work Readiness program across the Kivalliq through contracts with the GN's Department of Family Services. Agnico Eagle now considers those who have completed this program as an equivalent to the Work Readiness program for those who are interested in gaining employment with Agnico Eagle.

12.2.3 **Mandatory Training (Site Readiness)**

Participants that have successfully completed the Work Readiness Program will be retained for the Mandatory Training Program (called "Site Readiness") and then will become part of the Labour Pool.

The Mandatory Training 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.

In 2018, 142 candidates successfully completed the Mandatory Training.

12.2.4 **Training Hours**

The following categories of training are available:

- Mandatory: Mandatory training related to compliance with the Nunavut Mine Act, as well as training that is mandated according to AEM Health and Safety policies. Many of these training sessions are offered via e-learning prior to employee's arrival on site.

- General: Training activities required at a departmental level and covers many employees working in different departments. General training includes training on light duty equipment as well as enterprise software systems and cross-cultural training.

- Specific: Focused on developing individual competencies related to a specific position. This training qualifies individual workers for promotion following their progression through the Career Path. These training programs are provided by in classroom (theory) learning as well as practical (one-on-one) learning.

- Emergency Response Training (ERT).

The following table provides the training hours provided to Agnico Eagle employees at Meliadine (excluding contractors) in 2018:

Table 12.3: Training hours provided to Agnico Eagle employees at Meliadine

Type of Training	Inuit	Non-Inuit	Total
Mandatory	482	4,364	4,846
General	248	1,949	2,197
Specific	2,321	4,891	7,212
ERT	100	1,640	1,740
Total	**3,151**	**12,844**	**15,995**

12.3 TRAINING PROGRAMS

12.3.1 E-learning

Before coming to an Agnico Eagle site for the first time, newly hired employees must complete their Mandatory Training online, which consists of six (6) modules: General Induction, WHMIS, Fire Suppression, Job Hazard Analysis and Work Card, Spill Response, and Occupational Health and Safety (Personal Protective Equipment, Ladder Safety, Surface Standard Operating Procedure). The General Induction chapter provides general information about Agnico Eagle and working life at the mines. The e-learning training material has been translated into English, French, and Inuktitut.

As per the requirement of the IIBAs, in 2017 two new e-learning lessons were developed and added to the General Induction. The Inuit Impact and Benefit Awareness module (IIBA) provides general awareness on: Agnico's Commitment to Indigenous People, history of the Nunavut Agreement and the different Inuit organization branches, what an IIBA is and why the sites have one, and a high level overview of the benefits and impact mitigation provided through the IIBAs. The Archaeology module informs workers on how to identify potential archaeological sites (ex. fox traps, tent circles, hunting blinds) and what to do if a worker finds one when working in the tundra. An objective of these lessons is also to

give each employee and contractor employee cross-cultural context before arriving on one of Agnico's sites.

In 2018, three (3) e-learning lessons have been updated: Process Plant Induction, Chemical Awareness and General Induction. The e-learning WHMIS, which is now WHMIS 2015, has been modified according to meet the new WHMIS standards.

12.3.2 **Cross-Cultural**

Implemented first at Meadowbank, the Cross Cultural Training Program is a 5 hour in-class training course. This course allows employees from different cultures and backgrounds to understand each other's culture in order to improve understanding and communication at the workplace.

The program was revisited with the assistance of the Nunavut Literacy Council in 2013, and a revised program was initiated in 2014. This program is mandatory for all Agnico Eagle employees and contractors who will be on site for six months or more. The training is in English, Inuktitut and French, and is offered at Meliadine.

In 2018, Meliadine had 17 sessions.

12.3.3 **Career Paths**

The Career Path Program was designed in 2012 at Meadowbank, with the intention of supporting upward mobility of Inuit employees at Agnico Eagle's Project sites. This program identifies the incremental steps that any employee is required to complete to advance in their chosen career of interest.

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.

In 2018, the Career Path system was developed in five (5) areas of activity at Meliadine: Mine underground (Meliadine only), Field services, Assay lab, Process plant and Maintenance.

12.3.4 **Apprenticeship Program**

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. Currently, we offer trades (8) for: cook, carpenter, millwright, electrician, heavy duty equipment technician, welder, housing maintainer and plumber.

As of the end of 2018, there were 4 apprentices and pre-apprentices at Meliadine.

12.4 GENERAL SOCIO-ECONOMIC PROVISIONS

12.4.1 Housing and Home Ownership

Agnico Eagle has shared financial literacy materials from its Work Readiness Program as well as details on Agnico's direct rental deduction program with the Nuanvut Housing Corporation in October 2017. Agnico Eagle will reach out again to NHC in 2019 with the intention to collaborate on the topic of home ownership and affordable housing options. Nunavut Housing Corporation is also invited to participate in the Kivalliq Socio-Economic Monitoring Committee.

12.4.2 Labour Force

Agnico Eagle submitted the latest staff schedule on May 2, 2018, and will submit an updated version in 2019. Agnico Eagle also submitted the IIBA-required Labour Market Analysis (LMA) to NIRB in March 2019.

12.4.3 Training and Development

Agnico Eagle works with training organizations and government departments regularly through the Kivalliq Socio-Economic Monitoring Committee, through the IIBA with the Kivalliq Inuit Association, through the Memorandum of Understanding with the Government of Nunavut, and through one-on-one partnerships and collaboration with organizations such as the Hamlet of Arviat, the Nunavut Literacy Council, Nunavut Arctic College, Aglu Consulting, and more.

The listing of formal certificates and licenses was sent to NIRB on November 7, 2018. There have not been any updates since the last submission.