APPENDIX 29-8. INTERIM CLOSURE AND RECLAMATION PLAN

AGNICO EAGLE

MELIADINE GOLD MINE

Interim Closure and Reclamation Plan – Update 2024

MARCH 2025

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DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1.0	April 2015	All	All	Preliminary Closure and Reclamation Plan Prepared in Support for the Water Licence application for Meliadine Mine	Agnico Eagle Mines Limited
00	December 2019	All	All	Meliadine Interim Closure and Reclamation Plan - Update 2019	SNC-Lavalin
00	June 2020	All	All	Reclamation Work and Costs Submitted in support of the Waterline for Treated Groundwater Effluent Discharge application	SNC-Lavalin
03	April 2021	All	All	Meliadine Interim Closure and Reclamation Plan – Update 2020 Submitted to NWB as part of the Meliadine Water Licence Amendment	SNC-Lavalin
2.0	January 2024	All	All	Meliadine Interim Closure and Reclamation Plan – Update 2024 Submitted to NWB as part of the Meliadine Mine Water Licence Amendment	Agnico Eagle
2.1	February 2025	4.2.4.3, 4.2.7.3 9, 9.1 Appendix J		Submitted to NWB as per Part B, Item 14 of the Amended Water Licence (2024) Updated to include mitigation measures for the protection of aquatic life Financial security amount and schedule updated to reflect Amended Water Licence (2024) Removed Appendix J	Agnico Eagle
2.2	March 2025	4.2.4.3, 4.2.7.3	64 81	Updated to include mitigation measures for the protection of aquatic life as recommended by ECCC and as per Agnico Eagle's Response to Final Written Submissions on the 2024 Meliadine Water Licence Amendment Application 2AM-MEL1631	Agnico Eagle

1 Introduction

1.1 General Description of the Meliadine Mine Site

The Meliadine Mine site, which is 100% owned by Agnico Eagle Mines Limited (Agnico Eagle) is located in the Kivalliq region, Nunavut, approximately 30 km south of Rankin Inlet as shown on Figure 1-1. The Meliadine Mine is located within the Meliadine Lake watershed of the Wilson Water Management Area (Nunavut Water Regulations Schedule 4) (Agnico Eagle, 2015a). Located in the peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8'' N, 92°13'6.42"W), on Inuit Owned Lands (IOL), the mine site is accessible by plane via the Rankin Inlet Aerodrome.

Figure 1-2 presents the location of Meliadine Mine in relation with the other Agnico Eagle Nunavut mine sites.

The Meliadine property is divided as Meliadine West property and Meliadine East property. These areas were divided geographically by the Meliadine Lake at 547500 E. Meliadine West contained Tiriganiaq, Wesmeg, Pump, F Zone, and Wolf deposits, whereas Meliadine East contained the Discovery deposits and other regional gold showings (Agnico Eagle, 2015a).

The environmental assessment of the Meliadine Mine, resulting in the issuance of Project Certificate No.006 in 2015 by the Nunavut Impact Review Board (NIRB), included approval of a multi-phase approach to development, including mining of Tiriganiaq deposit using open pit and underground mining methods and mining of the Pump, F Zone, Discovery, and Wesmeg deposits using open pit methods. Type A Water Licence 2AM-MEL1631 issued in 2016 by the Nunavut Water Board (NWB) was primarily for the Tiriganiaq deposit and associated infrastructure including, process plant, camp, tailings storage facility and waste rock storage facilities.

The Type A Water Licence was amended in 2024 to support the mining of deposits included in the 2014 Final Environmental Impact Statement and already approved under Project Certificate No. 006. This includes open pit mining of F Zone, Wesmeg, Pump, and Discovery deposits; waste rock storage facilities at Pump, F Zone, and Discovery; a completion of approved 2014 fuel storage capacity at Rankin Inlet fuel farm; an increase of operational water use; contact water infrastructure and dewatering of lakes and pond to support mining at Pump, F Zone, Wesmeg, and Discovery.

The Water Licence amendment site layout in relation to NIRB 2014 approved footprint is illustrated on Figure 1-3.

The closure period will commence in 2032. The open pits will be flooded at closure when open pit mining is completed. Flooding is planned to spread over a 7-year period. The post-closure period will commence in 2039 once water quality objectives in the pit lakes are met.

Figure 1-1: Meliadine Mine Site Location

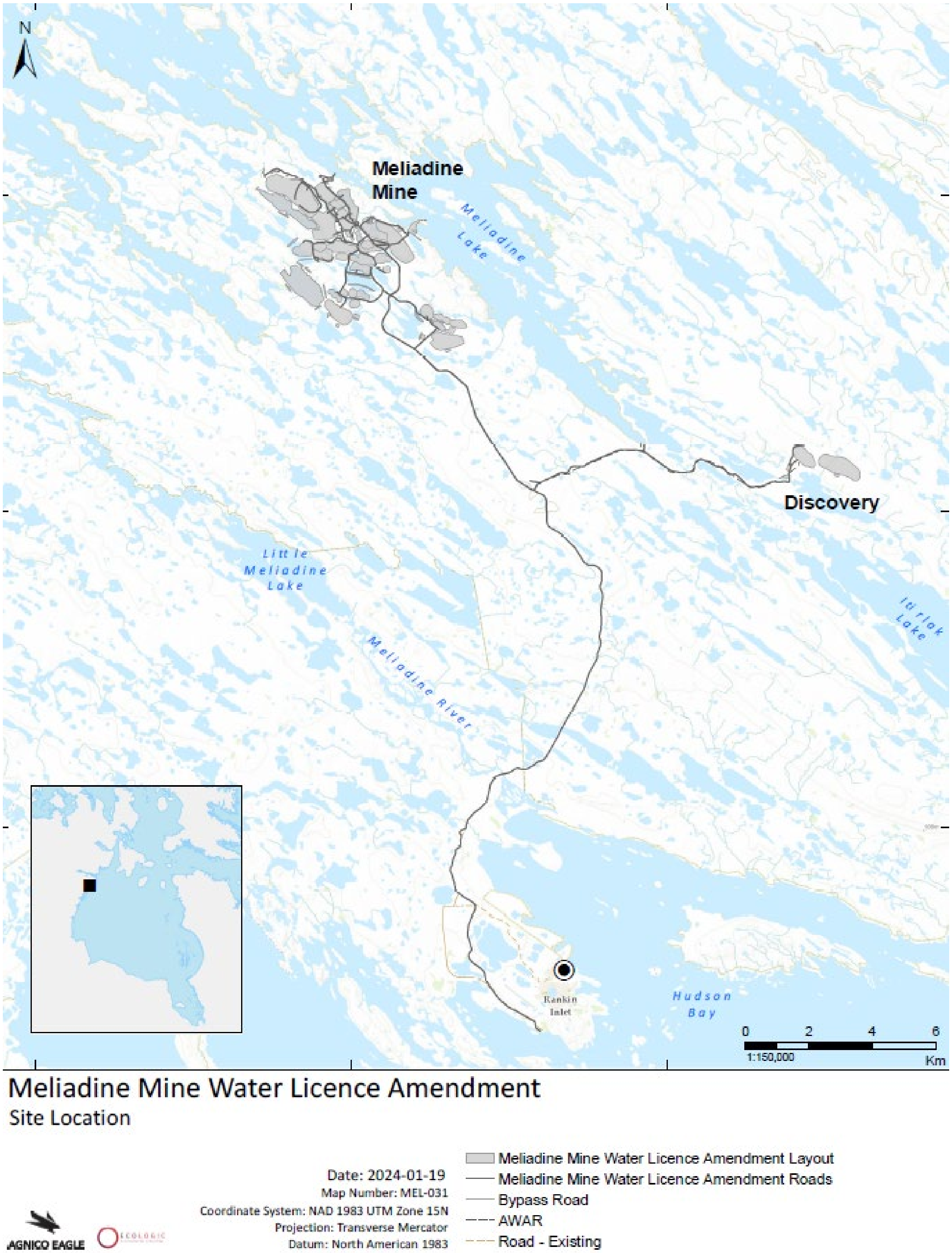

Figure 1-2: Meliadine Mine Site Location

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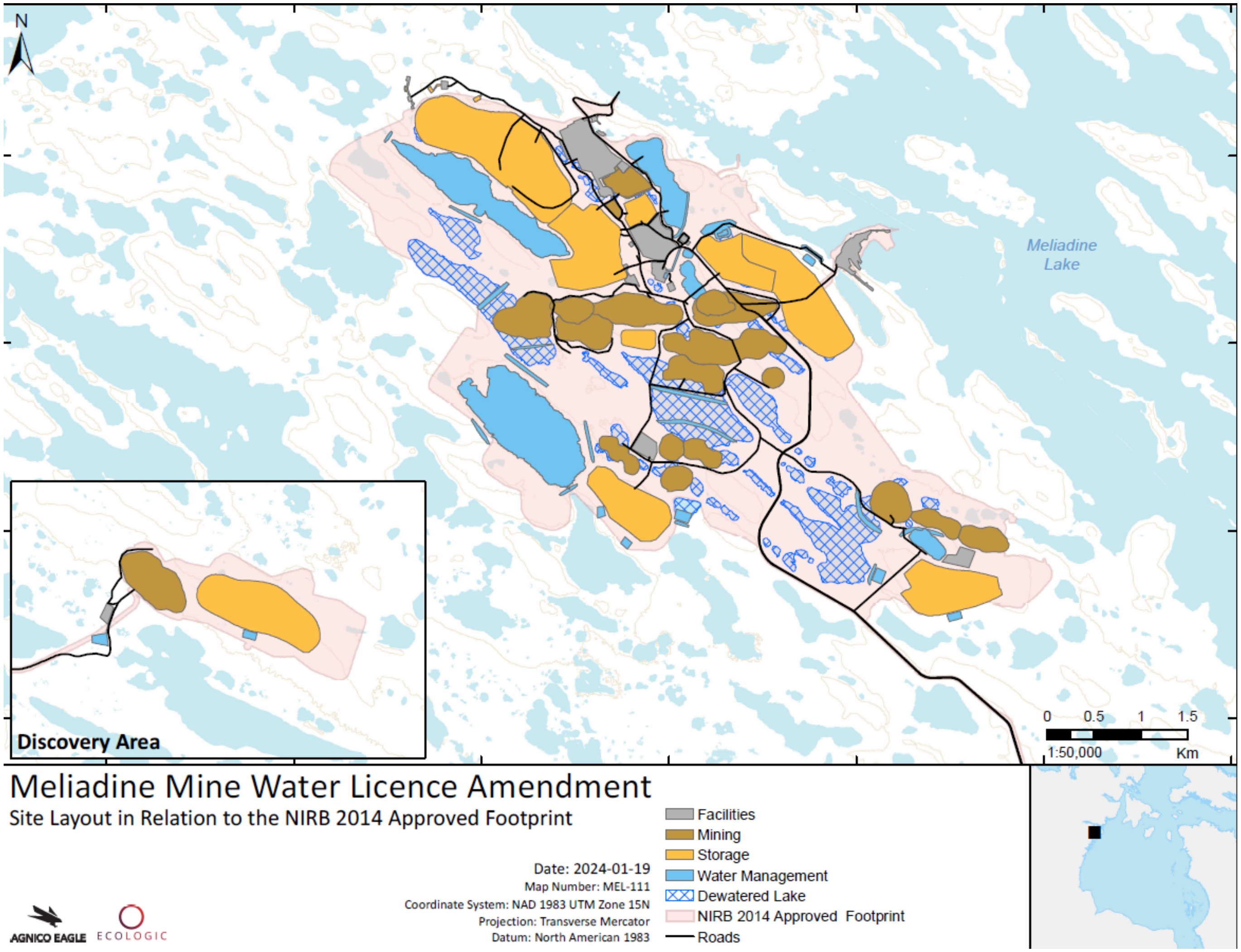
Figure 1-3: Site Layout in Relation to NIRB 2014 Approved Footprint



1.2 Purpose and Scope of the Interim Closure and Reclamation Plan

1.2.1 Purpose of the ICRP

This Interim Closure and Reclamation Plan (ICRP) provides increasing levels of detail on the closure and reclamation of individual project components and details for components which are to be progressively reclaimed earlier in the mine life.

The ICRP document is the main reference to be used throughout the closure engineering process for the development of the Final Closure and Reclamation Plan. This document does not include detailed engineering closure designs, or specific post-closure monitoring programs as these will be developed in the future. However, a view of the current closure concepts for each area of the mine site and the plans to advance these designs are provided.

The focus of this ICRP is to:

- Provide closure objectives for the mine components;
- Describe closure options for temporary and permanent closure;
- Identify uncertainties related to the proposed closure objectives, options, or criteria;
- Identify post-closure monitoring requirements and responsibilities for the selected closure activities;
- Predict the likelihood of potential post-reclamation risks to the environment and human and wildlife health; and
- Estimate the closure and reclamation costs.

1.2.2 Description of the Proponent

The proponent of the Meliadine Mine is:	Agnico Eagle Mines Limited (Agnico Eagle)
The address for the proponent is:	Meliadine Gold Project – Agnico Eagle 145 King Street East, Suite 400 Toronto, Ontario M5C 2Y7, Canada
The Mine site is located at:	latitude 63°1'23.8"N, longitude 92°13'6.42"W (UTM 6988500N, 540250E, NAD83, Zone 15) Territory of Nunavut, Canada
The contact persons for the Meliadine Mine:	Sara Savoie, Meliadine Environment Superintendent Agnico Eagle Mines Limited Meliadine Division Nunavut, Canada Email: sara.savoie@agnicoeagle.com mailto: Colleen Prather, Permitting & Regulatory Affairs Superintendent Agnico Eagle Mines Limited Email: colleen.prather@agnicoeagle.com

1.3 Goal of the Closure and Reclamation Plan

Permanent closure is defined as the final closure of the mine site after mining has ceased. Permanent closure is typically a planned event, the timing of which is dependent on the life of mine. The closure approach for the project, as well as specific closure activities at each project facility, is guided by the intended end land use of the area. Based on stakeholder and local community consultation to date, the intended end land use for project-affected areas is a return to the “natural” state. As such, closure activities are focused on decommissioning mine components so that they blend into the existing landscape to the extent possible.

Agnico Eagle is committed to responsible mining practices for the protection of human, wildlife and aquatic life health, and for minimizing impacts on the environment. Agnico Eagle intends to leave behind a positive community and environmental legacy. The closure goal as described in the Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest (AANDC/MVLWB, 2013), is to return the mine site and affected areas to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities. The four (4) closure principles of physical stability, chemical stability, no long-term active care requirements, and future use (including aesthetics and values) support the closure goal:

- Physical stability: The components of the reclaimed site should be built or modified at closure so that they do not erode, subside or move under extreme design events, and therefore do not pose a threat to humans, wildlife, or environmental health and safety;
- Chemical stability: The components of the reclaimed site should be chemically stable so as to prevent adverse soil, water and air quality effects that might pose a risk to humans, wildlife or environmental health and safety;
- No long-term active care requirements: Any project component that remains after closure does not require long-term active care and maintenance. Thus, any post-closure monitoring can only continue for a defined period of time. Physical and chemical stability will help ensure achievement of this principle; and
- Future use and aesthetics: The reclaimed site should be compatible with the surrounding lands at the completion of the reclamation activities.

These broad objectives were used to support the identification of closure objectives that are specific to the Project. These specific objectives are:

- Physically and chemically stable lands and waters at the reclaimed Meliadine site that are safe for human, wildlife and aquatic life;
- Lands and waters at the reclaimed Meliadine site that allow for traditional uses;
- Final landscape guided by pre-development conditions and traditional knowledge;
- Post-closure conditions that, where appropriate, do not require a continuous presence of Mine staff until a walk-away condition is achieved.

1.4 Closure and Reclamation Planning Team

The strategy used by Agnico Eagle is an integrated approach consisting of a consortium between the Meliadine departments, the corporate office and Engineering consultant firms. This multidisciplinary team will form the Reclamation Planning Team, which will be responsible for coordinating activities and projects related to closure. The Reclamation Planning Team will oversee the review of the ICRP, developing the Final Closure and Reclamation Plan and communicate its content to all departments of the Meliadine Mine. The communication effort is intended to provide a sufficient level of awareness among operations staff as to the importance of closure and reclamation activities on Meliadine Mine development. The team members are comprised of Environment and Permitting Departments staff members for now.

The Reclamation Planning Team will ensure to:

- Take leadership of the Closure Project and develop a work environment characterized by open communication, commitment, dedication to safety and continuous improvement;
- Liaise with departments and manage inter-company relationships;
- Take responsibility for the staffing and organization of the studies required for the interim and final closure and reclamation plans;
- Respect the schedule and permitting requirements;
- Identify closure risks and opportunities;
- Manage documentation; and
- Provide services in an ethical manner that is consistent with the Agnico Eagle corporate policies and its professional reputation.

Furthermore, Agnico Eagle has developed a Risk Management and Monitoring System (RMMS) Standard. The RMMS supports the application of Agnico Eagle's Sustainable Development policy. All Agnico Eagle Divisions must implement the RMMS outlined in the current standard at all their sites. Sites include operations, exploration, projects, offices, and closed sites. The application of RMMS does not take precedence over site-specific statutory and permitting requirements. The primary focus of this system is to provide an integrated framework for the management of health, safety, environmental and social acceptability performance. This standard applies to all phases of mining projects including closure and post-closure phases.

1.5 Engagement

Since Agnico Eagle acquired the Meliadine Project in July 2010 from Comaplex Mineral Corporation, Agnico Eagle has actively engaged and consulted stakeholders throughout the Kivalliq region and adjacent jurisdictions.

Community information sessions and consultations made possible through in-person meetings have long been the standard for Agnico Eagle Nunavut's project development and operations teams.

Agnico Eagle hosts various public meetings, focus groups, and meetings with stakeholders to provide the communities with information on the Meliadine Mine and answer their questions, and identify their concerns and feedback with regards to the Mine. Community and stakeholder engagement activities are reported to the NWB and NIRB as part of Agnico Eagle's annual reporting.

1.6 Regulatory Instruments for Closure and Reclamation

1.6.1 Applicable regulatory guidelines

The ICRP follows applicable regulatory guidelines, the principles of which are described in:

- Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories (AANDC/ MVLWB, 2013);
- Mine Site Reclamation Guidelines for the Northwest Territories (AANDC, 2007);
- NTI Reclamation Policy and Guidelines
- Mine Site Reclamation Policy for Nunavut (AANDC, 2002);
- Environment Canada, Environmental Code of Practice for Metal Mines (Environment Canada, 2009); and
- Abandoned Military Site Remediation Protocol (AMSRP) (INAC 2008).

The Meliadine Mine is located within the Nunavut Territory and is thus subject to the regulatory processes established under the applicable laws and regulations of Canada and of Nunavut. The Meliadine Mine is subject to the Federal and Territorial Acts and Regulations listed below:

- Arctic Waters Pollution Prevention Act and Regulations;
- Canadian Environmental Act and Regulations;
- Fisheries Act and Regulations;
- Metal and Diamond Mining Effluent Regulations;
- Navigable Waters Protection Act and Regulations;
- Nunavut Agreement and Regulations;
- Nunavut Waters and Nunavut Surface Rights Tribunal Act and Regulations;
- Territorial Lands Act and Regulations;
- Nunavut Environmental Protection Act and Regulations;
- Nunavut Transportation of Dangerous Goods Act and Regulations; and
- Nunavut Mine Health and Safety Act and Regulations.

The Amended NWB Water Licence and the NIRB Project Certificate for Meliadine details are found in Table 1-1. In addition, a list of the known Federal and Territorial Acts and Regulations applicable to the ICRP and a list of all Authorizations for the Meliadine Mine are found in Appendix D.

Table 1-1: NWB Water Licence and NIRB Project Certificate for Meliadine

Authorization	Issuing Authority	Note
NWB Type A Water Licence 2AM-MEL1631 NWB Type A Water Licence 2AM-MEL1631 Emergency Amendment NWB Type A Water Licence 2AM-MEL1631 Amendment 001 NWB Type A Water Licence 2AM-MEL1631 Amendment 002	Nunavut Water Board (NWB)	For Meliadine Mine
NIRB Project Certificate No.006, approval received in 2015 NIRB Project Certificate No.006, Amendment 001 NIRB Project Certificate No.006, Amendment 002	Nunavut Impact Review Board (NIRB)	Amendments and additions to Terms and Conditions of Project Certificate to reflect significant modifications to the Meliadine Gold Mine Project as proposed in the Saline Effluent Discharge to the Marine Environment proposal and amendments to reflect implementation of project monitoring and reporting requirements

1.6.2 Concordance between the Water Licence Requirements and the ICRP

Agnico Eagle was granted a Type A Water Licence 2AM-MEL1631 in April 2016 (NWB, 2016). This licence authorizes Agnico Eagle to use water and dispose of waste associated with the mining of the Tiriganiaq deposit and milling undertakings at the Meliadine mine site. The Licence sets out several conditions with respect to Agnico Eagle's right to alter divert or otherwise use water for the purpose of mining. Specifically, in Part J, the Licence stipulates the conditions applying to abandonment, reclamation and closure. A summary of the specific requirements listed within the Water Licence applicable for the ICRP are provided in Table 1-2. The development of a closure and reclamation plan is also a requirement of the NIRB Project Certificate 006.

On June 23, 2021, the Minister approved the Type A Water Licence 2AM-MEL1631 Amendment (NWB, 2021) which included updated total dissolved solids (TDS) thresholds to Meliadine Lake, increase of annual freshwater consumption, additional laydown area, additional landfarm, updated waste management strategy, construction of access roads, and an updated ICRP.

On November 22, 2024, the Minister approved the Type A Water Licence 2AM-MEL1631 second Amendment (NWB, 2024) which included the open pit mining at Wesmeg, Pump, F Zone and Discovery, Waste Rock Storage Facilities at Pump, F Zone and Discovery, increase in the diesel fuel storage at Itivia, increase of the Tailings Storage Facility (TSF) capacity, increase in operational and closure water withdrawals, construction of water management infrastructures, dewatering of lakes and ponds.

Table 1-2 Concordance between the Water Licence (NWB, 2016) Requirements and the ICRP Sections

Part/Condition	Water Licence (NWB, 2016) Requirements	Corresponding Sections in the ICRP
Part J-1	The Board has approved the document entitled Preliminary Mine Closure and Reclamation Plan, dated April 2015, under Part B, Item 12. The Licensee shall submit to the Board for approval, within six (6) months of Commercial Operation, an Interim Closure and Reclamation Plan prepared in accordance with the Mine Site Reclamation Guidelines for the Northwest Territories, 2007 and consistent with the INAC Mine Site Reclamation Policy for Nunavut, 2002. The Plan shall include the following:	All sections of the ICRP
	a. Detailed description, including maps and other visual representations, of the pre-Construction conditions for each site, accompanied by a detailed description of the proposed final landscape, with emphasis on the reclamation of surface drainage over the restored area;	Sections 3.0 Section 4.0
	b. A description of how progressive reclamation will be employed and monitored throughout the life of the mine, plus reclamation scheduling and coordination of activities with the overall sequence of the project; details of reclamation scheduling and procedures for coordinating reclamation activities within the overall mining sequence and materials balance;	Section 4.0 Section 5.0 Section 7.0
	c. Implications of water quality model re-calibration results on discharge strategy and any adaptive management measures that may be required;	Section 4.2.4, 4.2.5, 4.2.6, 4.2.7
	d. An evaluation of closure and reclamation measures for each mine component, including the goals, objectives, closure criteria and the rationale for selection of the preferred measures;	Section 4.0
	e. A comprehensive assessment of materials suitability, including geochemical and physical characterization, and schedule of availability for reclamation needs, with attention to cover materials, including maps where appropriate, showing sources and stockpile locations of all reclamation construction materials and any Water related mitigation required during implementation;	Section 3.3.5 Section 4.0
	f. An assessment and description of any required post-closure treatment for drainage Water that is not acceptable for discharge from any of the reclaimed mine components;	Sections 4.2.4, 4.2.5, 4.2.6, 4.2.7
	g. Contingency measures for all reclamation components including action thresholds that are linked to the monitoring programs;	Section 4.0
	h. Monitoring programs to assess reclamation performance and environmental conditions including monitoring locations for surface Water and groundwater, parameters, schedules and overall timeframes;	Section 8.0
	i. QA/QC procedures for managing all waste disposal areas; j. A list of non-salvageable materials and disposal locations;	Section 4.2.5, 4.2.6, 4.2.9

Part/Condition	Water Licence (NWB, 2016) Requirements	Corresponding Sections in the ICRP
	k. Rock storage facility closure design plans and sections including the types of material placed and volumes; l. Underground mine plans and sections, including the areas of backfill, the type of material placed and volumes; m. Protocol for the disposal of any contaminated soil at closure; n. An assessment of the long-term physical stability of project components; o. A detailed criteria for the final breaching of the Dam(s); p. A revised closure and reclamation cost estimate; and q. A detailed implementation schedule for completion of reclamation work.	Section 4.2.9 Section 4.2.5 Sections 2.4.1, 4.2.3 Section 4.2.9 Section 4.0 Section 4.2.7 Section 9.0 Section 7.0
Part J-8	The Licensee shall implement progressive reclamation, including progressive covering of the tailings, and re-vegetation if practically possible.	Section 5.0 Section 7.0
Part J-9	The Licensee shall notify the Board in writing, at least sixty (60) days prior to any intent to achieve Recognized Closed Mine status.	Section 2.4.1 Section 7.0
Schedule I	Monitoring programs according to Table 2	Section 8.0

2 Project Description

2.1 Location and Access

The Meliadine Mine site is in the Kivalliq region, Nunavut, approximately 30 km south of Rankin Inlet as shown in Figure 1-1. The Meliadine Mine is primarily situated on IOL (Figure 2-1) and administered by the Kivalliq Inuit Association (KivIA) (surface rights) on behalf of the Inuit Beneficiaries as designated under the Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement).

The Meliadine Mine involves pre-development, construction, operation, and closure, including decommissioning and the rehabilitation of a conventional gold mine.

The mine site access is via the All-weather Access Road (AWAR) from Rankin Inlet, which provides year-round access. Employees are flown to the Rankin Inlet airport and then via bus to the Mine site. Meliadine Mine relies on marine transportation to the Itivia Harbour in Rankin Inlet via Hudson Bay for most of its supplies including fuel, construction and operation equipment, materials and consumables, including dangerous goods, food, household goods and other non-perishable supplies. The Rankin Inlet Bypass Road located south of the airstrip allows traffic from Itivia to bypass the Hamlet in delivering materials and fuel to the mine site.

2.2 Site History

In late 2010, Agnico Eagle announced that it planned to accelerate the pace of advanced exploration at the Meliadine West property given the encouraging drilling results. Agnico Eagle subsequently reopened the underground decline and advanced a second bulk sample from underground in 2011, increased the number of operating diamond drills, and modified and expanded the exploration camp and associated facilities (sewage treatment, potable water treatment, power generation, etc.) to allow exploration to continue year-round. Exploration continued during the environmental assessment. Diamond-drilling was required to better define existing mineral resources and to find new resources on the minerals claims. In 2011, condemnation drilling was required to confirm that the mine buildings and other infrastructure were not planned on top of potential new ore zones (Agnico Eagle, 2015c).

The construction phase started in the last quarter of 2015 ending in 2019. The mine construction period focused primarily on-site preparation and the construction of infrastructure, with some mining activities (advancement of the mine ramp) occurring at the Tiriganiaq underground mine. Operation started after commissioning was completed at the end of Q2 2019.

The NIRB issued a Project Certificate No.006 in February 2015 (amended in February 2019 and March 2022), setting out the terms on which the Meliadine Mine could proceed. In March 2017, Agnico Eagle and the KivIA signed the Inuit Impact Benefit Agreement (IIBA) for the Meliadine Mine. Through the agreement, both Agnico Eagle and the KivIA are intent on ensuring that business opportunities, employment and training opportunities arising from this mine will benefit the Inuit of the Kivalliq Region.

Agnico Eagle was granted a Type A Water Licence 2AM-MEL1631 in April 2016. At that time, Agnico Eagle only applied for the Type A Water Licence required to proceed with the Tiriganiaq deposit. The Water Licence was amended in June 2021 which included updated TDS, threshold to Meliadine Lake, increase of annual freshwater consumption, additional laydown area, additional landfarm, updated waste management strategy, construction of access roads, and an updated ICRP.

The Water Licence was amended again in October 2024 (and approved by the Minister in November 2024) which included the open pit mining at Wesmeg, Pump, F Zone and Discovery, additional Waste Rock Storage Facilities, increase in the diesel fuel storage at Itivia, increase of the Tailings Storage Facility (TSF) capacity, increase in operational and closure water withdrawals, construction of water management infrastructures, dewatering of lakes and ponds.

2.3 Site Geology and Mining Methods

The information as presented below is extracted from the Agnico Eagle website and from the Meliadine Mine Technical Report (Agnico Eagle, 2015b).

The Meliadine Mine is located near the western shore of Hudson Bay in the Kivalliq District of Nunavut. The 111,357-hectare property covers an 80-kilometre-long greenstone belt. The Figure 2-1 presents the area of the site including the claims, leases and subsurface Nunavut Tunngavik Incorporated (NTI) concessions. The current mineral reserves are mainly in the Tiriganiaq deposit at underground and open pit depths, and consist of 4.067 million ounces of gold in proven and probable reserves (20.75 Mt at 6.1 g/t) as of December 31, 2019 (Agnico Eagle website, Mineral reserves).

Commercial production began at Meliadine in mid-May 2019. The mine produced 191,113 ounces gold in 2019. Agnico Eagle anticipates that mining at Meliadine will be carried out through underground mining operations and open pits over the life of the mine. There are numerous opportunities to create additional value at Meliadine, both at the mine and on the large regional land package (Agnico Eagle website).

Archean volcanic and sedimentary rocks of the Rankin Inlet greenstone belt underlie the property. The rock layers have been folded, sheared and metamorphosed. They trend west-northwest, dip steeply to the north, and have been overturned. The rock units are truncated by the Pyke Fault, a regional structure that extends the entire 80-km length of the property (Agnico Eagle website).

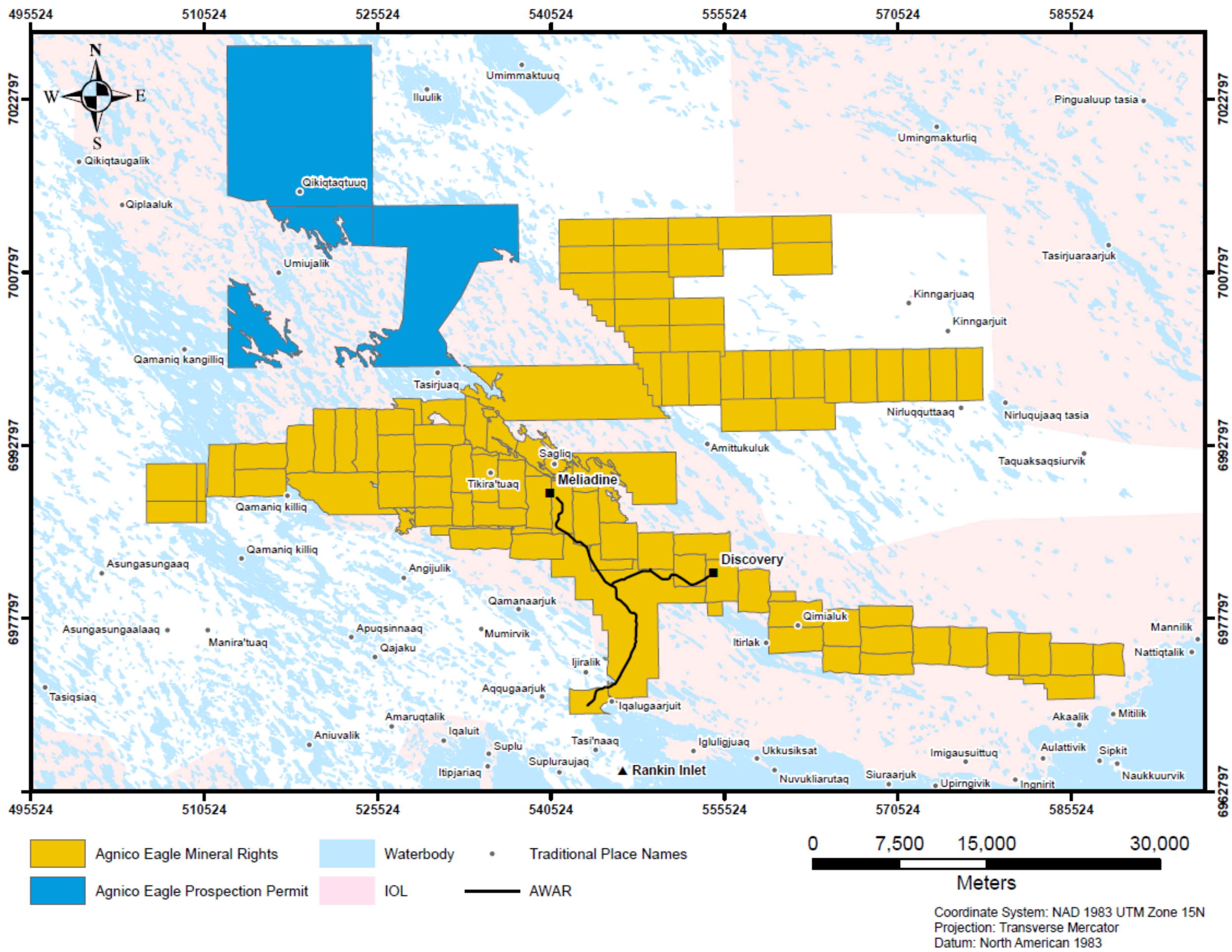
The Pyke Fault and associated secondary structures (i.e., the Lower Fault) appear to control gold mineralization on the property. Along the fault is a series of oxide iron formations that host six (6) of the seven (7) Meliadine mine deposits currently known. The deposits consist of multiple lodes of mesothermal quartz-vein stockwork, laminated veins and sulphidized iron formation mineralization. The northern, magnetite-rich Upper Oxide iron formation hosts the Tiriganiaq zone, the largest deposit to date with a strike length of approximately 3.0 km at surface and a known depth of 800 m, as well as the Wolf North and Discovery zones. The southern, weakly magnetic Lower Lean iron formations contain the F Zone, Pump, Wolf Main and Wesmeg deposits. Normeg is hosted by mafic volcanics and is located between the Wesmeg and Tiriganiaq zones (Agnico Eagle website).

The deposits are all within 5 km of Tiriganiaq except for Discovery, which is 17 km east-southeast of Tiriganiaq. Each of these deposits has mineralization within 120 m of surface, making them potentially mineable by open pit methods. They also have deeper mineralization that could potentially be mined with underground methods, which are currently being considered in various studies (Agnico Eagle website).

Appendix F presents the regional and local geology maps for Meliadine. The Tiriganiaq-Westmeg-Normeg schematic geological cross-section and the Tiriganiaq composite longitudinal section are also presented.

As presented in the 2014 FEIS (Agnico Eagle, 2014), open pit mining will continue at the Pump deposit, F Zone deposit, and Discovery deposit.

Figure 2-1: Meliadine Mine claims, leases and concessions



2.4 Meliadine Water Licence Amendment Summary

The 2024 Meliadine Mine Water Licence Amendment allows the mining of deposits included in the 2014 FEIS and approved under Project Certificate No.006 (Tiriganiaq, Wesmeg/Wesmeg North, Pump, F Zone, and Discovery), and the following components:

- temporary ore stockpiles (three facilities located near Pump, F Zone, and Discovery)
- Tailings Storage Facility capacity to 20.6 m^3
- waste rock storage facilities (WRSF6 & WRSF7, WRSF9)
- fuel storage at Rankin Inlet from 37.5 ML to 80 ML
- annual operational water use limits from 742,000 m^3/yr to 1,100,296 m^3/yr
- Saline Pond (SP6)
- contact water infrastructure for Pump, Wesmeg, F Zone, and Discovery
- Dewatering of the Lakes/Ponds to support mining at Pump, Wesmeg, F Zone and Discovery

2.4.1 Meliadine Mine Plan

Meliadine operations started after commissioning was completed at the end of the second quarter of 2019 and span approximately over 12 years, with mining activities and ore processing expected to end in (2031).

Closure is estimated to take seven years as pits are being re-flooded, from 2032 to 2038. Consistent with the 2014 FEIS (Agnico Eagle, 2014), most removal or demolition of buildings and infrastructure will occur at the end of the operation phase and would be done in the first two years of decommissioning. Reclamation work should be completed within 3 to 4 years of the closure. The filling of open pits with water would extend until the end of the closure phase. During closure, all saline water will be pumped to the underground. Surface contact water as well as local runoff and precipitation will be stored in the pits to enhance reflooding activities. Active reflooding will be conducted with water to be pumped from Meliadine Lake. There will be no discharge into Meliadine Lake or to Itivia Harbour during this phase.

Post-closure will be initiated when flooded pits are reconnected to the surrounding environment and will last 10 years, from 2039 to 2048.

Table 2-1 summarizes the Meliadine Mine development schedule and Table 2-2 summarizes the quantities to be mined from the open pit and underground mining operations and the mine waste to be managed.

Table 2-1: Meliadine Mine Development Sequence

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032-2038	2039-2048
Construction	■	■	■	■	■	■	■	■	■	■	■			
Mining	■	■	■	■	■	■	■	■	■	■	■	■		
Closure													■	
Post-Closure														■

Table 2-2: Life of Mine Summary of All Deposits

Year	Total Ore Open Pit	Total Waste Rock Open Pit	Total Ore Underground	Total Waste Rock Underground	Total Tailings Stored in TSF	Total Overburden
	(t)	(t)	(t)	(t)	(t)	(t)
2019*	-	236,219	1,108,666	482,736	862,814	411,684
2020*	109,392	3,395,398	1,293,507	608,134	1,092,253	1,354,831
2021*	514,930	4,428,776	1,445,614	653,096	1,363,855	2,218,888
2022*	432,859	2,942,941	1,345,975	682,237	1,311,413	1,828,976
2023*	366,731	3,358,879	1,358,913	760,507	1,430,506	2,223,091
2024*	561,000	5,262,000	1,463,000	920,000	1,543,000	606,000
2025	926,000	4,863,000	1,492,000	831,000	2,136,000	918,000
2026	824,000	4,446,000	1,513,000	780,000	2,225,000	2,143,000
2027	2,816,000	4,844,000	2,470,000	966,000	2,957,000	2,849,000
2028	2,151,000	12,676,000	2,479,000	968,000	2,958,000	3,254,000
2029	1,973,000	47,939,000	2,470,000	966,000	2,947,000	9,078,000
2030	1,104,000	45,711,000	2,470,000	966,000	2,958,000	6,542,000
2031	2,356,000	23,758,000	2,470,000	966,000	2,944,000	6,000
Total (t)	**14,135,000**	**163,861,000**	**23,380,000**	**10,550,000**	**26,729,000**	**33,433,000**
Total (Mt)	**14.1**	**163.9**	**23.4**	**10.6**	**26.7**	**33.4**
2024 WLA Application Total (Mt)	**12.3**	**168.8**	**25.2**	**10.8**	**28.1**	**34.5**

*End of year total mined values

2.4.2 Mine Facilities

This section presents a list of all facilities require to support the mining operation at the Meliadine site and in Rankin Inlet. The detailed description of the facilities is presented in Section 4.0. Figure 2-2 shows the current and planned main infrastructures at the Meliadine Mine. Figure 2-3 presents the main infrastructures in Itivia (Rankin Inlet). The AWAR and the Bypass Road are presented on Figure 4-1 and Figure 4-2 of the next section.

Existing infrastructure has been developed from previous bulk sampling programs, which were completed in the 2008 by Comaplex and 2011 by Agnico Eagle. The pre-existing site infrastructure was regulated by the NWB under the Water Licence 2BE-MEP1318 (Meliadine East Project) (expired 2018-10-31) and the Water Licence 2BW-MEL1215 (expired 2015-05-31). The existing facilities at the mine site, which are also covered in this ICRP, include:

- An exploration camp, located on the shore of Meliadine Lake, approximately 2.3 km north-east of the Tiriganiaq deposit;
- Two underground portals;
- An underground mine (Tiriganiaq Underground), including an underground total suspended solids (TSS) removal system;
- Two (2) open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2);
- A mineral processing facility, which includes a crusher plant, process plant, and paste backfill plant;
- Two (2) waste rock storage facilities (WRSFs);
- A tailings storage facility (TSF);
- Sewage treatment plant (STP);
- Water treatment systems;
- Supporting infrastructure, including gated access, emulsion plant and storage facility, potable water treatment plant, permanent camp, maintenance and on-site storage areas, power plant, fuel storage, incinerator, landfill, landfarm, water management system, water intake and diffuser, a temporary overburden stockpile and ore stockpile facilities and laydown area facilities;
- Transportation routes on site including internal access and haul roads;
- Roads to future operation area (deposits), included in the Meliadine FEIS;
- All Weather Access Road (AWAR);
- Quarries and borrow pits.

Infrastructures to be constructed following the 2024 Water Licence amendment include:

- Open pits at Wesmeg, Pump, F Zone, and Discovery;
- Three (3) additional surface waste rock storage facilities are added (WRSF6, 7, 9);
- Additional berms, dikes, and channels to manage the water around the new infrastructure.

The Rankin Inlet Site Facilities are located about 30 km south of the mine site. The Rankin Inlet facilities act as a transfer point and temporary storage for all dry freight and fuel materials arriving by barge prior to overland shipment to the mine site via the Bypass Road and AWAR. The infrastructures present in Rankin Inlet that belong to the Meliadine Mine are:

- Fuel storage facility;

- Laydown and material storage area;
- Barge structure;
- Saline effluent pipeline and diffuser for saline water at Itivia;
- Waterline for treated groundwater effluent discharge into marine environment;
- Bypass Road around the hamlet of Rankin Inlet, and AWAR.

Figure 2-2: Meliadine Mine Infrastructure - General Map

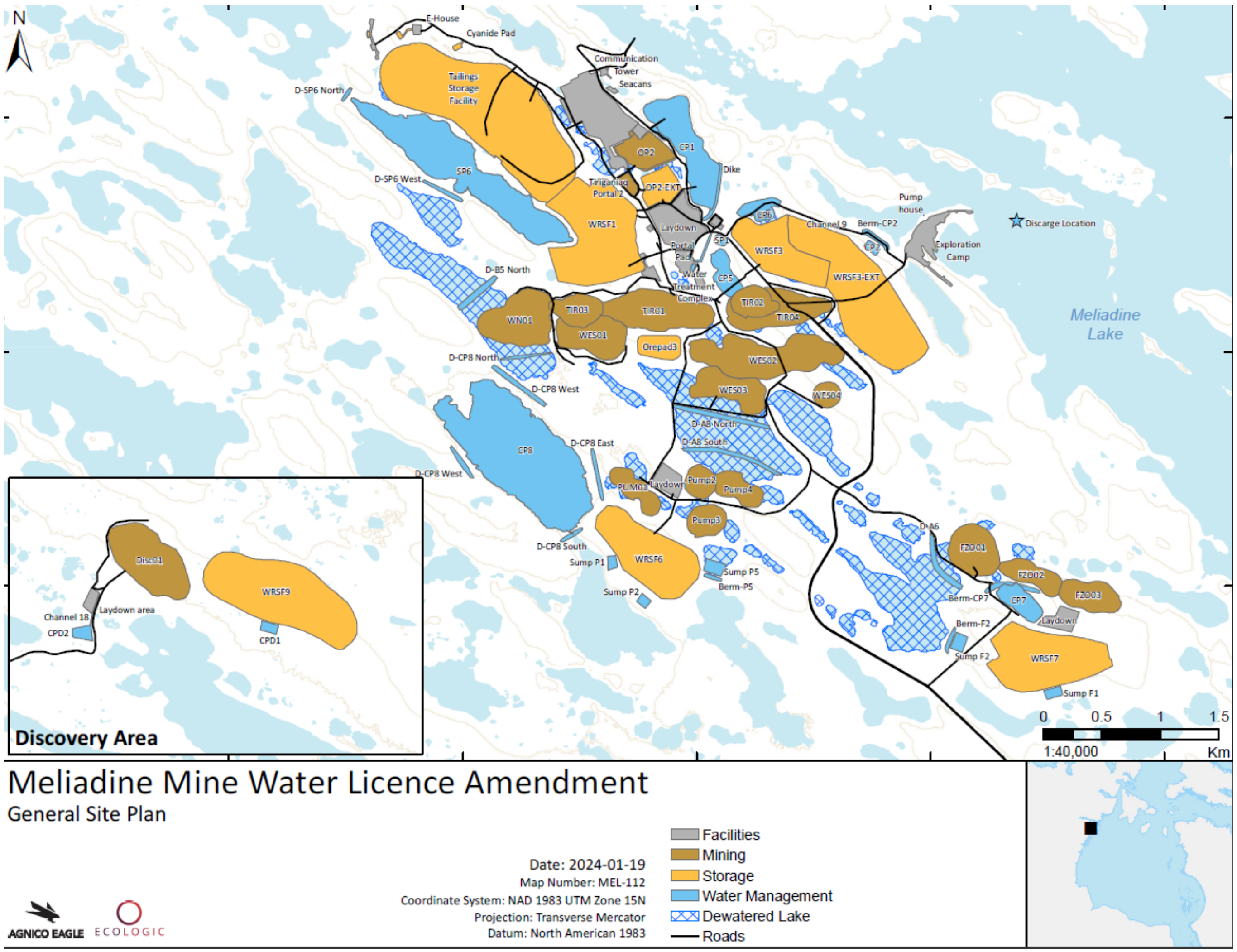


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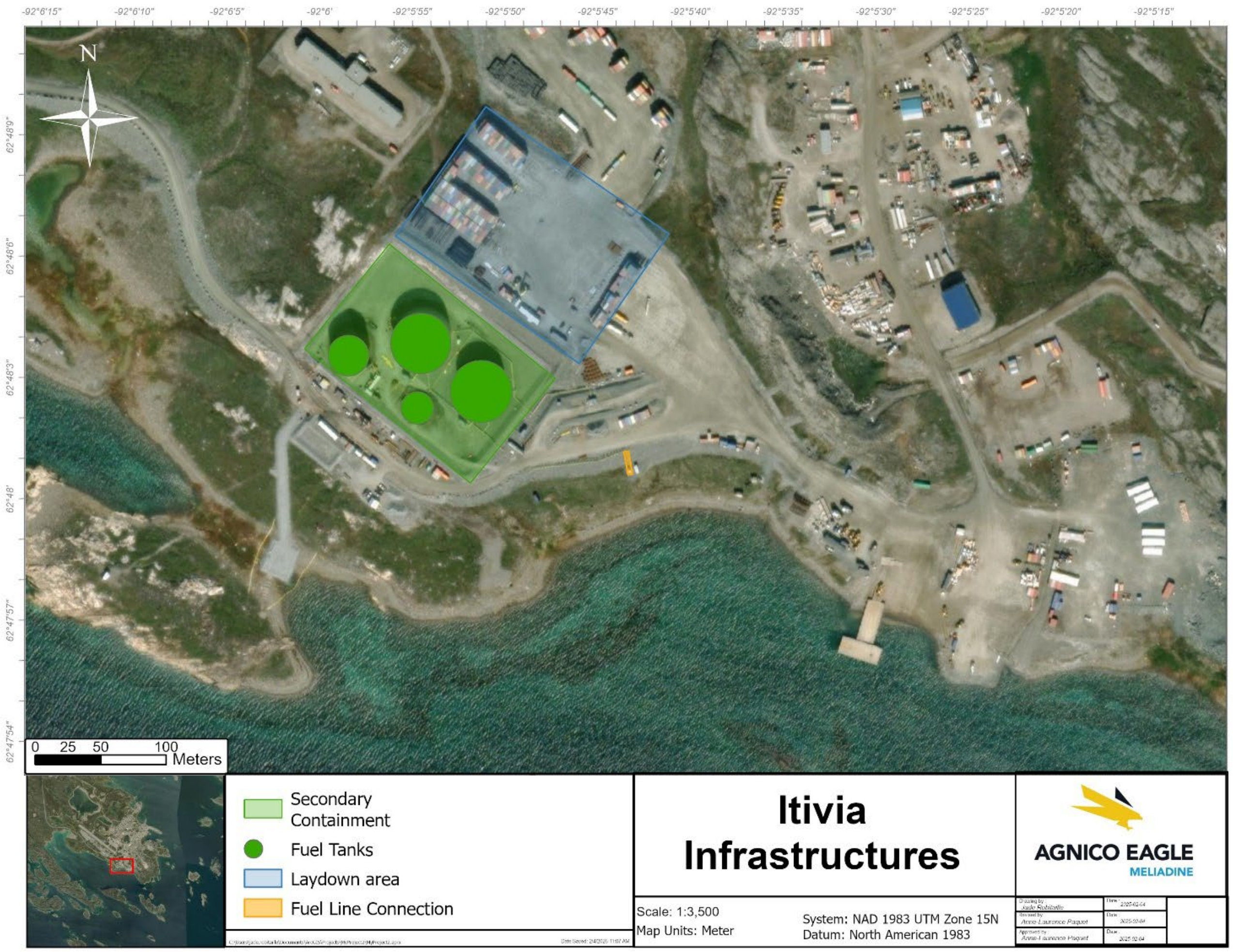
Figure 2-3: Itivia Infrastructure General Map



2.4.3 Project Alternatives

Agnico Eagle completed an explicit analysis of all the reasonable identified means of carrying out the Meliadine Mine components or activities, including the “no-go” alternative, as presented in detail in the 2014 FEIS (Agnico Eagle, 2014).

The alternative assessment approach employed by Agnico Eagle recognizes that community preferences are important, and that positive and negative effects on valued components of the ecosystemic and socio-economic environments must be carefully weighed in selecting the preferred alternative. The process gives due consideration to the vulnerability of the Arctic ecosystem, reclamation and closure, and potential for cumulative effects.

Agnico Eagle also uses adaptive management as part of the precautionary approach and is part of the larger of decision-making processes. Agnico Eagle will continue to follow the Adaptive Management Plan.

3 Project Environment

This section provides a detailed description of the pre-disturbance conditions and the current development status of the Meliadine Mine. The Mine Environment details presented herein were extracted from the main documents listed below:

- Final Environmental Impact Statement (FEIS), Volume 1 to 10 (Agnico Eagle, 2014), including;
    - Permafrost Baseline Studies (SD 6-1) (Agnico Eagle, 2014);
    - Terrestrial Synthesis Baseline (SD 6-2) (Agnico Eagle, 2014);
    - Geochemistry Baseline (SD 6-3) (Agnico Eagle, 2014);
- Meliadine Preliminary Closure and Reclamation Plan (Agnico Eagle, 2015a);
- Meliadine Interim Closure and reclamation Plan (SLI, 2019);
- Type A Water Licence Main Application Document (Agnico Eagle, 2015c); and
- Meliadine Gold Mine - FEIS Addendum Environmental Assessment of Treated Groundwater Effluent Discharge into Marine Environment (Agnico Eagle, 2020b).

3.1 Atmospheric Environment

3.1.1 Climatic Conditions

The Meliadine Mine is located in an arid arctic environment that experiences extreme winter conditions, with an annual average temperature of -10.4°C. The monthly average temperature ranges from -30.9°C in January to +10.5°C in July, with above-freezing averages for only 4 months of the year (i.e., June to September). The Meliadine Mine is underlain by thick and continuous permafrost, except under larger waterbodies where taliks can exist. Winds are moderate to strong and generally originate from the north-northwest and the north. Mean monthly wind speeds are typically between 19 kilometres per hour (km/hr) and 29 km/hr, with an average of 22.3 km/hr.

The annual average total precipitation at the Meliadine Mine is 430 millimetres per year (mm/year) and falls almost equally as snow and rainfall. Average annual evaporation for small waterbodies in the Meliadine Mine area is estimated 40-45% of the total precipitation between June and September. The average annual loss of snowpack to sublimation and snow redistribution is estimated to vary between 30-35% of the total precipitation for the winter period and occurs between October and May (Okane, 2021).

Table 3-1 summarizes the estimated monthly climate characteristics used for the Meliadine Mine climate modelling and Table 3-2 summarizes the extreme 24-hour rainfall events derived for the mine site intensity-duration-frequency curves established from the regional Rankin Inlet rainfall observation.

Table 3-1: Estimated Mine Site Monthly Climate Characteristics

Month	Monthly Air Temperature (ºC)			Monthly Precipitation	
	Minimum	Average	Maximum	mm	(days)
January	-33.9	-30.3	-26.7	17	27
February	-33.7	-30.1	-26.4	17	25
March	-29.2	-24.9	-20.7	22	27
April	-20.4	-15.9	-11.4	29	22
May	-8.9	-5.6	-2.3	30	21
June	0.7	4.4	8.1	32	15
July	6.4	10.8	15.1	46	16
August	6.4	9.8	13.2	59	18
September	1.4	3.9	6.4	53	21
October	-7.1	-4.5	-1.8	57	27
November	-20.7	-16.9	-13	39	27
December	-29.1	-25.3	-21.7	25	28
Annual	-14.0	-10.4	-6.7	426	272

Source: Summary of average climate parameters for the 39-year (1981-2020) Meliadine historical climate database with adjusted precipitation (Tetra Tech 2021 and Okane 2021)

Table 3-2 : Estimated Mine Site Extreme 24-our Rainfall Events

Return Period (Years)	24-hour Precipitation (mm)
2	29.9
5	40.1
10	45.7
20	50.5
50	56
100	59.9

Source: Tetra Tech (2021)

3.1.2 Climate Change

In October 2014, after the issuance of the 2014 FEIS, the Intergovernmental Panel on Climate Change's (IPCC) adopted four new Representative Concentration Pathways (RCPs) to replace the Special Report on Emission Scenarios (SRES) that was used for the 2014 FEIS climate change assessment (IPCC 2014). As such, the Meliadine Mine climate change analysis was conducted under Representative Concentration Pathway (RCP) to represent greenhouse gas concentration trajectories.

RCP4.5 was selected as the climate change base case in all the models and designs. The RCP4.5 climate change database was developed following the recommendations outlined on the Canadian Climate Data and Scenarios (CCDS) website, which is wholly supported by Environment and Climate Change Canada (ECCC).

3.1.2.1 Temperature

Temperatures at Meliadine Mine are anticipated to rise at approximately 0.06°C/year relative to historical averages for RCP4.5, an average annual temperature of approximately -4.6°C over the last 30 years of the climate change database from 2020 to 2120 (Okane 2021).

A summary of annual average temperature for 2020 to 2120 is presented in Table 3-3.

Table 3-3: Annual Average Temperature Estimates from 2020 to 2021

Climate Change Scenario	Climate Normals 1981 to 2020 (°C)	2020 to 2050 (°C)	2050 to 2090 (°C)	2090 to 2120 (°C)
RCP 4.5 *	-10.4	-7.7	-5.9	-4.4

* base case climate change scenario, Source: Okane (2021)

3.1.2.2 Precipitation

Precipitation Normals have been adjusted for missing data and for gauge undercatch and evaporation due to wind effect (Okane 2021a). Historic precipitation Normals were used to create the site-specific RCP4.5 climate change database, following the recommendations outlined by (CCDS) online tool, which is wholly supported by ECCC.

Precipitations predictions for Meliadine Mine are anticipated to increase approximately 0.7 mm/year (70 mm total increase over 100 years) for RCP4.5. A summary of annual average adjusted precipitation for 2020 to 2120 is presented in Table 3-4 (Tetra Tech 2021).

Table 3-4: Annual Average Adjusted Precipitation Estimates from 2020 to 2021

Climate Change Scenario	Climate Normals 1981 to 2020 (mm)	2020 to 2050 (mm)	2050 to 2090 (mm)	2090 to 2120 (mm)
RCP 4.5 *	430	415	451	486

* base case climate change scenario, Source: Tetra Tech 2021

3.1.3 Air Quality

Baseline air quality presented in the 2014 FEIS was obtained using ECCC National Air Pollution Surveillance Network. The air quality was representative of undisturbed natural area. Readings were very low and well below the given air quality standards.

Air quality monitoring is ongoing at the Meliadine Mine. Constituents monitored include NO_x, SO_2, total suspended particulates (TSP), PM_{10}, $PM_{2.5}$, and dust. Results are presented in the Annual Report.

Incinerator stack testing has been ongoing since Project Certificate issuance in 2015 and all results reported as part of the Annual Report to the NIRB.

Target concentrations published by the CAAQS were updated since the 2014 FEIS to include stricter targets for 2020 and 2025. The 2014 FEIS used the NAAQS as criteria. Agnico Eagle has included both the 2020 and 2025 CAAQS targets in its NO_2 and SO_2 predictive modelling. Table 3-5 summarizes CAAQS for NO_2 and SO_2.

Table 3-5: Ambient Air Quality Standards, Objectives and Guidelines for NO_2 and SO_2

Compound	Averaging Period	2014 FEIS (NAAQS)	2020 CAAQS	2025 CAAQS
NO_2 (µg/m^3)	1-hr	400	113[b]	79[b]
	24-hr	200	N/A	N/A
	Annual	60[a]	32[c]	22.5[c]
SO_2 (µg/m^3)	1-hr	450	183[d]	170[d]
	24-hr	150	N/A	N/A
	Annual	30[a]	13[e]	10.5[e]

(a) Arithmetic mean value

(b) Canadian Ambient Air Quality Standard is 113 µg/m^3 from December 2017 through December 2024 and 79 µg/m^3 as of January 2025 (Government of Canada 2017a); compliance based on a three-year average of the annual 98th percentile of the daily 1-hour maximum concentration (D1HM).

(c) Canadian Ambient Air Quality Standard is 32 µg/m^3 from December 2017 through December 2024 and 22.5 µg/m^3 as of January 2025 (Government of Canada 2017a); compliance based on a one-calendar-year average of all the 1-hour average concentrations.

(d) Canadian Ambient Air Quality Standard is 183 µg/m^3 from October 2017 through December 2024 and 170 µg/m^3 as of January 2025 (Government of Canada 2017b); compliance based on a three-year average of the annual 99th percentile of the daily-maximum 1-hour average concentrations.

(e) Canadian Ambient Air Quality Standard is 13 µg/m^3 from October 2017 through December 2024 and 10.5 µg/m^3 as of January 2025 (Government of Canada 2017b); compliance based on a one-calendar-year average of all the 1-hour average concentrations.

3.1.3.1 Air Quality Monitoring Program

Air quality monitoring focuses on measuring airborne particulates, dustfall, and gaseous compounds (NO_2 and SO_2) during construction and operations (Agnico Eagle, 2021b).

The objectives of the air quality monitoring program during operations are (Agnico Eagle, 2021b):

- To verify the predicted concentrations of TSP, PM10 and PM2.5; and
- To verify that the mitigation measures considered integral to the Meliadine Mine are being incorporated as planned and are effective.

Dynamic particulate monitoring for the Meliadine site includes intermittent 24-h sampling for TSP, PM_{10} and $PM_{2.5}$ using Partisol Sequential Air Samplers. In addition to the dynamic monitoring for suspended particulates, a dustfall monitoring program has been implemented at the mine site to measure deposition rates of particulate matter. Unlike the active samplers, dustfall collection is a passive program that provides a measure of all particulates that would be directly deposited onto vegetation, soil, and water in the vicinity of the Meliadine Mine (Agnico Eagle, 2021b). The dustfall rates measured at the dustfall stations are analyzed for indications of increasing trends or measured concentrations above the applicable air quality guideline, as well as spatial and temporal trends. The conclusions of this analysis are presented yearly in the annual report. In accordance with Condition 2 of the Project Certificate, Agnico Eagle will monitor NO_2 and SO_2 at two (2) onsite locations throughout the construction and operations phase of the project, with passive NO_2-SO_2 samplers (Agnico Eagle, 2021b).

In accordance with Term & Condition 1c of the Project Certificate, snowpack monitoring for contaminants will be conducted annually, to assist in predicting the impact of contaminants released in snowmelt on the water quality in Meliadine Lake (Agnico Eagle, 2021b).

Air quality monitoring includes analysis of dustfall in several monitoring stations surrounding the site, as well as NO_2 and SO_2 in two (2) locations, over one month averaging periods throughout the year. In addition, Agnico Eagle began sampling dustfall transects at three locations along the AWAR, and one location along the Rankin Inlet Bypass Road. Units are in place for the year-round analysis of suspended particulates (TSP, $PM_{2.5}$, and PM_{10}). Available results for all parameters are compared to regulatory guidelines and FEIS predictions, and spatial and temporal trends are assessed.

The air quality monitoring plan for closure will be developed in the future, based on the operation monitoring plan and results.

3.1.4 Noise

Baseline noise levels, as presented in the 2014 FEIS (Agnico Eagle 2014) were representative of undisturbed environment as human activity in the study areas was minimal (35 dBA). Some measurements were also collected closer to Rankin Inlet where noise levels were measured in the 45-52 decibel (dBA) range.

A total of 20 locations were identified within the Site Study Area (SSA) and Local Study Area (LSA) as being at risk of receiving noise emissions. Modelling exercises and monitoring strategies for the existing environment are based upon limiting the impact on those 20 noise receptors. Monitoring data from Meliadine's noise monitoring plan collected since 2016 shows sounds levels at selected stations are mostly within the predictions and site noise criterion.

3.1.4.1 Noise Monitoring

The objective of the noise monitoring program at Meliadine is to measure noise levels at five (5) previously determined monitoring locations over at least two 24 h periods. All noise monitoring stations are near seasonally occupied cabins, which were identified as being the most sensitive receptors in the noise impact assessment (Agnico Eagle, 2014, Volume 5). The program aims to confirm the predictions made in the FEIS regarding Meliadine Mine impacts on area noise levels, and in doing so, determine if supplemental or alternative mitigation strategies are required to reduce noise emissions from the Meliadine Mine (Agnico Eagle, 2021c).

As described in the Noise Abatement and Monitoring Plan (Agnico Eagle, 2021c), the program includes a Noise Abatement Plan (NAP) and Noise Monitoring Plan (NMP). The NAP describes how noise abatement is incorporated into the Meliadine Mine, while the NMP describes the annual ambient noise monitoring program. Together, the NAP and NMP are designed to control potential Project noise impacts on Points of Reception (PORs) located in the Meliadine Mine area. If the noise monitoring confirms excessive Project associated noise levels exist, the monitoring data will be used to determine where the NAP requires improvement and if additional monitoring activities are required.

3.2 Physical and Terrestrial Environment

3.2.1 Topography and drainage basin

Topography and lake bathymetry characteristics for the Project presented herein are from the Permafrost Thermal Regime Baseline Report (Agnico Eagle 2014). The dominant terrain in the Project area comprises glacial landforms, such as drumlins (glacial till), eskers (gravel and sand), and lakes. A series of low relief ridges composed of glacial deposits-oriented northwest-southeast control the regional surface drainage patterns.

The Tiriganiaq, F Zone, Pump, and Wesmeg deposits are located on a large peninsula separating the east and west basins of Meliadine Lake. The Discovery deposit is located south and east of Meliadine Lake. Bathymetry surveys of critical lakes around the Meliadine Mine are presented in Table 3-6 and result from new bathymetry survey performed in 2019 (Agnico Eagle 2019).

Table 3-6: Maximum Lake Depths

Area	Lake	Maximum Lake Depth[(a)] (m)
Main	B4	2.0
	B5	3.0
	B7	4.5
	A6	4.0
	A8	4.0
Discovery	CH6	8.0

(a) Based on bathymetry survey using 0.5 m contours (Agnico Eagle 2019)

3.2.2 Surficial Geology

In general, the local overburden stratigraphy in the area consists of a thin layer of topsoil overlying a layer of silty gravelly sand. Cobbles and boulders are observed throughout the entire site and at various depths in the boreholes. The grain angularity is found mainly to be sub-angular to angular and few are identified as sub-rounded. The bedrock surface at site is encountered between about 2 to 18 m below the ground surface.

Additional information on the surficial geology in the local area, including geotechnical properties, can be found in SD 2-4A of the 2014 FEIS (Agnico Eagle, 2014).

3.2.3 Bedrock Geology

Meliadine Mine is located within the Archaean Rankin Inlet Greenstone Belt, within the Churchill Structural Province of the Canadian Shield. The rocks of the Rankin Inlet Greenstone Belt have been subjected to polyphase deformational events and metamorphism. The rocks consist of a sequence of mafic volcanic rocks, felsic pyroclastic rocks, sedimentary rocks and gabbro sills.

The Meliadine Mine is situated in a region of historically low seismicity. Archaean and Proterozoic deformational events have resulted in an alignment of stratigraphy trending in a northwest to southeast direction which defines the Meliadine trend. To the south of the deposits is the Pyke Fault, a major regional fault zone, which extends over several kilometres and is characterized by multiple foliations and regional shear zones.

The geology of the Tiriganiaq Deposit consists of greywacke and argillite sediments (Sam Formation), iron formation, and mixed iron formation, greywacke, and siltstone (Upper Oxide Formation) in fault contact with underlying mafic volcanic rocks (Wesmeg Formation). The sequence trends in an east/west direction, and dips northward at inclinations greater than about 60 degrees. The stratigraphy is aligned for over 3 km along the mineralized shear direction. The fault contact between the Tiriganiaq and the Wesmeg Formation is referred to as the Lower Fault Zone. A zone of graphitic, mineralized fault gouge (0.5 to 3 m in thickness) commonly occurs over this zone.

Ongoing monitoring of geological structures has led to the identification of 17 faults (i.e., KMS corridor, RM-175) that have been incorporated into the conceptual hydostratigraphy, in addition to the three regional faults (Lower Fault, Pyke Fault, and North Fault) that were previously considered in the 2014 FEIS.

The additional structures are generally located between the Lower Fault and Pyke Fault within the Mafic Volcanic Rock formations, and range in thickness between 2 and 6 m. An exception is the KMS corridor, which is a wider zone of poor rock quality that is generally located between the KMS fault and Lower Fault. The improved understanding of the different structural features in the mining area have contributed to reduced conservatism in the hydrogeology modelling (refer to section 3.2.6).

There appears to be two parts to the Wesmeg gold deposit: a northern and southern part. In the northern part, the stratigraphy strikes east-west and dips 65 degrees to the north. The stratigraphy in the southern part strikes northwest-southeast and dips 50 degrees to the north. The host Wesmeg Formation is massive to pillowed basalts and interlayered mafic volcaniclastics, with rare gabbro dykes and some interflow sediments consisting of siltstone, mudstone, and minor iron formations.

The stratigraphy in the Pump deposit area strikes northwest-southeast and dips 50 degrees to the north. Similar to the F Zone and Wesmeg deposits, the host rocks at the Pump area are massive to pillowed basalts of the Wesmeg Formation, which are cut by rare gabbro dykes and interflow sediments.

The stratigraphy of the F Zone area is dominated by mafic volcanic rocks and the east southeast striking Lower Lean Iron Formation. The deposit area is located north of the Pyke Fault which runs sub-parallel to the Lower Iron Formation. Mineralization of the F Zone is hosted by the Lower Lean Iron Formation and is associated with quartz veins and east striking shear zones.

The stratigraphy of the Discovery area is dominated by a thick package of inter-bedded clastic sedimentary units, chemical sediments (oxide facies iron formations) and minor gabbroic dykes. In the deposit area, the hanging wall to the main gold-bearing iron formation horizon is dominated by a greywacke unit which contains minor interbedded argillaceous units, chemical sediments and gabbroic dikes.

Gold mineralization is generally restricted to a folded and variably sheared oxide facies iron formation package, which generally consists of banded chert and magnetite horizons (banding on the millimetre [mm] to centimetre [cm] scale), with lesser interbedded chlorite-rich beds and chert and minor local interbedded greywacke units. The footwall to the main mineralized iron formation horizon consists of a similar succession of clastic sedimentary units as found in the hanging wall. The footwall stratigraphy is dominated by greywacke, with a more argillaceous interval, approximately 20 to 40 m below the mineralized iron formation.

3.2.4 Geological Hazards and Seismicity

The mine site is in an area of relatively low seismic risk. The peak ground acceleration for the area was estimated using seismic hazard calculator from the 2010 National Building Code of Canada-Natural Resources Canada (NRC) website (NRC, 2015).

The estimated PGA is 0.022 g for a 5% in 50-year probability of exceedance (0.001 per annum or 1 in 1,000 year return) and 0.037 g for a 2% in 50-year probability of exceedance (0.000404 per annum or 1 in 2,475 year return) for the area (see **Appendix F** for the seismic zoning map and the seismic hazard calculation).

3.2.5 Permafrost

The Mine site is located within a region of continuous permafrost within the Southern Arctic terrestrial ecozone; one of the coldest and driest regions of Canada (see **Appendix E**). Permafrost is defined as ground that remains at or below 0°C for at least two (2) years. Permafrost does not necessarily contain ice; rather, its definition is based solely on the temperature of the mineral or organic parent material. Permafrost in the Mine area is considered to be an irregular surface, and so the actual depth of permafrost is variable. In this region, the layer of permanently frozen subsoil and rock is generally deep and overlain by an active layer that thaws during summer. The ground temperature data indicates that the active layer is 1.0 to 3.0 m in areas of shallow soil and away from the influence of lakes. It is anticipated that the active layer adjacent to lakes or below a body of moving water, such as a stream, will be deeper. Thermal modelling indicates the depth to permafrost varies between 320 and 490m depth, with the interpreted depth dependent on the proximity to nearby lakes (WSP 2024). Late-winter ice thickness on freshwater lakes is approximately 1.7 m. Ice covers usually appear by the end of October and are completely formed in early November. The spring ice melt typically begins in mid-June and is complete by early July, depending on site specific conditions of water depth and exposure. Based on bathymetry data, maximum lake depth varies from 2.5 to

5.0 m. Where water depth is greater than about 1.0 to 2.3 m, taliks are expected. A talik is a zone of unfrozen ground year-round that lies in permafrost areas. Formation of open taliks that penetrate through the permafrost may also be expected for relatively deeper and larger lakes in the project area. Round lakes that do not freeze to the bottom in winter and have a minimum radius of approximately 290 to 330 m, or elongated lakes that do not freeze to the bottom and have a minimum half width of approximately 160 to 195 m, are expected to have a talik underneath that extends through permafrost.

The ground ice content of permafrost soil and rock in the Meliadine area is expected to be between 0% and 10% (dry permafrost) based on regional scale compilation data. Locally on land, ice lenses and ice wedges are present, as indicated by ground conductivity, and by permafrost features such as frost mounds. These areas of local ground ice are generally associated with low-lying areas of poor drainage.

Rock and soil-related terrain instability is a minor concern in the Meliadine area. Although permafrost will degrade in certain areas, for the most part the permafrost is “dry” and has low ground ice content. The exception is the wetlands occupying lowlands adjacent to lakes and ponds where excess ground ice is present and thaw instability is foreseeable. These impacts can be mitigated using currently accepted permafrost engineering practices as part of construction and closure.

3.2.6 Hydrogeology

A 2-Dimensional thermal modelling was completed to update the predicted depth to the base of permafrost in the study area, to assess the extent of lake taliks and to determine whether the proposed open pits and additional underground developments will remain within the permafrost limits (WSP 2024). This approach was adopted given the mining activities and proximity of these to lakes with potential open taliks.

The 2014 FEIS predicted that taliks extending through the permafrost would exist beneath circular lakes having a minimum radius of approximately 290 to 330 m, and beneath elongated lakes having a minimum half width of approximately 160 to 195 m. Taliks (areas of unfrozen ground) are to be expected where lake depths are greater than about 1.0 m to 2.3 m. Formation of an open talik, which penetrates through the permafrost, would be expected for lakes which exceed a critical depth and size. The thermal modelling update indicates that below Lake B7, Lake A8, Lake B5, Lake A6, Lake B4, and Lake CH6 will have open taliks with some being connected to the deep groundwater flow regime (WSP 2024).

Since the completion of the 2014 FEIS, supplemental hydrogeological data has been collected to enhance the understanding of hydrogeological conditions, which is presented in an updated existing conditions report (WSP 2024b). An updated numerical groundwater model has been developed and is presented in the Hydrogeology Modelling Report (WSP 2024c). This report addresses the approaches and assumptions adopted in the estimate of the potential groundwater inflow quantity and groundwater quality (TDS only) associated with the development of the open pits and underground. In this assessment, a three-dimensional numerical groundwater model was developed using FEFLOW (V8). Base case predictions of total saline groundwater inflow to be managed from the combined underground developments range from 400 m^3/day at the Tiriganiaq underground in Year 2022, up to a peak inflow of 1,625 m^3/day in Year 2027 (WSP 2024c).

3.2.7 Surface Water Hydrology

The Meliadine Mine is located within the Meliadine Lake watershed. Meliadine Lake has a water surface area of approximately 107 km^2, a maximum length of 31 km, features a highly convoluted shoreline of 465 km in length, and has over 200 islands. Unlike most lakes, it has 2 outflows that drain into Hudson Bay through 2 separate river systems. It has a drainage area of 560 km^2 upstream of its 2 outflows. Most drainage occurs via the Meliadine River, which originates at the southwest end of the lake. The Meliadine River flows for a total stream distance of 39 km. The Meliadine River flows through a series of waterbodies, until it reaches Little Meliadine Lake and then continues into Hudson Bay. A second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which discharges into Hudson Bay through the Diana River system (a stream distance of 70 km). At its mouth, the Diana River has a drainage area of 1460 km^2.

Watersheds within the Local Study Area (A, B, C, D, E, G, H, I, J, and P near the main Meliadine Mine footprint; and X and CH near Discovery) comprise an extensive network of waterbodies, and interconnecting streams. These watersheds have lake surface fractions (i.e., the ratio of lake area to land area) of up to 51%, and the hydrology of these watersheds is dominated by lake storage and evaporation. Channels are only slightly entrenched with banks typically consisting of mats of vegetation, below which are found organics and fine soils within a matrix of cobble and boulders similar to the bed materials. After the spring runoff and before the late summer rains, the streams are usually dry. During spring snowmelt peak discharges, erosion of channel banks is likely enhanced by frozen conditions. However, during conditions above freezing after spring runoff, these banks may be sensitive to changes in flow regime.

Summer evaporation is roughly equivalent to summer precipitation, with little if any net input from summer rain. The net input to the annual water balance of the watershed comes from spring run-off that recharges the lakes and ponds. Snowmelt runoff in the region begins in the period from late May to mid-June, and the snowmelt peak is often the peak flow for the year. Flows typically decline through the late summer and fall, with freeze-up occurring towards the end of October (except for Meliadine Lake, which has been observed to flow over the winter). All channels are anticipated to freeze to the bottom with zero flows over the winter period.

The previous assessments predicted quantities of water that would be withdrawn from Meliadine Lake for process or potable use, and quantities of water that would be managed and discharged to Meliadine Lake; these predictions are compared to measured data (Table 3-7). The previous assessments concluded that there would be negligible effects to water levels and flows in Meliadine Lake due to water withdrawal and water discharge. The measured water withdrawal and discharge volumes are within the range of predictions.

Table 3-7: Summary of Predicted and Measured Annual Water Withdrawal and Discharge to Meliadine Lake for the Meliadine Mine

Source	Annual Withdrawal (m^3)	Annual Discharge (m^3)
Predictions		
2014 FEIS	2,168,100 (Volume 2, Table 2-27 from Agnico Eagle 2014)	392,507 to 2,630,600 (SD 2-6 from Agnico Eagle 2014)
2016 Water Licence	318,000 (Agnico Eagle, 2015c)	798,000 (Agnico Eagle, 2015c)
2020 Water Licence Amendment	741,706 (Agnico Eagle, 2020d)	598,209 to 883,631 (Table 6 from Golder 2020a)
2024 Water Licence Amendment	1,100,296 (Agnico Eagle, 2024a)	910,000 (in average) (Lorax, 2024)
Measured		
2016	0[a] (Agnico Eagle, 2017b)	177,376 (Agnico Eagle, 2017b)
2017	14,863 (Agnico Eagle, 2018)	0 (Agnico Eagle, 2018)
2018	29,255[b] (Agnico Eagle, 2019)	642,521 (Agnico Eagle, 2019)
2019	299,470[b] (Agnico Eagle, 2020a)	306,773 (Agnico Eagle, 2020a)
2020	296,823[b] (Agnico Eagle, 2021a)	1,031,178 (AEM, 2021a)
2021	457,636[b] (Agnico Eagle, 2022b)	851,126 (Agnico Eagle, 2022b)
2022	463,484[b] (Agnico Eagle, 2023a)	436,631 (Agnico Eagle, 2023a)
2023	510,106[b] (Agnico Eagle, 2024b)	529,545 (Agnico Eagle, 2024b)

(a) No water under licence 2AM-MEL1631
(b) Withdrawn from Meliadine Lake and A8

3.3 Chemical Environment

3.3.1 Soil Chemistry

A geochemical characterization of overburden was completed to complement the soil characterization of the 2014. The geochemical characterization results indicated that Overburden from within the pit footprints is non-acid-generating and does not require means to prevent oxidation. Leachate concentrations in overburden are generally lower than waste rock and meet MDMER monthly mean limits. Overburden salinity was determined to increase from 2 to 6 m depth. Below a depth of 6m, overburden salinity was observed to remain relatively constant. Below a depth of 6m, overburden salinity was observed to remain relatively constant, with a peak pore water TDS of 10,000 mg/L.

3.3.2 Sediment Quality

The 2014 FEIS (Agnico Eagle, 2014) provides a review of baseline sediment quality in Meliadine Lake, small waterbodies on the peninsula of Meliadine Lake, and regional waterbodies. Average metal concentrations were generally similar across the lakes with some exceptions:

- Metals that were higher in the peninsula lakes as compared to Meliadine Lake included cobalt, arsenic, nickel, chromium, copper, and zinc.
- Metals that were higher in Meliadine Lake as compared to the peninsula lakes included molybdenum, strontium, vanadium, titanium, and aluminum.

Sediment chemistry in Meliadine is typical of northern lakes, particularly those located in close proximity to highly mineralized areas. Arsenic, cadmium, and chromium concentrations are naturally elevated in the exposure and reference areas of Meliadine Lake (Azimuth 2021).

Since 2014, sediment quality has been monitored following the Aquatic Effects Monitoring Program (AEMP) design plan (i.e., collection of pre-construction data in 2016, and starting in 2018, collection of data every three years following the EEM requirements). In Meliadine Lake, samples are collected in five areas including a near-field area, mid-field area, and three reference areas.

Monitoring since 2014 primarily reflects existing conditions since construction and early operation of Meliadine Mine. Further analysis of the pre-2014, 2015, 2016, and 2018 sediment data examined the relationship between metal concentrations and sediment particle size because there is a propensity for most metals to accumulate in finer sediments (Golder 2019a).

In the 2014 FEIS (Agnico Eagle, 2014), it was stated that sediment quality in Meliadine Lake could be affected through release of treated effluent from the diffuser, erosion and sedimentation at the diffuser, and erosion and sedimentation on the shore of Meliadine Lake near mining infrastructure. Erosion and sediment control measures as well as best management practices were implemented at the site of the diffuser, and along the shore of Meliadine Lake, where appropriate, to minimize mobilization of suspended solids, and associated adsorbed chemicals, in the water column. Loading of particulate matter from treated effluent through the diffuser were controlled, as TSS in the end-of-pipe effluent is predicted to be no more than 15 mg/L. In addition, the use of a diffuser aids development of a mixing ratio in Meliadine Lake so that water quality guidelines are met at the edge of the mixing zone. Since water quality in Meliadine Lake at the edge of the mixing zone predicted to not exceed aquatic life or drinking water guidelines, and TSS in the effluent released from the Project will be managed to meet the regulations, it was predicted that sediment quality near the diffuser would not change from baseline concentrations.

Based on sediment data collected in 2018, arsenic, cadmium, and chromium were above the ISQG in the near-field and reference areas, and there was no indication that concentrations had increased in 2018 as compared to baseline/pre-construction (Azimuth 2021). These monitoring results are consistent with the FEIS (Golder 2019a).

3.3.3 Surface Water Quality

The 2014 FEIS (Agnico Eagle, 2014) provides a review of Meliadine Lake, small waterbodies on the peninsula of Meliadine Lake, regional waterbodies, and small and large watercourses on the peninsula of Meliadine Lake and along the AWAR. It also provides a thorough overview of baseline (i.e., pre-2014) conditions in the LSA and RSA. Monitoring has been conducted since 2014 that primarily reflects existing conditions since construction and early operation of Meliadine Mine. These monitoring programs focus mainly on Meliadine Lake and a few small waterbodies near the Meliadine Mine (i.e., Lakes A8, Saline Pond SP6, and D7).

Seasonality is an important feature in lakes of northern Canada, where the seasonal production of ice can cause dissolved substances to concentrate in the unfrozen water, and in shallow systems, ice can form through the water column and freeze to the bottom in shallow waterbody and stream systems. Oxygen levels can be suppressed during the winter because oxygen is not replenished from the atmosphere and is consumed by sediments and organisms. During open water conditions, oxygen is replenished in waterbodies through exchange with the atmosphere. The open water season ranges from late May until early October, with ice cover the rest of the year.

Surface water in winter can often be high in total dissolved solids (TDS) due to the formation of ice as pure water, which increases the concentration of dissolved solids in the remaining water. In spring, runoff from snowmelt and precipitation is often low in TDS which dilutes TDS in the lakes. In contrast, total suspended solids (TSS) tend to increase in spring as freshet flows can result in erosion and suspension of materials in the water column. As flows decrease, TSS settles and the water column clears.

Meliadine Lake is generally described as well oxygenated throughout the year, with circumneutral to slightly basic pH. Concentrations of TDS, hardness, alkalinity, specific conductivity, nutrients, and metals were below relevant guidelines for aquatic life (CCME) and drinking water (Health Canada 2020). Concentrations were generally higher in the peninsula lakes as compared to Meliadine Lake; for example, TDS was lowest in Meliadine Lake and the larger regional lakes and the rivers, and higher in the peninsula waterbodies (2014 FEIS, Volume 7, Section 7.4.4; Agnico Eagle 2014).

As per T&C of Project Certificate No.006 and Type A Water Licence 2AM-MEL1631, there is extensive water quality monitoring conducted on the mine site. These monitoring data are reported each year in the annual report. All water on the mine site is managed for eventual discharge to the receiving environment; treated surface contact water is discharged to Meliadine Lake, and treated saline water is discharged to Itivia Harbour.

Consistent with the 2014 FEIS, discharge of treated effluent was identified as the main mine activity that could potentially change water quality. As part of the annual Aquatic Effects Monitoring Plan (AEMP) reports, discharge quality is evaluated against the water licence criteria and the MDMER on an annual basis and reported via the Annual Site Report. These predictions will be validated through the AEMP and EEM monitoring programs.

3.3.3.1 Surface Water Quality Monitoring

There are many monitoring programs conducted to evaluate water quality at Meliadine. These are mainly a requirement of the Meliadine Water Licence 2AM-MEL1631 Schedule I. They are designed to provide immediate feedback such that mitigation or adaptive management can be implemented.

Further details on surface water quality monitoring during operations is provided in Water Quality and Flow Monitoring Plan and Annual Report.

3.3.4 Groundwater Quality

The Meliadine Mine lies within the Canadian Shield in an area of continuous permafrost. In areas of continuous permafrost, there are generally 2 groundwater flow regimes: a shallow groundwater flow regime located in the active (seasonally thawed) layer near the ground surface, and a deep groundwater flow regime beneath permafrost.

The following details are from the FEIS for Meliadine (Agnico Eagle, 2014, Volume 7). In the Canadian Shield, primarily in response to upward diffusion of deep-seated brines, concentrations of Total Dissolved Solids (TDS) in groundwater increase with depth. Chloride and calcium, with sodium to a lesser degree, are the chemicals that contribute to TDS in shield brines. By comparison, sea water is mostly composed of chloride and sodium. Three groundwater samples were collected in 2011:

- Groundwater sample from about 100 m bgs with a TDS of about 4,700 milligrams per litre (mg/L);
- Groundwater sample from about 450 m bgs with a TDS of about 60,900 mg/L; and
- Groundwater sample from about 600 m bgs with a TDS of about 61,000 mg/L.

As reported in the preliminary closure and reclamation plan (Agnico Eagle, 2015a), these values are greater than values observed at other sites in the Canadian Shield at corresponding depths. This difference, together with the relatively high proportion of sodium relative to calcium in groundwater samples likely indicates the presence of relic sea water in bedrock. It is known that this area was largely overlain by seawater during the last period of glaciation. Such occurrences have been observed at other areas where land was submerged by oceans in the past.

A TDS profile with depth was prepared for Meliadine mine site based on the three samples identified above and, compared to TDS profiles from sites in the Canadian Shield, as well as the Diavik and Meadowbank sites. It is assumed that the TDS attributed to the sodium chloride of the recent incursion of seawater will decrease with depth down to the calcium chloride profile established for Meadowbank (Agnico Eagle, 2015a).

An additional groundwater sampling round was undertaken in the summer of 2013. The TDS of the three groundwater samples collected in 2013 are as follows:

- groundwater sample from about 455 m bgs with a TDS of about 54,290 mg/L;
- groundwater sample from about 510 m bgs with a TDS of about 57,700 mg/L; and
- groundwater sample from about 580 m bgs with a TDS of about 58,420 mg/L.

It is expected that the following key salinity parameters will vary with depth: chloride, sulphate, calcium, magnesium, potassium, sodium, and strontium. In all water samples, the concentration of dissolved trace metals in the groundwater is low, including arsenic which has a concentration below the analytical method detection limit in all samples. All parameters not associated with salinity are expected to be constant with depth.

As outlined in the Groundwater Management Plan, groundwater investigations suggested that total dissolved solids (TDS) concentrations are relatively consistent below the permafrost at approximately 64,000 mg/L. Groundwater quality samples have been collected since 2017 from diamond drillholes intersecting water bearing structures. Results from the 146 samples collected from 2017 to 2019 indicate stable and consistent concentrations for several parameters and indicate that TDS concentrations are less than predicted at a mean concentration of 56,000 mg/L. The discrepancy between expected and observed TDS levels is potentially due to the difference of sampling depth between pre-development testing and samples collected during development. Pre-development samples were collected below permafrost (>450 m below ground surface), whereas the bulk of samples collected to-date have been collected in the basal cryopeg (280 m to 450 m below ground surface). Samples and trends will continue to be assessed as development progresses below the cryopeg. It should also be noted that mining operations include drill-and-blast excavation for the development of the Underground Mine, which results in certain parameters in groundwater to be influenced by explosives (particularly ammonia and nitrate).

Table 3-8 presents a summary of the groundwater sampling that has been conducted in the area near the Meliadine mine and that has been used to characterize the groundwater quality presented in the 2014 FEIS and 2018 FEIS Addendum.

Table 3-8: Comparison of Groundwater Sampling Conducted in Meliadine

Reference	2014 FEIS	2018 FEIS Addendum	Additional Groundwater Sampling
Sampling program date	2009, 2011 to 2013	2014 to 2017	2019 to 2021
Number of samples and location	• 1 sample in 1 BH • GT09-19 (Lake SP6) • Samples from 8 intervals from Westbay well • M11-1157 (Lake B5)	• Samples from 8 intervals from Westbay well M11-1157 • 3 groundwater samples from seeps (Tiriganiaq UG) • 8 groundwater samples from BH TIS-200-001 (Tiriganiaq UG) • 64 groundwater samples from DDH (Tiriganiaq UG)	• 37 groundwater samples (Tiriganiaq UG)
Depth (m)	105 to 620	225 to 725	230 to 457
TDS (mg/L)	4 700 to 61 000	16 400 to 66 300	24 558 to 67 000

BH = Borehole; DDH = Diamond Drill Hole

3.3.4.1 Groundwater Monitoring Program

A summary of the underground monitoring plan is presented in the Groundwater Management Plan.

3.3.5 Geochemical Characterization

The 2014 FEIS geochemical characterization program included ore, waste rock, overburden, and tailings at Tiriganiaq, Tiriganiaq-Wolf, Wesmeg, Wesmeg North, F Zone, Pump, and Discovery. Sample collection for the 2014 FEIS included:

- Waste rock (n= 557) and ore (n=25) samples collected from drill core.
- Tailings samples produced from metallurgical testing (n=20).
- Overburden samples collected from shallow test pits (0.3 to 0.7 m depth) (n=34).
- Waste rock samples collected from a pad constructed near the Tiriganiaq exploration pad (n=12).
- Ore (n=2) samples from two stockpiles (Lode 1000 and Lode 1100) present at the mine surface.

A comprehensive analytical testing program was completed on these samples. A subset of samples was also analysed for net acid generation (NAG) pH, shake flask extraction (SFE) and X-ray diffraction (XRD).

A kinetic testing program was initiated which included 46 humidity cell tests, 9 unsaturated column experiments and 4 field cells. Details on analytical methods and sample collection methods can be found in SD 6-3 of the 2014 FEIS.

3.3.5.1 Waste Rock

Most waste rock that will be excavated as part of the Meliadine Mine is classified as non-Potentially Acid Generating (non-PAG) except for the Discovery deposit. The distinct Acid Rock Drainage and Metal Leaching (ARD-ML) potential at Discovery is due to lower carbonate mineralization compared to other deposits, reducing the amount of Neutralizing Potential (NP) that is available to neutralize acidity generated from sulphide oxidation. Owing to the relatively low carbonate content, material classified as Potentially Acid Generating (PAG) or Uncertain are found in all three major waste rock lithologies (Sedimentary, Gabbro and Iron Formation). The occurrence of PAG rock outside of Discovery is essentially limited to the Iron Formation lithology. This lithology is primarily hosted with ore and comprises a minor component of waste rock from most deposits. The occurrences of Iron Formation at Wesmeg, Pump and F Zone tend to show similar ARD potential as Iron Formation at Discovery, while Iron Formation occurrences at Tiriganiaq and Wesmeg North are generally non-PAG.

Overall, 63% of Discovery open pit waste rock is classified as PAG or Uncertain. Only 5% of total waste rock outside of Discovery is expected to be classified as PAG or Uncertain. The ARD potential associated with Discovery open pit waste rock will be mitigated through progressive construction of a cover system on WRSF9.

3.3.5.2 Tailings

Milled tailings tend to have lower ARD potential compared to ore due to differences in ARD screening criteria. Discovery is the only deposit where most tailings are considered PAG. At Discovery, both major lithology types (Sedimentary and Iron Formation) are expected to be PAG or Uncertain. Outside of Discovery, the ARD potential is essentially limited to Iron Formation. Only 18% of tailings from all other deposits are classified as PAG or Uncertain. Mitigation of ARD potential of tailings placed in the TSF will occur through encapsulation by NPAG non-PAG material.

Throughout operations a closure cover will be progressively installed over the TSF to minimize the metal leaching potential from this facility.

3.3.5.3 Overburden

Overburden from within the pit footprints is non-acid-generating and does not require means to prevent oxidation. Metal release under laboratory conditions is low despite the relatively high total arsenic content. Leachate concentrations in overburden are generally lower than waste rock and meet MDMER monthly mean limits. Waste rock and overburden have compatible geochemical characteristics such that they could be managed together in the same facility.

Overburden excavated from mine pits will be co-disposed with waste rock in the WRSFs. Overburden excavations will be mostly conducted during winter months, to maintain frozen conditions, mitigating metal and salinity leaching potential from this material.

3.3.5.4 Geochemical Monitoring

Further details on characterization are provided in ARD-ML Sampling and Testing Plan. Sampling and testing of Discovery waste rock for ARD characterization will be conducted during mine operation to segregate suitable waste for use in construction and for closure. Sampling and reporting will be completed in accordance with Type A Water Licence 2AM-MEL1631.

3.4 Biological Environment

Baseline studies on vegetation, and terrestrial wildlife in and around the Meliadine Mine area were conducted for three study areas:

- A regional study area (RSA) to capture any effects that may extend beyond the immediate Meliadine Mine area on vegetation and wildlife in the broader regional context;
- A local study area (LSA) to assess the immediate direct and indirect effects of the Meliadine Mine on vegetation and wildlife;
- The AWAR LSA to assess limit of direct and indirect effects from the road on the surrounding vegetation and is delineated by a 1 km buffer on either side of the anticipated right-of way surrounding the proposed road alignment.

A map illustrating the LSA and RSA study area is provided in **Appendix G**.

The regional study area was defined as a 28 km radius centered on the mine site and encompasses an area of approximately 246,300 ha. Three Mine components that cover three distinct geographical locations (i.e., the Mine site and associated infrastructure, the AWAR, and the footprint of the Hamlet of Rankin Inlet) were considered when defining the LSA. The LSA for Meliadine Mine footprint and buffer area (a 500 m buffer is applied) encompasses approximately 10,598 ha.

3.4.1 Vegetation Habitat

In general, the community types identified within the Meliadine Mine and AWAR areas, or in the vicinity, include upland terrestrial vegetation classes, wetland classes and un-vegetated classes.

The Upland terrestrial vegetation is predominantly heath vegetation. Heath vegetation in this area is defined as land where the soils are not saturated for extended periods of the year. Heath refers to the presence of low growing evergreen shrubs, such as Labrador tea, bearberry, and black crowberry that are typical of these areas. Heath vegetation in the area also consists of heath tundra or heath boulder and bedrock associations.

Wetlands or riparian vegetation are defined as areas that are saturated for most, or all the growing season. Wetlands or riparian vegetation in the area consists of wet sedge meadows or tussock-hummock areas and low shrubby riparian vegetation along the margins of lakes and rivers.

Miscellaneous land cover types include un-vegetated areas, such as areas disturbed by pre-mining activities or bare ground and water.

A total of six rare plant species were observed within the Meliadine Mine area and include: pretty milkvetch (*Astragalus eucosmus*), northern tansy-mustard (*Descurainia sophioides*), hairy butterwort (*Pinguicula* *villosa*), Lanate willow (*Salix lanata sp. calcicola*), moor rush (*Juncus stygius*) and false chamomile (*Tripleurospermum maritimum*).

There are an additional 11 species of rare plants that may have the potential to occur in the Project area, though they were not encountered during previous field programs. These are listed as "Sensitive" in NU (CESCC 2011), though none are federally listed (COSEWIC 2012; SARA 2012).

3.4.1.1 Vegetation monitoring

The vegetation monitoring component is intended to provide a framework for maintaining both a healthy vegetative cover and re-vegetating disturbed areas to reduce the overall effect of the Mine on plant populations and communities, and consequently wildlife habitat. The objectives of the vegetation monitoring and management component are as follows:

- measure direct loss of plant communities as a result of the Mine footprint;
- measure degree of re-vegetation of disturbed areas;
- measure distribution and abundance of non-native invasive plant species; and
- measure plant health as part of the dust monitoring program.

As part of the re-vegetation monitoring plan in collaboration with the University of Saskatchewan, studies will be carried out at selected test plots to assess natural re-vegetation processes in disturbed areas. The focus of these test plots will be to evaluate plant species ingress, growth and survival on various disturbed sites, including rock fill covers, to determine re-vegetation success and the length of time it takes to reestablish vegetation on these sites (Terrestrial Environment Management and Monitoring Plan; TEMMP).

Studies indicate that tundra turfs, biological soil crusts and nitrogen fixing legumes are all candidates for active and passive restoration and both natural recovery and active restoration of local native vegetation can support the development of healthy functioning tundra ecosystems (Agnico Eagle, 2022b).

In addition, monitoring programs for non-native invasive plant species will be completed during the construction and operations phase of the Mine. Surveys for non-native invasive plant species will be undertaken in disturbed areas (e.g., active mine site, borrow pits) to identify and document the extent of any non-native invasive plant species that may occur during construction and operations.

Vegetation monitoring is completed as part of the TEMMP.

3.4.2 Aquatic Biota and Habitat

Studies targeting the ecological characteristics of the aquatic environment in the LSA and RSA were conducted from 1997 to 2012. Investigations included ground and aerial surveys to assess habitat quality of streams, bathymetric surveys of selected lakes, continuous recordings of water temperature in streams and lakes, collection of in-situ water quality data, and measurements of vertical distribution of temperature and dissolved oxygen in lakes (Agnico Eagle, 2015a).

As presented in the 2014 FEIS (Agnico Eagle, 2014, Volume 7), habitat for fish was dominated by shallow runs; other habitat types encountered included riffles, pools and riffle/boulder garden combinations. High quality habitats occurred in pools and deeper run habitats that were present mainly in larger streams connecting the primary chains of lakes in each Peninsula basin. Coarse substrates and abundant instream cover in these larger streams provided suitable habitat for Arctic grayling spawning and rearing. The valued ecosystem components occupying top trophic positions in the Meliadine Lake ecosystem were Arctic char, lake trout, and Arctic grayling.

Mainly shallow, ponds were also investigated in the area of the proposed mine site (i.e., the Peninsula) and contained poor to moderate fish habitat. The surveys showed that pond habitat was suitable mainly for rearing and spawning by forage species, particularly ninespine stickleback. The lack of suitable coarse substrates limits the spawning potential for Arctic grayling. Freezing to bottom during winter, overwintering by fish in the Peninsula ponds is not possible. Spring freshet and/or important precipitation events allows movement between ponds, they offer seasonal habitat (when accessible) and there is no potential to support fish on an annual basis.

In order to characterize the lower trophic communities within the LSA and RSA, numerous investigations at streams, ponds, and lakes were completed in 1997, 1998 and 2001. At the base of the ecosystem, phytoplankton in lake water and periphyton on shoreline rocks use nutrients and carbon sources for growth and provide food to benthic invertebrates and zooplankton. Zooplankton feed directly on phytoplankton, while benthic invertebrates feed on periphyton and decaying organic material that settle on the bottom of waterbodies. Fish feed on zooplankton and benthic invertebrates, and predatory fish feed on smaller fish (Agnico Eagle, 2015a).

3.4.2.1 Aquatic Ecosystem Monitoring

Upon the discharge of dewatering effluent to Meliadine Lake, the Mine becomes subject to the Metal and Diamond Mining Effluent Regulations (MDMER). Under the MDMER, the Mine is required to conduct Environmental Effects Monitoring (EEM) studies, the results of which are used by Environment and Climate Change Canada (ECCC) to assess the effectiveness of the effluent regulations by evaluating effects on fish, fish habitat, and use of fisheries resources by humans.

The Aquatic Effects Monitoring Program (AEMP) is a requirement of the Type A Water Licence 2AM-MEL1631. The AEMP is intended to function as an integrated monitoring program, which considers pathways to potential effects of the Mine on the aquatic environment, including changes in surface water quality, sediment quality, lower trophic communities, fish habitat, and fish health due to release of mine water, physical alteration of watersheds, and air emissions during construction, operations, and closure. The AEMP was also designed to incorporate EEM requirements of the MDMER throughout the life of the Mine, with supplemental components included to fulfill the additional conditions and requirements of the Water Licence.

3.4.3 Wildlife

The wildlife baseline details for the Meliadine Mine are provided in SD 6-2 2009 Terrestrial Synthesis Baseline of the 2014 FEIS and are briefly summarized herein.

- Wildlife studies identified the following species within the Project and AWAR areas:
- Barren-ground caribou;
- Arctic fox;
- Raptors;
- Upland birds;
- Shorebirds; and
- Waterfowl.

Key baseline details from the area include:

- Barren-ground caribou of the Qamanirjuaq herd are regular but transient visitors during their spring migration and calving periods.
- 37 bird species have been observed including 14 species of waterfowl, five species of shorebird, three species of raptor, and two owl species.
- The most common species of upland birds are Lapland Longspur (*Calcarius lapponicus*), Horned Lark (*Eremophila alpestris*), and Savannah Sparrow (*Passerculus sandwichensis*).
- Shorebirds are uncommon and have not been documented breeding.
- Pacific Loons (*Gavia pacifica*) and Tundra Swans (Cygnus columbianus) are confirmed, regular breeding summer residents.
- Peregrine Falcon (*Falco peregrines*), Rough-legged Hawk (*Buteo lagopus*), and Gyrfalcon (*Falco rusticolus*) have been documented and confirmed as breeding.
- Short-eared Owls (*Asio flammeus*) have been documented and nest observations indicate that they are likely breeding.
- Sandhill Cranes (*Grus canadensis*) occur throughout the study area in summer and are confirmed as breeding.
- Arctic fox (*Alopex lagopus*) and Arctic hare (*Lepus arcticus*) are common residents.
- Wolves (*Canis lupus*), muskox (*Ovibos moschatus*), and polar bears (*Ursus maritimus*) are infrequently observed.
- Grizzly bear (*Ursus arctos*) is listed under Committee on the Status of Endangered Wildlife in Canada as “Special Concern” and have the potential to be in the study area but were not observed in the study area during wildlife surveys.
- Wolverine (*Gulo gulo*) is listed under Committee on the Status of Endangered Wildlife in Canada as “Special Concern” and have the potential to be in the study area but were observed only once in the study area to date.
- Red knots, Calidris canutus rufa and Calidris canutus islandica are listed as “Endangered” and “Special Concern”, respectively under the Committee on the Status of Endangered Wildlife in Canada and have the potential to be in the study area, but were not observed during wildlife surveys for the Project.
- Polar bear, peregrine falcon, wolverine, and short-eared owl were the only species that are listed under Committee on the Status of Endangered Wildlife in Canada as “Special Concern” that have been documented in the study area.

3.4.3.1 Wildlife Monitoring

Wildlife protection at Meliadine is ensured by various protocols implemented during operations and presented in the TEMMP (a component of the FEIS).

The purpose of the TEMMP is to collect date 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 scope of the TEMMP annual report is to report on monitoring of the Meliadine Mine during construction, operation, maintenance, reclamation, and closure. The TEMMP is a requirement of the Meliadine Project Certificate No.006.

Wildlife monitoring is an essential tool in protecting and maintaining wildlife in the vicinity of the Project. A comprehensive monitoring strategy has been implemented and, as required, is adapted to meet the objectives of the management strategy and methods set out in the TEMMP. Monitoring programs evaluate the effectiveness of mitigation measures and assess Meliadine Mine-related impact predictions. For all wildlife monitoring programs there is a certain level of uncertainty or unpredictability; therefore, residual effects identified during monitoring may require implementation of adaptive management strategies.

Agnico Eagle has established several wildlife monitoring programs that involve collaborations with regional initiatives and community members and contribute to monitoring cumulative effects. These may include caribou collar program, regional muskoxen surveys, hunter harvest program, raptor monitoring program, waterfowl and shorebird monitoring and wildlife surveys.

As presented in the TEMMP, mitigation measures and monitoring initiatives to lessen the likelihood that wildlife will become habituated to the Meliadine site and its infrastructures. Measures are defined to deter wildlife from obtaining camp food waste, finding shelter around the site, gaining access to harmful substances present on the project site, being injured as a result of vehicle collisions, and damaging mine property. Despite these mitigation measures, personnel may occasionally come in contact with wildlife that inhabits the Meliadine area. Incidents must be managed to keep both humans and wildlife safe while using only humane control methods.

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 and Annual Reports and to the Government of Nunavut (GN), the Kangiqliniq Hunters and Trappers Organization (KHTO) and KivIA.

3.5 Social Environment

The Kivalliq region communities' population has varied between 2016 and 2021. There was an overall population increase of 6% in the Kivalliq region over that 5-year period. Since 2016, and using 2016 and 2021 Census counts, the population decreased in Baker Lake (<1%) and Chesterfield (9%), while it increased in Arviat (8%), Coral Harbour (16%), Naujaat (13%), Rankin Inlet (5%), and Whale Cove (8%). Despite the annual variation in the population numbers, the ratio of Inuit to non-Inuit employees in Rankin Inlet and Baker Lake remained relatively stable from 2001 to 2016 (the last year for which data is available).

Agnico Eagle's employee migration data indicates minimal impact on Kivalliq communities. Based on available and current data, there is no indication of mining-induced in-migration (2021 Socio-Economic Monitoring Program Report)

3.5.1 Traditional Activities

As part of the Meliadine Mine engagement activities, Agnico Eagle has heard that the daily diet still consists of various traditional foods. Agnico Eagle heard from participants that especially caribou and fish meat regularly supplement their weekly diet. Arctic char is stocked up during the summer and ice freeze up with gill net in the ocean or lakes. Fish is stored in catches for personal consumption and to feed dog teams. Caribou meat is consumed fried, dried and raw. The meat is also grounded to cook meals. A wide variety of berries are harvested and are either consumed fresh or used to make jam and shared among relatives. Participant indicated that they share all their catches with anyone that needs traditional food. Traditional food sources are preferred over store bought and processed food for health and cost reasons.

Fishing is practiced year-round. The community shared that Meliadine Lake is a good fishing spot in the late winter and springtime. Many people follow the winter road toward the Meliadine Camp and then follow snowmobile trails to the southeast end of the lake. There are many ice fishing holes made in Meliadine Lake in the spring. Additionally, summertime is said to be generally a good season for fishing lake trout and spending time on the lake.

Berry picking was and still is an important fall and spring activity throughout the Meliadine valley, wherever there are low slopes with heath tundra, and in hummocky areas at the edges of wetlands. During the spring, when there is light all day long, people would walk from Rankin to the area near Diana River to pick berries. Areas along the road were regularly used for berry picking. While people pick berries throughout the Meliadine valley, people are less likely to cross the Meliadine River when coming from Rankin Inlet to pick berries, especially if they are carrying young children on their ATVs. Mid-August and beginning of September is when cloudberries are harvested in the Rankin Inlet area up to Meliadine Lake.

3.5.2 Inuit Qaujimajatuqangit and Traditional Knowledge

The Inuit Qaujimajatuqangit (IQ) and traditional knowledge (TK) shared on the Mine included knowledge on the existing condition, Project impact concerns, and recommendations for the Project. Knowledge of the existing conditions is included in baseline reports or environmental setting portions of the 2014 FEIS.

In 2021, Agnico Eagle developed a Kivalliq Inuit Elders' Advisory Committee (KEAC) comprised of 21 Elders from Baker Lake, Chesterfield Inlet, Rankin Inlet, Whale Cove, Coral and Arviat to integrate Inuit Qaujimajatuqangit (IQ), Inuit Societal Values (ISV) and community knowledge into exploration, planning, workforce, wellness, and operational plans.

As part of it's mandate, the KEAC reviews and validates collectively IQ and TK shared with Agnico Eagle through multiple engagement channels with Kivalliq individuals, communities, and community groups. Engagement channels regroup focus groups, public consultations and open house.

Concerns on the various Project impacts are included as part of the effects assessments and recommendations are considered when developing mitigation and monitoring plans.

3.5.3 Cultural, Archaeological and Paleontological Resources

A total of 139 archaeological sites were recorded in the LSA area, out of those, 23 are in the development area of the Meliadine Mine. The cultural affiliation of archaeological sites recorded as part of the Meliadine Mine are affiliated to the Neoskimo period and consist of hunting blind, campsite, cache and inuksuk. Within the LSA, a total of 39 sites were mitigated around the Mine Infrastructure and 13 along the AWAR. Continued avoidance by 30 meters will be continued for the sites not mitigated and mitigations measures implemented prior to development when required.

Since the 2014 FEIS submission, 28 new sites were identified throughout archaeological assessment conducted for the Meliadine Mine. Additionally, 10 sites recorded prior to the 2014 FEIS (1970s-80s) were included to the current total as they are located within the LSA area.

4 Permanent Closure and Reclamation

4.1 Definition of Permanent Closure and Reclamation

Permanent closure is defined as the final closure of a mine site with no foreseeable intent by the existing proponent to return to either active exploration or mining. Permanent closure indicates that the proponent intends to have no further activity on the site aside from post-closure monitoring and potential contingency actions. Permanent closure does not, however, preclude the proponent or another party from pursuing opportunities at the existing site or in the area at a time beyond the foreseeable future (AANDC/ MVLWB, 2013).

4.2 Permanent Closure and Reclamation Requirements

This section provides the permanent closure and reclamation requirements for each individual component of Meliadine Mine. The components are categorized in sub-sections for clarity. The specified closure objectives may be revised with subsequent updates to the Interim Closure and Reclamation Plan but are considered reasonable at this time to guide the advancement of closure planning.

The details presented herein for each mine component were extracted from the following documents and its corresponding supporting documents listed below:

- Final Environmental Impact Statement, (Agnico Eagle, 2014);
- Meliadine Preliminary Closure and Reclamation Plan (Agnico Eagle, 2015a);
- Meliadine Interim Closure and Reclamation Plan 2019 (SLI, 2019);
- Updated Technical Report on the Meliadine Gold Project (Agnico Eagle, 2015b);
- Nunavut Water Board Water Licence No: 2AM-MEL1631 (NWB 2016);
- Meliadine Annual Reports 2018 to 2023;
- Technical Memorandum for the Replacement of the Itivia Laydown Area Culvert (Agnico Eagle, 2024c)
- Design Report for Operation Landfill (Stage 1), Meliadine Gold Project (Tetra Tech, 2017);
- Construction summary (as-built) report for landfarm (Tetra Tech, 2018);
- Construction summary report for Rankin Inlet bypass road and culverts (Tetra Tech, 2019);
- Prefeasibility Level Design-WRSF3 & Water Management Infrastructure (Tetra Tech, 2020);
- Prefeasibility Level Design of Water Management Infrastructures for Meliadine Mine (Tetra Tech, 2024a);
- Stability Analyses for the Proposed Tailings Storage Facility (TSF), Meliadine Mine Water Licence Amendment (Tetra Tech, 2024b);
- Meliadine Gold Mine - FEIS Addendum Environmental Assessment of Treated Groundwater Effluent Discharge into Marine Environment (Agnico Eagle, 2020b);
- Reclamation Work and Costs – Waterline for Treated Groundwater Effluent Discharge (SLI, 2020a);
- Main Application Document, Type A Water Licence 2AM-MEL1631 Amendment (Agnico Eagle, 2020c);
- Application for Water Licence Amendment, Nunavut Water Board (Agnico Eagle, 2020d);
- Nunavut Water Board. Amendment no. 1 to Water Licence No: 2AM-MEL1631 (NWB 2021);
- Meliadine Interim Closure and Reclamation Plan – Update 2020 (SLI 2021);
- Meliadine Groundwater Management Plan;
- Meliadine Water Management Plan;

- Meliadine Mine Waste Management Plan;
- Meliadine Roads Management Plan;
- Meliadine Water Quality and Flow Monitoring Plan;
- Meliadine Landfill and Waste Management Plan;
- Meliadine Landfarm Management Plan;
- Meliadine Borrow Pits and Quarries Management Plan;
- Meliadine Hazardous Materials Management Plan;
- Meliadine Itivia Bulk Fuel Storage Facility Environmental Performance Monitoring Plan;
- Meliadine Terrestrial Environment Management and Monitoring Plan; and
- Meliadine ARD-ML Sampling and Testing Plan.

4.2.1 Rankin Inlet Facilities

4.2.1.1 Description of the Components

Rankin Inlet facilities are located mainly in the Itivia area as presented on Figure 2-3. This is the transfer point and temporary storage for all dry shipment and fuel materials arriving by barge prior to overland shipment to the mine site via the AWAR. Rankin Inlet Facilities are listed below:

- Floating Dock: A floating dock facility (spud barge) dedicated to the Meliadine Mine is located at Itivia. This floating dock consists of a barge that is connected by cables to the shore, while the other end is anchored in place by two (2) “spuds” onto the seabed, which allow the barge to rise and fall with the tides. The barge is connected to the shore using a ramp or removable bridge section. A portable crane (capacity of about 200 t) is set up on the floating dock and used to lift the sea cans and other containers and equipment directly off the delivery barges and place them onto trucks. The gateway to link the barge to the beach is approximately about 6.5 m wide by 21 m long. The ship(s) will be located offshore in deep water (approximately 3 km from Itivia) where they will be offloaded onto barges for the transport of materials to the Itivia laydown area. Sea cans, large equipment, machinery, and vehicles are placed onto the barges for transport through the access passage using tugs before being docked alongside the floating dock located at Itivia.
- Dry Freight Storage Facility: A laydown area (14 hectares) is located near the offloading barge to store the material being received during the barge season. The culvert under Itivia laydown area road are a group of 2 pipes, length of 30 m each and diameter of 1000 mm (Agnico Eagle, 2024c).
- Bulk Fuel Storage Facilities: The Itivia Bulk Fuel Storage facility including the fuel tank farm is located fairly close to the barge landing. The tank farm includes four (4) diesel fuel storage tanks of 20 ML,13.5 ML, 9ML and 4.5 ML. The total approved capacity of the facility is of up to 80 ML of diesel fuel. Fuel is pumped from the barges to the storage tanks.
- Water and Power Management: Water accumulation within the berms lined with geomembrane surrounding the Bulk Fuel Storage Facilities has to be managed as it is release to the environment. Power for facilities is supplied by portable generators and yard lighting is provided by portable diesel-powered light towers.
- Waterline for treated groundwater effluent discharge into marine environment: Treated saline effluent and surface contact water will be conveyed through waterlines prior to discharge through a diffuser to Itivia Harbour. The saline effluent will be treated at the Meliadine Mine in compliance to the water quality effluent guidelines for safe discharge in the ocean. The discharge of treated saline effluent from the mine into Itivia Harbour will occur every year during open water season,

while there is mining activities at the Meliadine Mine. The proposed discharge volume of treated groundwater effluent to the marine environment is 20,000 m^3/day. The treated groundwater will be conveyed through two (2) waterlines (two (2) 16-inch diameter HDPE pipes) along the 34 km of the AWAR and 7 km of bypass road between Rankin Inlet and the Meliadine Mine. The waterlines will be located on the side of the roads and attached to the bridges. Approximately 80% to 90% of the total length of the waterlines will be covered with material. The diffuser system will leave the Itivia Fuel Storage Facility through a Horizontal Directional Drilling (HDD) corridor before daylighting at a depth of 7m. The outfall will connect with the HDD section and terminate with a diffuser at 20 m depth in Itivia Harbour. The diffuser system includes a 75 m length (diameter of 12-inch HDPE DR-11) of outfall and a 25 m length diffuser. The diffuser located into Itivia Harbour is approximately 20 m below the water surface (Agnico Eagle, 2020b).

Additional details for the saline water tank and the waterline for the treated saline water are available in section 5.2.7.

4.2.1.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (Agnico Eagle, 2014).

The Meliadine Mine facilities are currently in use and will be during the period of operation, until closure or post-closure.

As mentioned in the FEIS Addendum for the treated groundwater waterline (Agnico Eagle, 2020b), for the most part, discharge into the ocean does not have much impact on the environment via waterlines from Meliadine Mine. Most effects from Meliadine Mine related to the waterlines, such as discharge to the marine environment have been reviewed and approved. Approximately 80% to 90% of the total length of the waterlines will be covered with material. The waterlines will be built close to the road on the tundra, impacting the vegetation where the waterlines will lie.

The facilities will be dismantled and reclaimed following best practices put in place during operation and in order to minimize long term disturbance and impact on the community. The facilities could also be transferred to the local community upon interest.

4.2.1.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Rankin Inlet Site facilities are listed in Table 4-1, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and Agnico Eagle, 2015a).

Table 4-1: Closure Objectives and Criteria – Rankin Inlet Facilities

Closure Objectives	Closure Criteria	Action / Measurements
Return area to its original state or to a condition compatible with the end land-use targets	Remove all facilities and restore natural/compatible terrain as much as possible	Dismantle and reclaim all infrastructure, fuel reservoirs, chemicals and industrial wastes Physical inspection to confirm removal
The systems are dismantled and removed/disposed of (i.e., waterlines, diffuser)	Remove all components above ground, under water or buried	Components or materials will be cleaned up and salvageable materials removed, shipped or disposed at the landfill Physical inspection to confirm removal
Infrastructure, equipment and storage area will not be a source of contamination to the environment or a safety hazard to humans and wildlife	Limit access during closure Remove all facilities and restore natural/compatible terrain as much as possible Remove all hazardous material	Place signs to limit access Dismantle and reclaim all infrastructure, fuel reservoirs and hazardous wastes Remaining areas will be scarified and remaining concrete foundations and slabs will be cut in the pieces and buried Soil and water monitoring Physical inspection
Ensure contaminated soil, if present, is removed from site	Remove and remediate contaminated soils	An assessment will be carried out to identify areas where soils may be contaminated by hydrocarbons. The characterized hydrocarbon contaminated soils will be excavated and hauled to the landfarm for remediation.
Surface runoff and seepage water quality is safe for humans and wildlife	Water quality meets Water Licence requirements	Water quality monitoring
Restore natural drainage patterns where surface infrastructure has been removed	Restore natural/compatible terrain as much as possible	Surface will be regraded to promote natural drainage
Restore the area for natural use by wildlife or traditional use by the community	Restore natural/compatible terrain as much as possible	Surface will be regraded to promote the use for wildlife and safe access for traditional activities
Consider community land use expectations and traditional knowledge	Community engagement and traditional knowledge will continue to be implemented in closure planning	Community engagement during closure planning

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- Support infrastructure, such as fuel storage tanks, pipelines, conveyors and underground services, should be removed (from recommendation no R517).

4.2.1.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for Rankin Inlet facilities closure are provided by the AANDC/ MVLWB (AANDC/ MVLWB, 2013). Closure activities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Recycling or reusing building materials and equipment where possible to reduce waste;
- Dismantle all buildings that are not necessary to achieve the future land use target;
- Drain, dismantle, and remove tanks and pipelines from the site;
- Cover foundations with materials conducive to vegetation growth;
- Where approved, break or perforate concrete floor slabs and walls to create a free draining condition in order that vegetation can be established;
- Bury materials in the unsaturated zone or below the active layer;
- Cut, shred, crush, or break demolition debris to minimize the void volume during disposal;
- Decontaminate equipment (free of any batteries, fuels, oils, or other deleterious substances) and reuse or sell it to local community interests;
- Remove all hazardous materials and chemicals prior to demolition to national approved hazardous material treatment facilities, or recycle, reuse, or dispose of in an appropriate manner upon approval from the regulatory authorities.

All the options listed above will be required to address closure and reclamation of the Rankin Inlet facilities belonging to Meliadine Mine. Details on the implementation of those considerations are provided as applicable in the following section.

4.2.1.5 Engineering Work Associated with Selected Closure Activity

At closure, it is planned to offer the infrastructures located in Rankin Inlet to local interests. If there is no local interest or agreement, the facilities and equipment will be decommissioned, dismantled and removed appropriately.

Agnico Eagle will return, if possible, the Rankin Inlet area where the facilities are located to pre-development conditions. The site may also be left in a semi-industrial condition if consistent with a different end land use agreed upon with regulators, the community of Rankin Inlet, and other local interest.

All remaining bulk fuel located at Itivia will first be cleaned and then removed and offered to local interests. Infrastructure, including floating dock and portable equipment will be emptied, and also offered for local use and/or relocation. In the case that there is no local interest for the tanks or remaining infrastructure and equipment, the infrastructure will be dismantled, decontaminated and demolition waste will be either transported to the mine site landfill disposal or barged out of Rankin Inlet to a southern waste disposal, recycling facility or sale for scrap metal.

At closure, scarification of all disturbed areas, including storage pads and roads, is planned to loosen the compacted material to promote surface drainage. Areas will be profiled, and water management structures will be removed from the roadways to re-establish natural drainage patterns.

The saline water tank and diffuser for trucked groundwater will be decommissioned, dismantled and removed as appropriate. The pump, piping, tanks and other components will be either transported to the mine site landfill disposal or barged out of Rankin Inlet.

During mine closure, the waterline system for the treated groundwater discharge will be decommissioned; the covered sections of waterlines will be excavated, the pipeline network components will be dismantled, removed and disposed on-site in a landfill. The water effluent diffuser will also be dismantled and removed from the shore area and water, using best practices to minimize disturbance, and disposed on-site in the landfill.

It is important to note that any contaminated soils from the facilities will be removed and placed in sealed drums. These will then be transported to the mine site landfarm for treatment or barged out of to a southern destination for treatment and disposal.

4.2.1.6 Predicted Residual Effects

No significant residual effects have been identified for after closure of the supporting facilities in Rankin Inlet, but changes to terrain caused by the construction and subsequent reclamation of the facilities could result in some alteration of the natural terrain or loss of plant populations.

4.2.1.7 Uncertainties

The main uncertainty is related to the local interest for the Rankin Inlet facilities or equipment.

4.2.1.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following the closure of the Rankin Inlet facilities and maintenance strategies as presented by AANDC/ MVLWB (2013):

- Periodic inspections will be performed to visually assess the reclaimed areas; and
- All buildings and equipment left on-site during closure will be maintained until no longer required, at which time they will be removed from the site or demolished and disposed to the mine site landfill disposal or barged out to a southern waste disposal or recycling facility or for sale or sold as scrap metal.

4.2.1.9 Contingencies

There are no activities proposed as contingencies for the closure of the facilities in Rankin Inlet.

4.2.2 Transportation Roads and Quarries

4.2.2.1 Description of the Components

Transportation Routes considered for the Project are listed below:

- Access Road (AWAR): The AWAR connects Rankin Inlet to the Mine site. The AWAR is a 23.8 km private road built with a 6.5 m running surface between the Char River bridge turn-off and the Mine site and has passing turnouts approximately every 400 ± 50 m (9.5 m total road width at passing turnouts). The first 2.3 km of the AWAR between Rankin Inlet and the Meliadine mine site are located on municipal land; the first 2 bridges on the AWAR (over the Char and Meliadine rivers) are also located on municipal land. There are eight (8) culverts along the AWAR, and two (2) bridges under the responsibility of the Meliadine Mine. The road alignment is presented on Figure 4-1.

- Bypass Road: A bypass road is built around the south of the airstrip to Itivia as shown on Figure 4-2. The length of the bypass road is approximately 6.17 km long and allows traffic from Itivia to bypass the hamlet. Its design and width are similar to the AWAR (6.5 m, 8.0 m from chainage 0+222 to 1+492). There are 19 groups of culverts along the bypass road (Tetra Tech, 2019).
- Internal Access and Haul Roads: A network of roads (service roads and haul roads) of approximately 15 km on the mine site connects the various mining areas and to access the various Project facilities.
- Roads to Future Operation Areas (deposits): A network of roads to other deposits, included in the Water Licence Amendment (Agnico Eagle 2020c), will be built. The road to Discovery is approximately 15.8 km long with a width of 17 m and includes four (4) water crossings, as presented on Figure 4-3. The roads to the other deposits represent approximately a network of 9.3 km with an average width of 17 m. The roads are presented on Figure 4-4.
- Quarries and Granular Borrow Sites: Required for AWAR, Bypass, internal access and haul roads construction. There are 15 quarries located along the AWAR. There are also 3 quarries located directly on site. Details of the additional borrow pits and quarries can be found in the Borrow Pits and Quarries Management Plan.

Figure 4-1: All Weather Access Road (AWAR) General Map

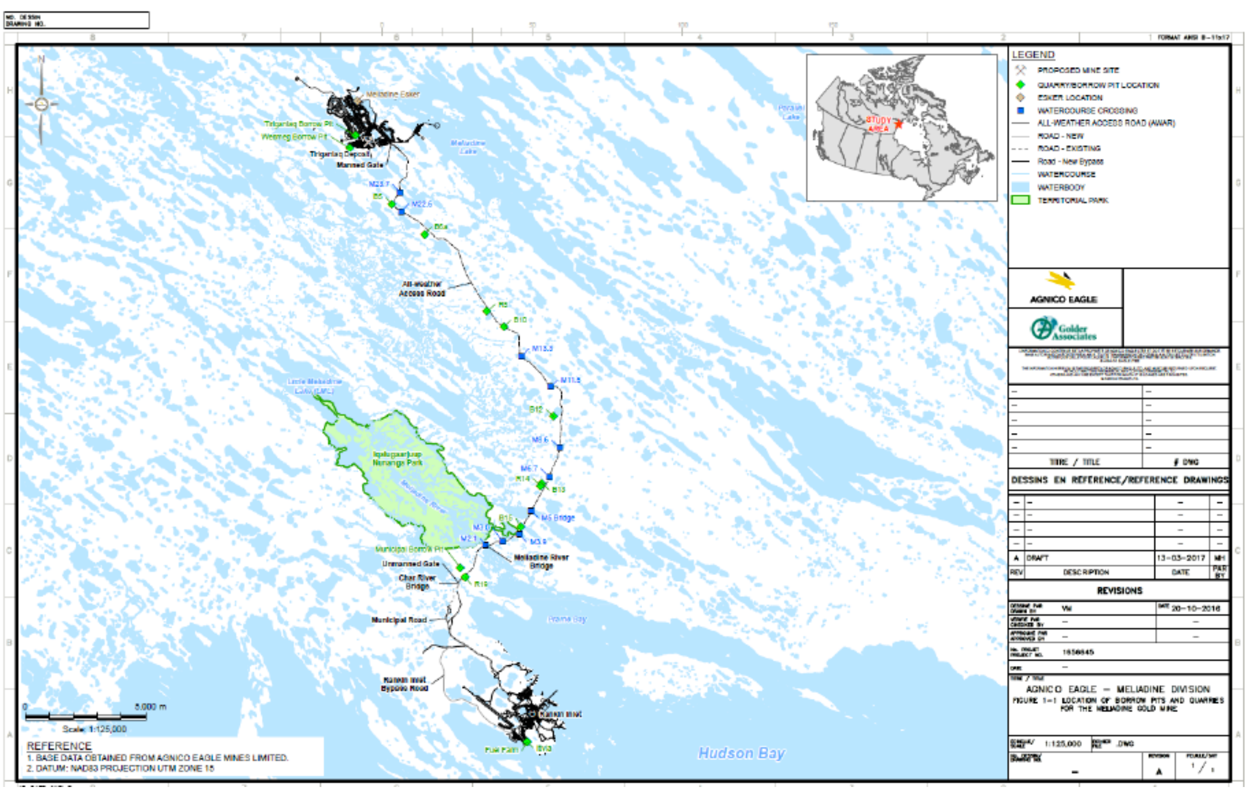


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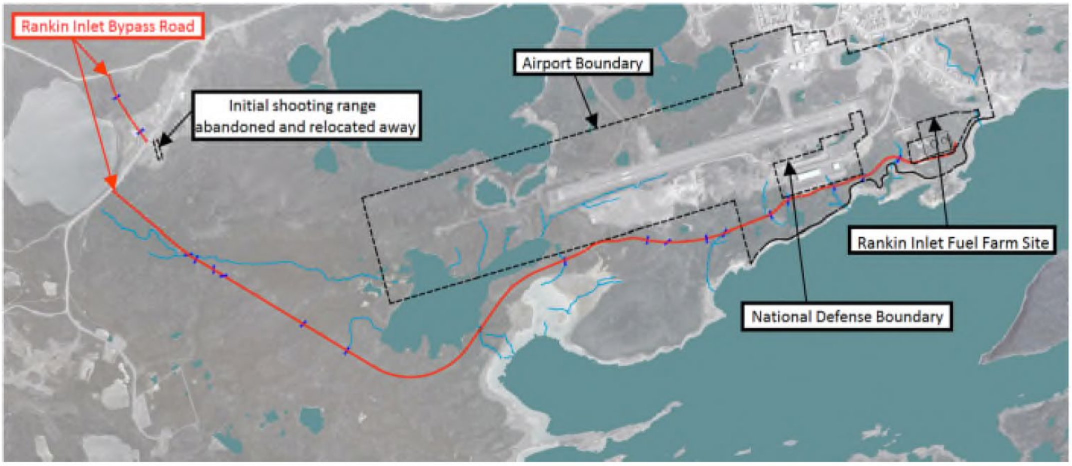
Figure 4-2 : Bypass Road General Location



Source: (Tetra Tech, 2019)

Figure 4-3: Road to Discovery

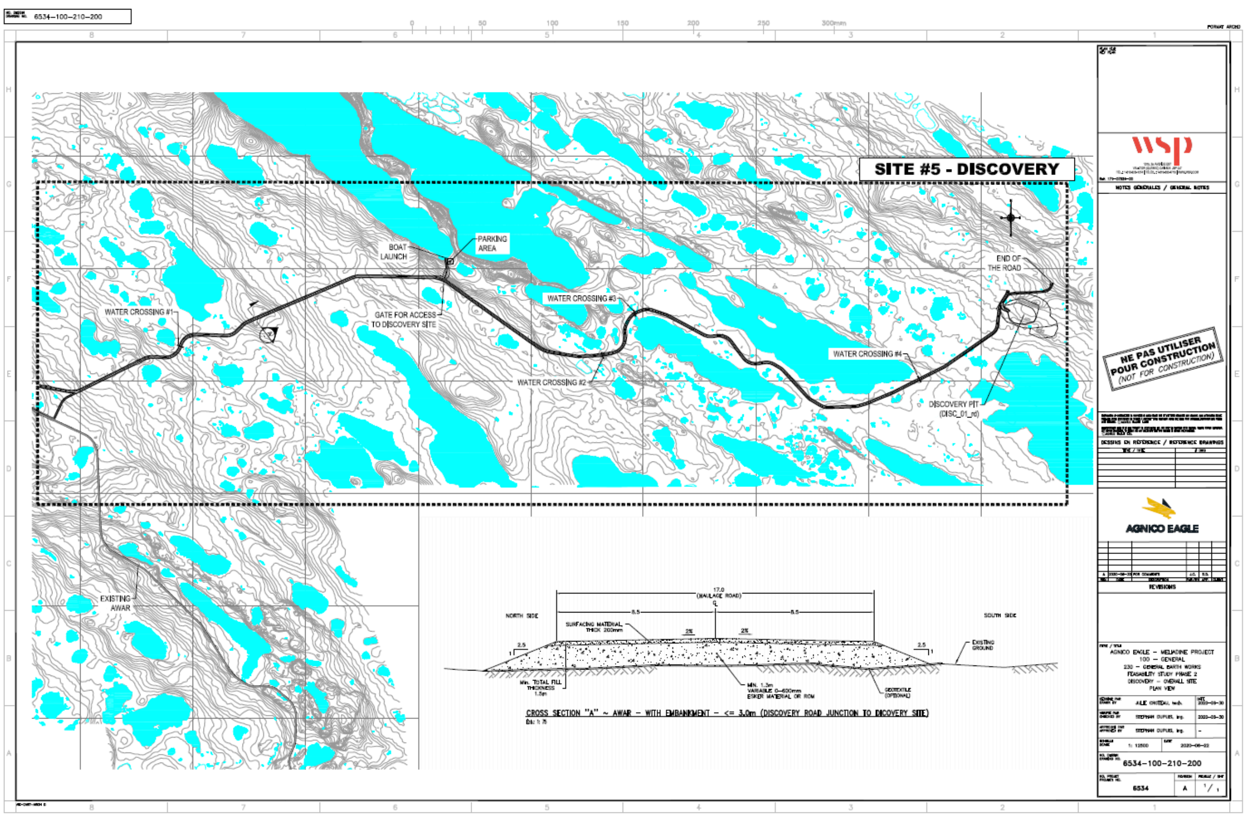


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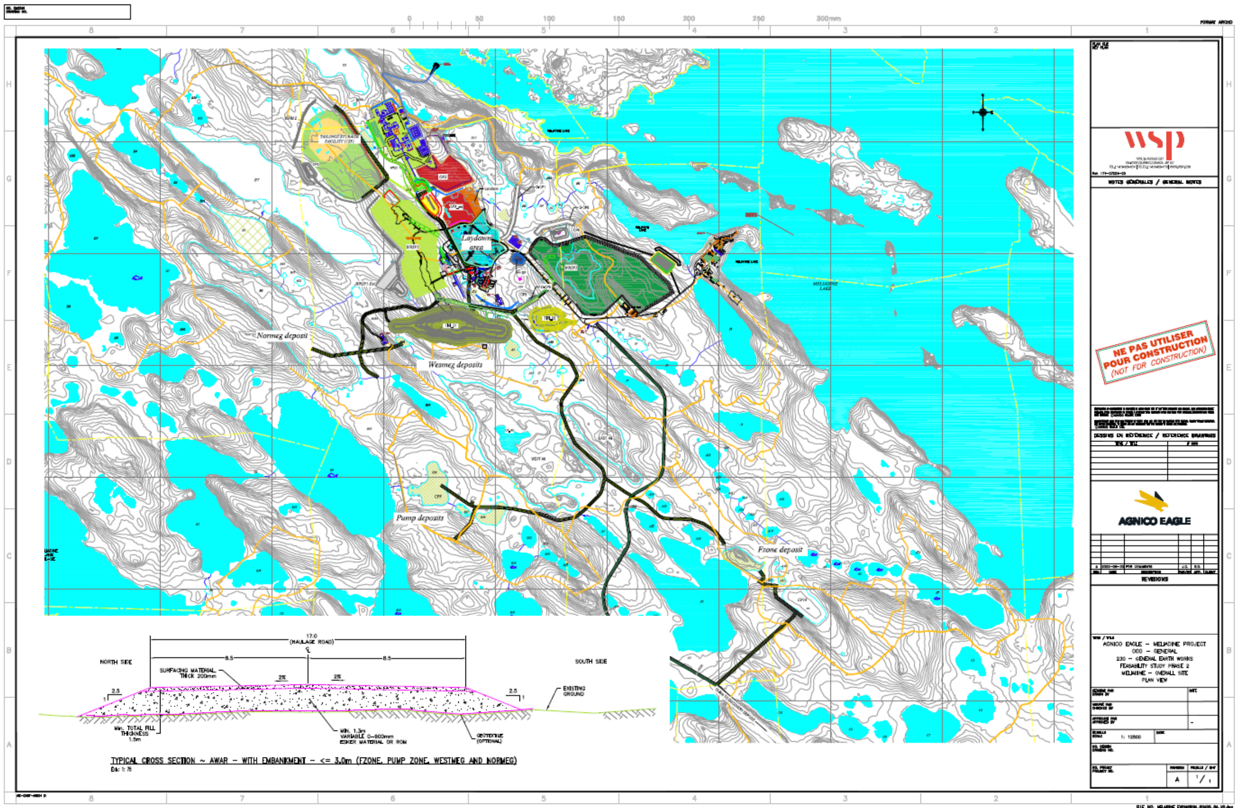
Figure 4-4 : Roads to Future Operation Areas (deposits)



4.2.2.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the 2014 FEIS.

The transportation roads are currently in use and will be until post-closure, at least for the AWAR to access the site. The quarries will be maintained until material is no longer required.

At post-closure, the AWAR, the by-pass road embankment, and road to Discovery will be reclaimed, and the natural drainage and terrain will be restored as much as possible. The culverts and the bridges all along the AWAR, the Bypass road and the road to Discovery will be dismantled. Upon local interest and regulatory approval, the AWAR, the Bypass and road to Discovery could be transferred to the local community.

The internal access roads, roads to the different deposits and haul roads on site will be reclaimed and the natural drainage and terrain will be restored as much as possible during closure.

The quarries and granular borrow sites no longer required for operations will be progressively reclaimed during operation, as equipment and resources are available.

4.2.2.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the transportation routes are listed in Table 4-2, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and Agnico Eagle, 2015a).

Table 4-2: Closure Objectives and Criteria – Transportation Roads and Quarries

Closure Objectives	Closure Criteria	Action / Measurements
Maintain access to site during post-closure for monitoring	Preserve the main access road to the site in a sufficient condition to allow post-closure access for monitoring, inspection and maintenance activities	Reclaim the AWAR, the bypass and road to Discovery once post-closure monitoring and site maintenance can be completed with helicopter access
At closure and post-closure, reclaim road to its original state or to a condition compatible with the end land-use targets	Restore natural/compatible terrain as much as possible and promote revegetation	Remove bridges, culverts and pipes; restoring natural stream flow and drainage patterns; stabilizing stream banks by using rip-rap Road embankment will be regraded and surface scarified Remove other infrastructures along the road, including communication towers
Restore natural drainage patterns	Restore natural/compatible terrain as much as possible	Road embankment will be regraded to promote natural drainage Remove bridges, culverts and pipes; restoring natural stream flow and drainage patterns Visual inspection
Reclaim quarries and borrow area by providing safe long-term conditions	Promote natural drainage and ensure wall stability	Quarry walls will be drilled and blasted to ensure long term stability and safety of the quarry walls for wildlife Quarry area will be regraded to promote natural drainage Visual inspection
Control dust generation from reclamation activities	Best management practices for controlling dust, fugitive and exhaust emissions during active reclamation	Implement best management practices Routine air quality monitoring
Ensure the remaining surface areas are safe for wildlife use and access	Restore natural/compatible terrain as much as possible	Scarified surfaces will be re-graded Visual inspection and wildlife survey
Ensure reclaimed areas are safe for the community and support continuation of human land use activities	Restore natural/compatible terrain as much as possible Human land use of the reclaimed area at post-closure will not compromise people's health and safety Reclaimed area will be compatible with land use	Routine monitoring and physical inspection
Consider community land use expectations and traditional knowledge	Community engagement and traditional knowledge will continue to be implemented in closure planning	Community engagement during closure planning

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- The main access road to the site and other on-site roads, as required, should be preserved in a sufficient condition to allow post-closure access for monitoring, inspection, and maintenance activities (from recommendation no. R518);
- Roads that will not be preserved for post-closure use should be reclaimed. Bridges, culverts and pipes should be removed, natural stream flow should be restored, and stream banks should be stabilized by re-vegetating or by using rip-rap. Surfaces, shoulders, escarpments, steep slopes, regular and irregular benches, etc., should be rehabilitated to prevent erosion. Surfaces and shoulders should be scarified, blended into natural contours, and re-vegetated (from recommendation no R519).

4.2.2.4 Closure Options and Selection of Closure Activities

Considerations for the transportation roads closure are provided by the MVLWB/AANDC (MVLWB/AANDC, 2013). Closure activities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Remove structures including bridges and culverts (not the culverts or bridges belonging to the Hamlet of Rankin Inlet);
- Reclaim areas to the original topography and drainage or to a new topography or drainage compatible with end land use targets;
- Scarify road surfaces to promote re-vegetation of indigenous species;
- Allow gradual slope failure of quarries involving rock masses or slope pit walls;
- Block quarry access routes with boulder fences, berms and/or inukshuks (guidance from local communities and elders would be sought); and
- Flatten berms and slopes at the side of roads to facilitate wildlife passage.

As mentioned in the preliminary closure plan (Agnico Eagle, 2015a) and subsequent Meliadine Mine regulatory processes, Annual reports, and FEIS Addenda, migrating caribou protection is an important aspect of the AWAR closure. Agnico Eagle will work, during the operations and closure stages, with the KivIA and HTO to monitor areas where the road may be impeding caribou migration. Heavy traffic on the AWAR, Discovery road, and on-site roads will cease at closure. Traffic associated with reclamation will continue at a reduced level for the first years of closure. After that, there will be very little vehicle traffic.

All the options listed above will be required to address closure and reclamation of the transportation roads for the Meliadine Mine. Details on the implementation of those considerations are provided as applicable in the following section.

4.2.2.5 Engineering Work Associated with Selected Closure Activity

Agnico Eagle is committed to manage the roads as a private road with limited public access during the mine life and to fully decommission the roads after post-closure. The transportation roads should be one of the last mining components to be reclaimed in post-closure to preserve access for monitoring.

As mentioned in the Roads Management Plan, it is the responsibility of Agnico Eagle of decommissioning and reclaiming all roads once construction, operations, closure, and post-closure activities are complete.

For a third party to take over the road(s), that third party would have to complete its own arrangements with the landowners (the KivIA and the Rankin Inlet Hamlet) and then complete its own environmental assessment and permitting process covering future use. Agnico Eagle does not own the land on which the roads are constructed and, thus, cannot transfer future ownership or use privileges to any third party. Agnico Eagle must complete its obligation to decommission and reclaim all roads unless directed otherwise by a combination of the landowners and other regulatory agencies who issued permits/authorizations for the roads. In the case that Agnico Eagle stays the owner of the AWAR, the bypass road and road to Discovery, natural drainage courses and terrain will be restored by removing culverts and bridges, regrading road fill material and removing in-stream works down to the original channel bed.

The reclamation work is summarized herein and also described in the Roads Management Plan. The loosening of compacted surfaces will be accomplished by ripping of the roadbed using a dozer with a “ripper” attachment on the back. Successive passes with the dozer longitudinally along the roadbed will eliminate the level road surface and make travel difficult. It is anticipated that, in this way, the abandoned roads will not be useable by wheeled vehicles (i.e., cars, trucks, and pick-up trucks). The roadbed would still be useable by ATV or snowmobile and, thus, even after final reclamation, the reclaimed roadbed would offer similar passage to the existing set of trails that currently exist and are used by the residents of Rankin Inlet for traditional use purposes.

The roads deactivation works will be carried out as necessary to stabilize any slopes where potential for slope erosion may exist. Stabilization measures may require pulling back of side-cast fills on locally steep slopes or buttressing and/or re-contouring of steepened out slopes using non-acid generating material. These measures would also be applicable to borrow pits/quarries that remained open following construction and are located adjacent to the roadway. As much as practical, deactivated surfaces will be graded to blend with the existing topography.

To the extent practical, the reclamation would also restore the natural pre-road hydrology. Natural drainage courses would be restored primarily through the removal of all culverts and bridges (excluding the Char River bridge, which will belong to the Hamlet of Rankin Inlet), and through rehabilitation of channels and banks at the crossing sites. Cross-drain structures (cross-ditches) will also be installed where necessary between culvert sites. Where armouring rock (rip-rap) is required, this rock will be non ARD/ML for the protection of aquatic life. Where affected watercourses are fish bearing, the timing of work will have to be restricted to within the designated Fisheries and Oceans Canada (DFO) fisheries work window (July 16th to April 30th). For these sites, appropriate fish exclusion measures will be undertaken prior to the in-stream works. All in-stream works will be carried out using best management practices for erosion and sediment.

Decommissioning of the roads will start from the Meliadine Mine and progress south towards Rankin Inlet and will include reclamation of the bypass road and the road to Discovery. Stream crossings will be rehabilitated as they are encountered during the progression of the work. The culverts and bridges, as previously mentioned, will be removed from the crossings using a backhoe and crane, and then removed materials (i.e., culvert steel, bridge decks, abutment steel, etc.) will be transported to Rankin Inlet using a semi-tractor and a low-boy trailer, for disposal and salvage.

The decommissioning details of the quarries are provided in the Borrow Pits and Quarries Management Plan. The quarries and borrow pits have gently sloping walls and are designed for positive drainage wherever possible. Reclamation and closure of quarries and borrow pits will depend on the individual site conditions. With a conservative initial design, the quarries should require little reclamation following completion of the roads. Loose rock will be pulled to the floor of the quarry and the entrance blocked with large boulders. Reclamation should lead to natural re-vegetation establishing on disturbed areas. Similar process will be completed for the reclamation of the quarries on site.

All quarry sites and borrow sources developed during the construction of the roads have been selected to generate only non-acid generating/low metal leaching materials. During reclamation of the roads, should acid-generating bedrock be exposed along the roadway or in borrow pit/quarries, these areas will be covered with a minimum 2 m thick layer of non-acid generating soil or rock to direct water away from the surface.

4.2.2.6 Predicted Residual Effects

No significant residual effects have been identified for after closure of the transportation roads and quarries but changes to terrain caused by the construction and subsequent reclamation of the facilities could result in some alteration of the terrain and or loss of plant populations and plant communities. The reclaimed roadbed would offer similar passage to the existing set of trails that currently exist and are used by the residents of Rankin Inlet for traditional use purposes.

4.2.2.7 Uncertainties

The pre-disturbance terrain is covered by discontinuous vegetation interspersed with few bedrock outcroppings. The reclamation plan will be designed to encourage a natural succession of indigenous plant species within disturbed site areas. Grading and contouring would be done, where appropriate, to control soil erosion and to promote re-vegetation by natural colonization. Re-vegetation studies will be completed to assess the potential for vegetation to establish in disturbed areas or on rockfill covers.

There are also some uncertainties regarding the transfer of ownership of the roads to the local community or a third party, upon interest. For a third party to take over the road(s), that third party would have to complete its own arrangements with the landowners (the KIA and the Hamlet) and then complete its own environmental assessment and permitting process covering future use.

4.2.2.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following the closure of the roads and quarries and maintenance strategies as presented by AANDC/ MVLWB (2013):

- Periodic inspections will be performed to visually assess the reclaimed areas; and
- All roads to be used during closure will be maintained until they are no longer required.

4.2.2.9 Contingencies

There are no activities proposed as contingencies for the closure of the transportation roads.

4.2.3 Underground

4.2.3.1 Description of the Components

Agnico Eagle is currently developing the Tiriganiaq gold deposit using traditional open-pit and underground mining methods. Two (2) open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and an underground mine (Tiriganiaq Underground) are currently on development.

Approximately 25.2 Mt of ore and 10.8 Mt of waste rock will be produced from underground. Underground mining will take place throughout the life of mine.

Underground ore and waste rock is trucked to the surface.

4.2.3.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the 2014 FEIS.

The underground mine stopes will be backfilled with cemented paste used in primary stopes, and dry rockfill for the secondary stopes. The underground workings will be flooded using groundwater seepage, and saline contact water stored in contact and saline ponds.

4.2.3.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the underground mine are listed in Table 4-3, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and Agnico Eagle, 2015a).

Table 4-3: Closure Objectives and Criteria – Underground

Closure Objective	Closure Criteria	Actions/Monitoring
Access to underground workings from surface openings has been limited, for the safety of humans and wildlife	The decline ramps and the portals will be capped to eliminate the access to the underground mine workings	Place signage Maintain or construct waste rock berm Inspection of berms
Uncontrolled surface water infiltration into underground workings has been minimized	The decline ramps and the portals will be capped, and area will be levelled to avoid water accumulation	Ramp will be dismantled and blocked Concrete structures will cap the raises Physical inspection and monitoring
Underground workings have been stabilized so that there is no surface expression of underground failure Controls that prevent collapse, stress transfer, and flooding of adjacent mines are in place	The underground will be designed and mined to be physically stable; stopes will be backfilled as needed during operation and closure	Proper backfilling procedure Meet appropriate design levels, physical inspection by a qualified engineer and monitoring
Contaminated mine water from underground workings is not and will not become a source of contamination to the surface environment, nearby taliks, surface water, or groundwater	Underground mine to flood with natural groundwater seepage	Water treatment systems in place until surface water meets discharge criteria to the environment Initial physical monitoring to check inflow, but limited once ventilation is turned off

Closure Objective	Closure Criteria	Actions/Monitoring
Areas surrounding mine openings are suitable for future use targets	Ramp facilities at the surface will be removed Area will be levelled to avoid water accumulation	Ramp will be dismantled and blocked Concrete structures will cap the raises Physical inspection and monitoring
No hazardous material from underground will become a source of contamination	Remove hazardous materials from the underground mine	Fuels, oils, chemicals and all hazardous material will be removed for disposal by a licensed handler prior to flooding Physical inspection and monitoring
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement and traditional knowledge will continue to be implemented in closure planning	Community engagement during closure planning

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- If it is technically and economically feasible to do so, infrastructure (e.g., crushers, metal structures and air pipes) and equipment (e.g., pumps) should be removed from the site. Any equipment to be left in the pit should be inspected and remediated as appropriate to ensure that there is no risk of leakage of any contaminants (from recommendation no. R506);
- During the decommissioning of underground and open pit mines, any contamination associated with vehicle and equipment operations and maintenance should be identified and remediated, as appropriate (from recommendation no. R507);
- Underground mine workings should be secured, and signs should be posted warning the public of potential dangers associated with the facility (from recommendation no. R508);
- The risk of subsidence in underground mines should be assessed. Appropriate measures should be taken to prevent subsidence in cases where the risk of subsidence is determined to be significant. The primary measure used to prevent subsidence is the backfilling of underground voids (from recommendation no. R509);
- The potential for mine water discharges should be assessed. For underground mines, this should be done using a hydrogeological assessment (from recommendation no. R511);
- Where there is the potential of mine water discharge after mine closure, the quality of the discharge should be predicted. Mine water quality should be assessed once closure has been completed to verify the accuracy of the predictions (from recommendation no. R512);
- Where there is the potential of mine water discharge of poor quality, measures should be implemented to prevent or control that discharge and to collect the mine water for treatment. Prevention methods may include capping of mine openings to prevent mine water discharge (from recommendation no. R513).

4.2.3.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for open pit closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the pit were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Minimize the number of mine openings to the surface;
- Include long-term geotechnical and geothermal stability in the design of mine openings and crown pillars;
- Develop a ground stability monitoring plan.

Capping the top of the decline ramps and portals are considered to be the only viable option for eliminating access to the underground mine workings.

Geotechnical monitoring, thermal monitoring and underground water quality monitoring is part of the underground operations and will be used for the closure planning of the underground mine.

4.2.3.5 Engineering Work Associated with Selected Closure Activity

All surface openings will be sealed; the decline ramp and the portal will be capped to eliminate access to the underground mine workings. The sealed surface opening areas will be contoured to prevent natural surface flows to the underground, and disturbed surface areas will be re-contoured to establish positive natural drainage patterns and blend in with the surrounding topography to the extent possible. The raises will be capped with concrete. Any equipment or infrastructure left underground will be cleaned, drained of fluids, inspected, and remediated as appropriate to eliminate the risk of contaminant leakage. All hazardous materials from underground shops, equipment, and magazines (fuels, oils, glycol, batteries, explosives, etc.) will be removed and disposed off-site at an approved disposal facility. Contamination associated with vehicle and equipment operations at work areas will be identified and remediated (Agnico Eagle, 2015a).

Every stope will be backfilled, with cemented pastefill used in primary stopes, and dry rockfill for the secondary stopes. The paste backfill will be made by mixing pressed filtered tailings, cement and water in a facility (Agnico Eagle, 2015b). Backfill will be done during the operation and will be completed in closure.

The underground workings will be flooded over the first year of active closure by a combination of groundwater seepage and saline contact water stored in saline ponds.

4.2.3.6 Predicted Residual Effects

No significant long-term effects are expected for the underground mine workings. After closure, the only surface expression of the underground workings will be the sealed vent raises and portals and the area graded and levelled to avoid erosion and water accumulation.

4.2.3.7 Uncertainties

There are no currently identified uncertainties associated with the closing of the surface openings to the underground or flooding the underground works.

4.2.3.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following the closure of the underground mine, and maintenance strategies as presented by AANDC/ MVLWB (2013):

- Visually inspect reclaimed openings for signs of physical deterioration or settlement;

- Vary the frequency of inspections, with increased frequency following construction and decreased frequency upon establishment of stable conditions;
- Check for surface expression (subsidence) of underground failure;
- Test underground mine water quality and monitor volume from controlled discharge points of workings to ensure water quality is as predicted;
- Identify unanticipated mine-related drainage discharge points (volume and quality);
- Install thermistors where appropriate to monitor the ground thermal regime in permafrost areas;
- Establish special monitoring provisions for mines that have become flooded and are retaining water under pressure by means of plugs. These provisions can include visual inspection, piezometers, seepage measurement weirs, and sampling to check water quality parameters;
- Inspect areas surrounding mine openings to ensure they are suitable for future use targets;
- Inspect passive water treatment systems for maintenance requirements.

4.2.3.9 Contingencies

Backfilling of certain underground areas will be completed during operation. This will ensure ground stability that potential ground collapse into these tunnels does not progress to surface, creating a subsidence or sinkhole.

4.2.4 Open Pits

4.2.4.1 Description of the Components

The mining development sequence planned for the development of the open pits for the Meliadine Mine is presented as part of the Annual Report and relevant Management Plans (e.g., Mine Plan, Mine Waste Management Plan, Ore Storage Management Plan).

A conventional truck/shovel operation for open pits is planned with different mining approaches for ore and waste. The mining method must be suited to Arctic conditions and provide a good daily production in waste zones. To maximize the recovery of economic material and minimize dilution in the ore zones, the method must be very selective.

The drill and blast activity will take place using 10 m bench heights, with 165-mm (6.5-inch) diameter holes. The emulsion will be prepared on site by an explosives supplier who will also be responsible for delivering explosives to the bore holes. Once blasted, the rock material will be loaded in rigid trucks by hydraulic excavators.

Rock material will be transported by haul truck to either the primary crusher dump area for ore material or the designated WRSFs for waste rock. Temporary ore stockpiling pads will be sited near the open pits.

No physical surface constraints have been considered in defining the ultimate pit limits within each deposit. The presence of different watercourses located within or near the pit footprints will require some water management including dewatering, drainage and water retention dikes. However, the ultimate pit limits have been controlled by the presence of the underground mine, which limits the deepening of the pits. Potential future pit expansion could interact with and/or be constrained by the development of surface infrastructure such as vent houses and raises that will be installed in the vicinity of the current/final pit walls.

Any water reporting to the open pits will be collected in sumps and ultimately directed to their respective collection pond. Dust will be managed for environmental and safety reasons on pits haul ramps by spraying water whenever needed during the non-freezing periods.

4.2.4.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (Agnico Eagle, 2014).

The open pits are designed to have stable slopes during the mine life and post-closure. At the end of active mining operations, the pits will be flooded, and rock berms will be placed around exposed perimeters of the pits to restrict access and minimize hazards to people and wildlife.

4.2.4.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine open pits are listed in Table 4-4 along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and Agnico Eagle, 2015a).

Table 4-4: Closure Objectives and Criteria – Open Pits

Closure Objective	Closure Criteria	Actions/Monitoring
Access to the pits are limited, for the safety of humans and wildlife	Install physical barriers to limit access	Maintain or construct waste rock berm until pit area is flooded Inspection of berms during flooding period
Allow emergency access and exit during flooding stage	Safe access and route will be established during flooding for inspection and emergency	A plan will be developed to allow for reasonable exit should inadvertent access occur Proper signage will be installed
The open pit mine walls, slopes and pit shorelines are physically and geotechnically stable or minimize access to unstable areas	Ensure walls and slopes are stable prior to flooding Install physical barriers to limit access	Inspection of berms, walls, slopes and shorelines before and during flooding period Maintain or construct waste rock berm until pit area is flooded
Meet water quality objectives for any discharge from pits Water quality in flooded pits is safe for humans, aquatic life, and wildlife	The water quality will meet the Water Licence requirements	Water treatment will remain on site until water quality criteria are met Routine monitoring as per the Water Licence requirements
Migration and discharge of contaminated drainage has been minimized and controlled Controlled flooding rate of the open pits	The water quality will meet the Water Licence requirements Ensure safe water level during flooding to avoid uncontrolled discharge Minimize erosion during flooding	Water treatment will remain on site until water quality criteria are met Integrate water management plan and water balance to control flooding rate and water level Routine monitoring as per the Water Licence requirements
Dust levels are safe for people, vegetation, aquatic life, and wildlife Meet Canadian Ambient Air Quality standards	Control dust emissions during active reclamation period Best management practices for controlling fugitive and exhaust emissions during active reclamation	Implement best practices and conduct air quality monitoring during active reclamation period
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement and traditional knowledge will continue to be implemented in closure planning	Community engagement during closure planning

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- During decommissioning, any contamination associated with vehicle and equipment operations and maintenance should be identified and remediated, as appropriate (from recommendation no. R507);
- Open pits should be backfilled or flooded to the extent practicable to prevent unauthorized access and to protect public safety. In cases where backfilling or flooding is not practically feasible, fencing

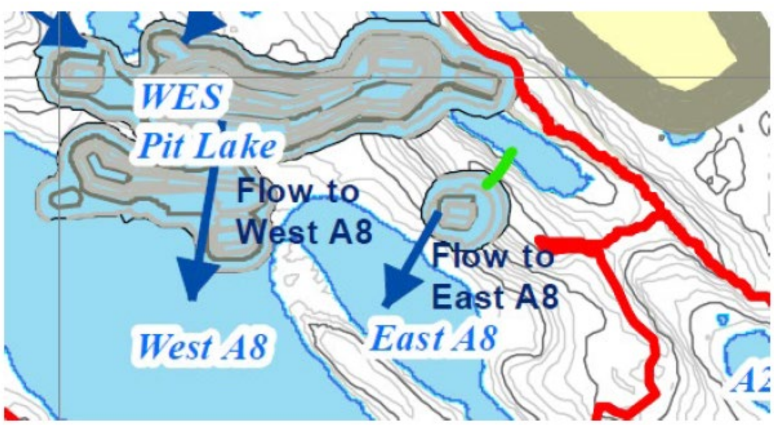
should be installed to protect the public. In all cases, signs should be posted warning the public of potential dangers associated with the site (from recommendation no. R510);

- The potential for mine water discharges should be assessed. For open pit mines, this may be done using water balance calculations and, in some cases, hydrogeological assessment. Where mine water discharge is predicted, the flow rate should be estimated (from recommendation no. R511);
- Where there is the potential of mine water discharge after mine closure, the quality of the discharge should be predicted. Mine water quality should be assessed once closure has been completed to verify the accuracy of the predictions (from recommendation no. R512);
- Where there is the potential of mine water discharge of poor quality, measures should be implemented to prevent or control that discharge and to collect the mine water for treatment. Prevention methods may include capping of mine openings to prevent mine water discharge (from recommendation no. R513).

As per Agnico Eagle's Response to Final Written Submissions on the 2024 Meliadine Water Licence Amendment Application 2AM-MEL1631 (Agnico Eagle, 2024d), potential mitigation measures for preventing potential impacts to aquatic life from water quality during post closure for the Open Pit WES04 include the following:

- The ratio of exposed pit walls in WES04 (0.84 ha) to surrounding catchment area (0.2 ha) is approximately 4:1, which along with a large lake surface area (4.17 ha) results in evapoconcentration of the pit wall loadings within this pit lake. As the predicted exceedances from the water quality model are largely a result of these physical characteristics of the pit, one mitigation measure that could be enacted would be redesigning the pit shell to raise the spill point elevation, and thereby reducing the ratio of pit wall contact water to surrounding catchment area.
- A secondary potential mitigation measure would be to cut a channel from the east end of the WES Pit Lake to the northeast corner of WES04 (as shown in Figure 4-5) to enhance flows through the WES04 pit lake.

Figure 4-5: WES04 post-closure flow paths. Potential channel cut indicated by green line.



As per the Water Licence, the water quality model will be updated on an annual basis which will include predictions for the remaining operational window, closure, and post-closure. This will ultimately inform ongoing operations and eventual closure, and validate assumptions used in the post-closure water quality predictions.

4.2.4.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for open pit closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the pit were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Excavate rock and soil slopes will remain stable during closure and post-closure;
- Flood the pit, with natural and pumped inflows;
- Block open pit access routes and control access.

All the options listed above will be required to address closure and reclamation of the open pits. Details on the implementation of those considerations are provided as applicable in the following section.

4.2.4.5 Engineering Work Associated with Selected Closure Activity

Refilling of the mined-out pits is anticipated to take seven years, with pumping of Meliadine Lake water at a maximum of 8.5 Mm^3/year over six years, reducing to 2.6 Mm3 in the last year of Active Closure (Lorax, 2024). The pumping rate will be evaluated further to validate that any possible negative effects to Meliadine Lake do not occur. Table 4-5 summarizes the pit volume and expected water elevations at the completion of flooding activities for Meliadine Mine.

Table 4-5 : Pit Flooding Volume

Pit ID	Total Water Volume (m^3)	Total Meliadine Lake Volume Pumped (m^3)
Discovery	13,441,460	12,840,000
F ZONE01	6,366,823	5,502,000
F ZONE02	1,380,520	1,245,588
F ZONE03	1,617,968	1,391,114
PUMP01	1,005,067	554,778
PUMP02	962,338	865,682
PUMP03	1,686,914	1,507,571
PUMP04	1,223,339	928,661
TIRI01[1,4]	8,811,361	0
TIRI02/04[2,4]	9,483,964	2,140,000
TIRI03[1]	1,492,152	1,334,805
WES01[1]	2,653,794	2,444,366
WES02	10,067,130	9,423,301
WES03	3,098,940	2,966,234
WES04	290,583	289,295
WN01[3]	9,873,505	9,353,693
Total	**73,455,858**	**52,787,087**

[1] TIRI01, TIRI03 and WES01 form the TIRI pit lake complex once full.
[2] TIRI02/04 is also filled via pumping from CP1, which comprises the majority of the volume shown here (15.4 Mm^3).
[3] WN01 joins with Lake B5 to form the NORWES pit lake complex once full.
[4] TIRI01 receives overflow from TIRI02/04 at approximately 2,000 m^3/day, so Meliadine Lake water is not required to fill this pit.
Source: Lorax 2024

The water quality within the pits will be monitored during flooding to verify the prediction of the water quality model. The information will be used to develop a strategy to minimize contamination of the regional surface water system.

Overall, the water quality objectives for closure and post-closure will represent baseline conditions or national water quality objectives such as the CCME or site-specific water quality objectives (SSWQO). The final SSWQO that will be applied for closure will be developed prior to closure and presented in the Meliadine Final Closure and Reclamation Plan

The open pit may be hazardous to wildlife species as wildlife may be injured by inadvertent access into the open pit. Wildlife management and protection practices will be implemented to limit wildlife injury and morbidity during closure and post-closure. A rock berm will be constructed around the open pits to limit or prevent access by people and to discourage access by wildlife. The rock berm(s) was selected over a fence based on feedback received from communities in regard to concerns relating to wildlife behavior (Agnico Eagle, 2015a). Proper signage will also be placed around the flooded pits to mark access points.

The open pits are designed to have stable slopes during the mine life and post-closure. The slopes are monitored as part of mine operations and will be progressively modified as required to maintain stability during closure and post-closure.

4.2.4.6 Predicted Residual Effects

As presented in the Preliminary Closure Plan (Agnico Eagle, 2015a), the following residual effects are predicted for the open pits after reclamation:

- The flooded open pits will be a permanent feature on the landscape. The impacted vegetation communities that formerly occupied the open pit footprints will be permanently lost;
- Although wildlife species will be discouraged from using the flooded open pits, some may still do so, and they could potentially ingest metals dissolved in the surficial water.

4.2.4.7 Uncertainties

The following uncertainties have been identified with respect to closure planning of the open pits:

- The open pit slopes are designed to be stable under operating conditions, but the walls of the open pits will have been exposed for several years during mine operations, therefore the long-term stability of the open pit walls represents an uncertainty in closure planning design;
- While surficial water quality within the flooded open pits is predicted to meet requirements for direct discharge to the environment (Meliadine Lake), actual water quality conditions will not be known with certainty until flooding is complete;
- Flooding rate for filling the open pits at closure, including natural inflows and lake water transfers, will have to be evaluated to determine the length of time to achieve target water levels.

Water quality monitoring will continue during operations to expand the available water quality database and calibrate the predictions. Water quality forecast for pit lake water will continue to be performed to predict the water quality at closure. The water balance and water management will also be reviewed in operation and in closure to estimate the lake water transfer volume required for flooding, as well as the natural inflows, to ensure adequate water levels are maintained into the pits.

4.2.4.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following flooding of the open pits as presented by AANDC/MVLWB (2013):

- Monitor water level in pit to confirm closure objectives are being achieved;
- Sample water quality and quantity at controlled pit lake discharge points;
- Inspect aquatic habitat in flooded pits where applicable.

4.2.4.9 Contingencies

The water treatment facilities are included as a contingency measure should water on site not be suitable for release to the environment. Water quality monitoring will occur during mine operation to include in the site water quality and to provide additional information for future closure water quality prediction and planning modifications if required. Prior to flooding of the pits, the quality of surface water and any groundwater seepage reporting from the pit walls will be sampled to assess potential for contamination of the pit water during re-filling. Water quality monitoring will continue in closure and post-closure.

If the results of water quality monitoring indicate that water in the flooded open pits is not suitable for direct discharge, in-pit treatment and active treatment prior to discharge into the receiving environment will be considered as contingencies for the treatment of the flooded pit water (Agnico Eagle, 2015a).

4.2.5 Waste Rock Storage Facilities and Overburden

4.2.5.1 Description of the Components

As described in the Mine Waste Management Plan, the design locations of the WRSFs took into consideration the environmental, social, economic, and technical aspects of waste rock management, including long-term physical stability of the facility, the availability of storage capacity, maintaining minimum distances between the toe of the WRSFs and the open pits, haul and access roads and adjacent lakes.

To achieve the above considerations, the following areas will be utilized for the combined storage of waste rock and overburden material. These areas are located as follows:

- WRSF1: located within the footprint of the approved SP6 WRSF. The area is within the 2014 FEIS footprint.
- WRSF3: is increased in height and to the south.
- WRSF6: Located within the footprint of approved B4 WRSF. The area is within the 2014 FEIS footprint.
- WRSF7: Located within the footprint of approved A45 WRSF. The area is within the 2014 FEIS footprint.
- WRSF9: The area is within the 2014 FEIS footprint.

The WRSFs are designed and operated to minimize the impact on the environment and considering geotechnical stability and geochemical considerations. The material will be generally transported by truck and end-dumped, following a sequence developed for the operation. Waste rock and overburden will be managed within the same area.

Discovery WRSF (i.e., WRSF9) contains rock with potential for acid generation or potential to leach metals and will require a cover system to reduce potential impacts on the environment.

Although not required for the management of metal leaching and acid rock drainage (ARD) potential, waste rock and overburden will be disposed on land and in a manner that encourages freeze back and permafrost aggradation. Based on experience, it is expected that the material within each pile will freeze within two years of placement, but this needs to be confirmed with thermal analyses. Several thermistors will be placed during operation to confirm the rate of freezing for the various material cells and modify the management if required.

Agnico Eagle will continue to adhere to management practices outlined in the Mine Waste Management Plan.

Seepage and runoff water from the WRSFs will be managed by a series of water diversion channels, water retention dikes/berms, and water collection ponds. If the water quality does not meet the discharge criteria as per the Type A Water Licence 2AM-MEL1631 requirement, the collected water will be treated accordingly prior to being discharged to the receiving environment.

4.2.5.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (Agnico Eagle, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

Most waste rock that will be excavated is classified as non-Potentially Acid Generating (non-PAG) except for the Discovery deposit. Overall, 63% of Discovery open pit waste rock is classified as PAG or Uncertain. The ARD potential associated with Discovery open pit waste rock will be mitigated through progressive construction of a cover system on WRSF9.

4.2.5.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine waste rock storage facilities are listed in Table 4-6, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB, 2013 and Agnico Eagle, 2015a).

Table 4-6: Closure Objectives and Criteria – Waste Rock Storage Facilities

Closure Objectives	Closure Criteria	Action / Measurements
The pile is physically and geotechnically stable for human and wildlife safety in the long-term: minimize erosion, thaw settlement, slope failure, collapse, or the release of contaminants or sediments	The WRSFs are designed for closure and will account for seismic and permafrost conditions	Ensure proper design and stable slopes Physical and geotechnical inspection by a qualified engineer Thermal monitoring
Build to blend in with current topography, be compatible with wildlife use, and/or meet future land use targets	Limit WRSFs elevation to blend into local topography WRSFs at post-closure will not compromise wildlife safety and safe land use	Ensure proper design and stable slopes Physical and geotechnical inspection by a qualified engineer

Closure Objectives	Closure Criteria	Action / Measurements
Generation of poor water quality has been minimized, including ARD/ML Confirm runoff and seepage from the WRSFs meet water licence criteria Surface runoff and seepage water quality is safe for humans and wildlife	The runoff and seepage from the WRSFs will continue to be collected in the designated collection ponds and pumped to CP1 for treatment in the WTP, as per operational practices, until monitoring results demonstrate that water quality conditions from the WRSFs are acceptable for direct discharge	The runoff and seepage from the WRSFs will continue to be collected and monitored as needed and transferred to CP1 for treatment Routine water quality monitoring and sampling Physical inspection, thermal monitoring
Dust levels are safe for people, vegetation, aquatic life, and wildlife in the long-term	Best management practices for controlling dust during active reclamation	Implement best management practices as during operation Routine air quality monitoring
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement will continue to be implemented	Public engagement

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- Carry out detailed inspections and assessments of waste rock piles. The objective of these inspections and assessments is to evaluate the actual performance against design projections related to anticipate post-closure conditions. (from recommendation no. R524);
- Conduct a comprehensive risk assessment for mine closure to evaluate the long-term risks associated with possible failure modes for waste rock piles. Identify possible impacts and critical parameters and develop control strategies. If warranted, implement a long-term monitoring plan. (from recommendation no. R525/526);
- Re-evaluate, and revise as necessary, plans for the management of waste rock to prevent, control and treat metal leaching and acidic drainage to ensure that they are consistent with the objectives and plans for mine closure and post closure. If warranted, implement a long-term site-specific monitoring program (from recommendation no. R527/538).

4.2.5.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for rock storage facilities closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the WRSFs were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Construct the WRSFs in lifts with slopes where individual lifts can be set back to provide long-term stability;
- Controlled runoff water by having sediment collection ponds where required for use during operation and possibly for the initial portion of the closure phase until seepage water quality is proven to be acceptable and stable;
- Design and operate the WRSF during operation to promote permafrost.
- Approximately 80% of the Discovery WRSF (i.e., WRSF9) cover system will be progressively reclaimed during the operations period, and the remaining 20% will be placed during the active closure period.

4.2.5.5 Engineering Work Associated with Selected Closure Activity

The description of the closure activities for the WRSFs as presented herein is taken from the Mine Waste Management Plan.

Reclamation of the WRSFs will use currently accepted management practices and appropriate mine closure techniques that will comply with accepted protocols and standards. Except for WRSF9 at Discovery, geochemical testing indicates that the majority of waste rock and overburden from the Tiriganiaq / Wesmeg / Normeg / Pump / F-Zone areas are non-potentially acid generating (NPAG) and non-metal leaching (NML). Kinetic tests completed on all waste rock type and at various scales show that drainage water quality is expected to meet MDMER monthly mean effluent limits, including results for arsenic. Therefore, a closure cover system is not proposed for these WRSFs.

The Discovery WRSF (i.e., WRSF9) contains rock with potential for acid generation or potential to leach metals and will require a cover system to reduce potential impacts on the environment.

The WRSFs were designed for long-term stability and no additional re-grading will be required at closure. Reprofiling could be required if waste rock material is excavated for reclamation work such as TSF cover or rock berms around the open pits.

The contact water management system for the WRSFs will remain in place until mine closure activities are completed and that monitoring results demonstrate that water quality conditions from the WRSFs are acceptable for discharge to the environment with no further treatment required. Once water quality meets the discharge criteria established through the water licensing process, the water management infrastructures will be decommissioned to allow the water from the WRSFs to naturally flow to the receiving environment.

Overall, the water quality objectives for closure and post-closure will represent baseline conditions or national water quality objectives such as the CCME or site-specific water quality objectives (SSWQO). The final SSWQO that will be applied for closure will be developed prior to closure and presented in the Meliadine Final Closure and Reclamation Plan.

Dust suppression measures, which are typical of the current mine practices and consistent with best management practices, will be considered through design, operation and closure phases to control the dust. Dust is expected to be a minor issue during the operation of the WRSFs as the waste rock produced at the mine generally comprises large pieces of rock that is not be susceptible to wind erosion. The overburden will be surrounded by waste rock in the WRSFs; therefore, dusting is not expected to be an issue. The need for dust control at closure will be further evaluated during closure activities.

It is anticipated that the native lichen community will naturally re-vegetate the surface of the WRSFs over time.

4.2.5.6 Predicted Residual Effects

The following residual effects are predicted at the WRSFs after reclamation:

- The WRSFs will be permanent features on the landscape. The vegetation communities which formerly occupied the areas will be permanently lost but it is expected that some of the native community will re-vegetate the WRSFs cover surface over time;

- No significant adverse impact on the continued opportunity for traditional and non-traditional use of wildlife in the region is anticipated with the closure of the WRSFs;
- Runoff from the WRSFs will eventually be discharged in the receiving environment, once water quality demonstrates that water flowing from the facilities is acceptable for direct release. It is predicted that concentrations will meet discharge criteria.

4.2.5.7 Uncertainties

The thermal conditions within the WRSFs will depend on the actual waste placement plan and schedule, initial waste temperatures when placed, and thermal conditions of the original ground before the waste materials are placed. Therefore, thermistors will be installed in each WRSFs to monitor the rate of freeze back and permafrost development in the facilities. Thermal monitoring will be done during operation and closure.

The WRSFs will be allowed to naturally re-vegetate. It is anticipated that the native lichen community will naturally re-vegetate the surface over time. As part of a research project at Meliadine, re-vegetation studies will be completed to assess the potential for vegetation on rockfill surfaces.

4.2.5.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring and maintenance strategies for the WRSFs as presented by AANDC/MVLWB (2013):

- Periodic inspections will be performed by a geotechnical engineer to visually assess stability and performance of the WRSFs. Geotechnical monitoring will be carried out during all stages of the mine life, including closure and post-closure, to demonstrate geotechnical stability and the safe environmental performance of the facilities. If any non-compliant conditions are identified throughout the process, corrective measures will be completed to ensure stability of the structures;
- Ground conditions in the WRSFs will be monitored to confirm permafrost conditions are being established as predicted;
- The placed waste rock and overburden are expected to freeze back, and permafrost is likely to develop within the WRSFs with time. Thermistors will be installed in each WRSF to monitor the rate of freeze-back and permafrost development progress in the facilities during closure;
- Water quality from the WRSFs will be monitored to confirm that drainage is performing as predicted and is not adversely affecting the environment;
- Any seepage areas from the toe of the WRSFs will be identified and monitored.

4.2.5.9 Contingencies

The contact water management system for the WRSFs will remain in place until mine closure activities are completed, and monitoring results demonstrate that water quality conditions from the WRSFs are acceptable for the discharge of all contact water to the environment with no further treatment required. Treatment systems will remain on site until suitable water quality is reached.

4.2.6 Tailings Storage Facilities

4.2.6.1 Description of the Components

The tailings storage facility at Meliadine consists in a dry stack tailings. Dry stack tailings produced in the mill at Meliadine are trucked to either the TSF or to the paste plant for use underground as backfill. The tailings are spread out at the TSF and compacted into thin lifts using a dozer and vibratory compactor.

The TSF is located on high ground west of the mill and east of Lake B7, as shown in Figure 2-2. The direct distance from the mill to the tailings stack ranges from 400 to 800 m. The minimum setback distance from the edge of Lake B7 is approximately 150 m.

The TSF is designed and will be extended to accommodate approximately 28.1 Mt of tailings. The TSF will be constructed using a cell-by-cell approach to limit the active deposition area such that dust generation, and surface erosion can be effectively managed and progressive reclamation and closure of the TSF can be conducted during the operation phase. The current cover system for the TSF includes a layer of waste rock on the slopes and a layered combination of waste rock and overburden on the crest.

Commissioning of the process plant started near the end the fourth quarter of 2018 and actual production commenced early in the second quarter of 2019. The production schedule, quantities, and distribution of tailings by year are presented in Table 2-2. Generally, deposition at the TSF consists of the following sequence:

- The filtered tailings are hauled to the TSF with haul trucks, end dumped, and placed into lifts of maximum height 0.3 m using a dozer. Each tailings lift is then compacted using a vibratory drum roller. This compaction is intended to promote runoff, reduce the potential for oxygen ingress and water infiltration, and maintain geotechnical stability.
- A starter waste rock berm was initially placed along the outside perimeter to contain the initial lifts of the tailings; the berm will become a part of the closure cover. Additional lifts of compacted waste rock (with a maximum lift thickness of 1 m) are placed as the tailings surface is brought up as erosion and thermal protection. Safety berms are placed on each lift of the waste rock that also help to reduce dust generation from the tailings surface.
- Surface water or excess snow/ice is removed from the natural ground within the footprint prior to tailings placement.

To promote freeze-back, the initial lift of tailings over original ground is placed during winter conditions. An adaptive, performance-based management approach has been used at the TSF to adapt the yearly deposition strategy to actual mill and paste plant production quantities.

The TSF is located within the catchment of Lake B7 with a small portion straddling the water catchment of CP1. Site contact water from the TSF is collected by the perimeter water management system located to the northwest and south of the TSF. Seepage and runoff from the TSF will be collected within the CP1 catchment area and in SP6. The contact water quality and the water management structures for the TSF will be monitored and assessed according to the Type A Water License 2AM-MEL1631 during operation, closure and post-closure periods.

4.2.6.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (Agnico Eagle, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

The progression of tailings deposition at Meliadine Mine is and will continue to be provided as part of the Annual Report.

As the tailings reach final elevation, the tailings will be progressively encapsulated with either waste rock or a layered combination of waste rock and overburden.

4.2.6.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine TSF are listed in Table 4-7, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and Agnico Eagle, 2015a).

Table 4-7: Closure Objectives and Criteria – Tailings Storage Facilities

Closure Objectives	Closure Criteria	Action / Measurements
Remnant embankments and surfaces of tailings containment areas are physically and geotechnically stable in the long-term	The TSF is designed for closure and will account for seismic and permafrost conditions A cover is placed during operation and closure for dust control (wind erosion), stability and water infiltration	Place cover in progressive reclamation and closure Physical /geotechnical inspection by a qualified engineer Monitoring
Surface runoff and seepage water quality is safe for humans and wildlife Ensure runoff and seepage is collected	Ensure runoff and seepage from the TSF is collected and meet water licence criteria for direct discharge	The runoff and seepage from the TSF will continue to be collected as needed and monitored as per operational practices, and until monitoring results demonstrate that water quality is acceptable for direct discharge Routine water quality monitoring and sampling Physical inspection
Ensure the TSF is safe for monitoring and physical inspections	TSF at post-closure will not compromise people's health	Ensure stability of the TSF Routine monitoring and physical inspection
Control dust generation from active reclamation activities Dust levels are safe for people, vegetation, aquatic life, and wildlife in the long-term	Best management practices for controlling dust, fugitive and exhaust emissions during active reclamation	Implement best management practices Routine air quality monitoring
Be compatible with wildlife use, and/or meet future land use targets	TSF at post-closure will not compromise wildlife safety TSF will be covered	Place cover in progressive reclamation and closure Physical /geotechnical inspection by a qualified engineer

Closure Objectives	Closure Criteria	Action / Measurements
		Routine monitoring and physical inspection
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement will continue to be implemented	Public engagement

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- Carry out detailed inspections and assessments of Tailings Storage Facilities. The objective of these inspections and assessments is to evaluate the actual performance against design projections related to anticipate post-closure conditions (from recommendation no. R524);
- Conduct a comprehensive risk assessment for mine closure to evaluate the long-term risks associated with possible failure modes for Tailings Storage Facilities. Identify possible impacts and critical parameters and develop control strategies (from recommendation no. R525). If warranted, implement a long-term monitoring plan (from recommendation no. R526);
- Re-evaluate and revise as necessary plans for management of tailings to prevent; and control and treat metal leaching and acidic drainage to ensure that they are consistent with the objectives and plans for mine closure and post closure (from recommendation no. R527). If warranted, implement a long-term site-specific monitoring program (from recommendation no. R528).
- At all mines that exist in permafrost conditions, downstream slopes of tailings containment structures should be revegetated (from recommendation no. R529).

4.2.6.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for the TSF closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the TSF were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Construct a cover system to prevent surface erosion and create a stable landform in the long-term;
- Collect water that does not meet the discharge criteria for treatment.

The closure options considered different approaches to achieving a stable configuration for the TSF. Placing the cover in a progressive manner is considered the most appropriate approach to achieving a stable configuration for the TSF. The runoff and seepage from the TSF will continue to be collected as needed and monitored as per operational practices. Water treatment facilities will remain on site during closure if required, until water quality meets discharge criteria.

4.2.6.5 Engineering Work Associated with Selected Closure Activity

Mine closure and reclamation of the TSF will utilize best management practices and appropriate mine closure techniques that will comply with recognized protocols and standards. Results of geochemical characterization indicates that most of the tailings produced to-date at the mine are either PAG or uncertain, while ML has not been observed to be an issue. Despite the PAG classification, the TSF is not considered to pose an ARD risk due to the placement methodology used, assumption of freeze-back within the facility and progressive reclamation cover placement (Agnico Eagle, 2020c). Freeze-back of the tailings and cover placement are management actions being taken to ensure water from tailings does not impact the receiving environment.

The closure plan for the TSF is to progressively place an engineered cover over the tailings surface as the tailings deposit reaches the ultimate elevation 80% of the cover system will be placed during operations and the reminder 20% during the first years of active closure. The proposed closure cover includes:

- A minimum thicknesses of 4.5 m waste rock cover over the lower toe of the final tailings side slopes and a minimum thicknesses of 4.0 m waste rock cover over the upper side slopes, placed during operation along with tailings deposition;
- A minimum thicknesses of 2.5 m waste rock cover over 0.5 m thick select overburden till fill over the top surface of final tailings. The top closure cover material will be placed when each cell reaches its operational capacity and sloped 4% to discourage ponding and surface infiltration.

Waste rock cover will consist of 600 mm minus NPAG waste rock. Select overburden till will be placed and compacted over the top surface of the tailings, in unfrozen conditions. The till material is intended to reduce surface infiltration and will meet the following specifications:

- Inorganic, sandy silt or silty sand with a fines content of 20% to 60% and maximum particle size of 300 mm;
- Placed in an unfrozen condition and have a minimum thickness of 0.5 m.

About 0.1 Mt of selected ice-poor overburden will be stored in a temporary overburden stockpile as TSF closure cover material.

The contact water management system for the TSF will remain in place until mine closure activities are completed, and monitoring results demonstrate that water quality conditions from the TSF are acceptable for the discharge of all contact water to the environment with no further treatment required. Once the water quality meets the discharge criteria established through the water licensing process, the TSF water management infrastructure will be decommissioned to allow the water to naturally flow to the receiving environment.

Overall, the water quality objectives for closure and post-closure will represent baseline conditions or national water quality objectives such as the CCME or site-specific water quality objectives (SSWQO). The final SSWQO that will be applied for closure will be developed prior to closure and presented in the Meliadine Final Closure and Reclamation Plan.

An adaptive closure strategy has been adopted for the Meliadine Mine. The preliminary closure cover design adopted for the TSF at this stage will be further evaluated and updated based on the TSF performance monitoring, water quality monitoring and evaluation, and the overall mine closure plan. The final closure cover design for the TSF will be developed before mine closure.

Dust suppression measures, which are typical of the current mine practices and consistent with best management practices, will be considered through design, operation and closure phases to control the dust. The surface compaction of the filtered tailings lifts and limiting traffic over the compacted surface will significantly reduce the potential for wind erosion of the tailings surface. The placement of the engineered cover will also help prevent dust production. TSF will be operated by cells to limit the tailings surface area exposed to wind and facilitate progressive closure for the cover.

It is anticipated that the native lichen community will naturally re-vegetate the TSF cover over time (Agnico Eagle, 2015a).

4.2.6.6 Predicted Residual Effects

The following residual effects are predicted at the TSF after reclamation (Agnico Eagle, 2015a):

- The TSF will be a permanent feature on the landscape. The vegetation communities which formerly occupied the areas will be permanently lost but it is expected that some of the native community will re-vegetate the TSF cover surface over time;
- No significant adverse impact on the continued opportunity for traditional and non-traditional use of wildlife in the region is anticipated with the closure of the TSF.

4.2.6.7 Uncertainties

The main uncertainties for the closure planning of the TSF are related to the cover design, the water quality from the TSF, the permafrost development and the re-vegetation.

During Post Closure, mining activity will have ceased, and mine site waterbodies will begin to discharge passively. In the absence of mining activities, TSS is expected to return to relatively low baseline values of <3 mg/L. Due to the low TSS baseline conditions, total and dissolved concentrations are anticipated to be similar during Post Closure. Hence, model results are developed assuming that total concentrations are equal to dissolved concentrations.

Additional water quality monitoring data collected through the life of mine will be used to update closure and post-closure predictions for the Final Closure and Reclamation Plan.

The cover design will consider infiltration and potential metal loadings in surface runoff. If necessary, water quality analysis through hydrogeological (groundwater) modelling, unsaturated flow modelling in the cover layer, and field trials will be undertaken to assess the water quality from the TSF at closure (Agnico Eagle, 2015a). The water quality modelling will be completed during operations and will be considered in the design of the final closure concept for the TSF. The models will be calibrated using operational monitoring data.

The thermal conditions within the TSF will depend on the actual tailings placement plan and schedule, tailings temperatures when placed, and thermal conditions of the original ground before the tailings are placed. Based on ground temperatures and climate data for the Meliadine Mine, it is anticipated that the TSF will freeze back in the long term. Tailings placement strategies will be adopted during mine operation to promote freeze back. Thermistor cables will be installed in the TSF to monitor the permafrost development progress within the facility during the operations stage.

It is anticipated that the native lichen community will naturally re-vegetate the TSF cover over time. As part of a research project at Meliadine, re-vegetation studies will be completed to assess the potential for vegetation on the TSF cover surface.

4.2.6.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring and maintenance strategies for the TSF as presented by AANDC/MVLWB (2013):

- Periodic inspections will be performed by a geotechnical engineer to visually assess stability and performance of the TSF;
- Ground conditions in the TSF will be monitored to confirm permafrost conditions are being established as predicted;
- Thermistor data will be monitored to determine thermal conditions within the TSF to confirm predicted permafrost aggradation;
- Water quality from controlled discharge points around the TSF will be monitored to confirm that drainage is performing as predicted and is not adversely affecting the environment; and
- Any seepage areas from the toe of the TSF will be identified and monitored.

4.2.6.9 Contingencies

The contact water management system for the TSF will remain in place until mine closure activities are completed, and monitoring results demonstrate that water quality conditions from the TSF are acceptable for the discharge of all contact water to the environment with no further treatment required. Treatment systems will remain on site until suitable water quality is reached.

Freeze-back of the tailings and cover placement are management actions being taken to ensure water from tailings does not impact the receiving environment. Monitoring will continue until freeze-back of the tailings has been achieved.

4.2.7 Water Management Structures

4.2.7.1 Description of the Components

The required water management infrastructure (i.e., dikes, berms, sumps, diversion channels, pumps/pipelines etc.) were assessed and sized based on the overall site water and waste management plans and the results of the water balance and water quality. They are detailed in the Water Management Plan.

The existing water management infrastructure include the following:

- Water collection ponds (CP1, CP2, CP3, CP4, CP5, and CP6) and their associated dikes or thermal berms (D-CP1, Berm CP2, Berm CP3, Berm CP4, D-CP5, and Berm CP6)
- Saline storage ponds (SP1 and Tiriganiaq Pit 2)
- Diversion berms (Berm 1, Berm 2, and Berm 3)
- Water diversion channels (Channel 1 to Channel 10)
- Water passage culverts to convey surface contact water (Culverts 1 to 8, 10, 11, 13, 14 to 16, 18, 19 and 20)
- A reverse osmosis treatment plant (RO)
- An effluent water treatment plant (EWTP)
- A saline effluent treatment plant (SETP)
- A water treatment complex (WTC) building – housing the EWTP and SETP
- A sewage treatment plant (STP)
- A potable water treatment plant (WTP)
- A network of surface pumps and pipelines
- A freshwater intake
- Jetties and pumping infrastructure (CP1 and CP5)

- An effluent diffuser located in Meliadine Lake
- An effluent diffuser located in Itivia Harbour
- A waterline to convey saline contact water to Itivia Harbour (under construction)

The water management infrastructure to be constructed include the following:

- Water retention dikes including Dikes D-SP6North, D-SP6West, D-B5North, D-B5South, D-CP8North, DCP8West, D-CP8South, D-CP8East, D-A8North, D-A8South, and D-A6;
- Water collection ponds including contact water ponds CP7, CP8, CP9, CPD1, CPD2, and saline pond SP6;
- Water diversion channels including Channels 11 to Channel 19;
- Sumps including Sump F1, and Sump F2;
- Thermal protection berms including Berm 4, Berm-CP7, Berm-F2;
- Various pump and pipelines; and culverts as required.

Water Retention Dikes and Thermal Berms

Dikes and thermal berms of Meliadine Mine were designed in accordance with the recommendations provided in the CDA Dam Safety Guidelines (CDA 2013 and 2014)

Diversion Channels

Diversion channels were designed to divert the natural run-off and contact water towards collection ponds and sumps that will be subsequently pumped to the main CPs and SPs. The diversion channels were designed to pass extreme intensity flow and rain events.

4.2.7.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (Agnico Eagle, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

The water management components are required during the operation phase of the Meliadine Mine. The water management objectives are to minimize potential impacts to the quantity and quality of surface water at the Mine. Water management structures are in place or will be constructed as needed during operation to contain and manage the contact water from the areas affected by mining activities. All mining components have been located to avoid or minimize impact on the local environment to the extent possible.

All water management facilities will be decommissioned at different stages of closure, the open pits will be flooded, and natural drainage will be restored as much as possible. Once the underground mining activities are completed, the source of saline groundwater will be eliminated.

4.2.7.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the dikes and dams are listed in Table 4-8, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and Agnico Eagle, 2015a).

Table 4-8: Closure Objectives and Criteria – Water Management Structures

Closure Objectives	Closure Criteria	Action / Measurements
Ensure physical stability of residual earth structures for environmental, human, and wildlife safety	Stabilize slopes to minimize erosion, failure and slumping Ensure long-term stability	Routine monitoring and sampling Physical and geotechnical inspection
Dismantle and remove as much of water management systems as possible and restore natural or establish new drainage patterns	Re-establish natural grade and drainage where possible Runoff is channelled through the watershed Restore natural/compatible terrain as much as possible	Dismantle all water management systems Surface will be regraded to promote natural drainage Physical inspection, routine monitoring and sampling
The systems are dismantled and removed/disposed of (i.e. pipelines, culverts, pump systems).	Remove all components above ground or buried	Components or materials will be cleaned up and salvageable materials removed, shipped or disposed at the landfill Concrete slabs on grade will be perforated and covered or removed and the area re-graded to avoid erosion and promote natural drainage Physical inspection to confirm removal
Remove all hazardous wastes to avoid contamination	All hazardous wastes are removed and disposed properly	Hazardous wastes will be removed for disposal by Licenced handler as per operation practices
Meet water quality objectives for the site surface water	Water licence criteria for direct discharge to the receiving environment	Routine monitoring of water quality as per the Water Licence requirements
Remove treatment facilities when water treatment is no longer required	Water licence criteria for direct discharge to the receiving environment Collected runoff and seepage will be treated until water quality meets licence criteria for direct discharge When water quality from the mine components is deemed suitable for direct discharge to the environment berms and dikes will be breached	Dismantle all water management and treatment systems when possible Routine monitoring of water quality as per the Water Licence requirements
Stable release of water discharge to the environment is maintained at designated discharge points	Maintain water management components until they are no longer required Long term water management structures are properly designed for long term stability	Design and construct structures for long term water management with adequate dimensions at proper locations Routine monitoring and inspection
Return area to its original state or to a condition compatible with the end land-use targets	Remove all facilities and restore natural/compatible terrain as much as possible	Dismantle and reclaim all infrastructure, regrade surface to promote natural drainage

Closure Objectives	Closure Criteria	Action / Measurements
		Physical inspection to confirm removal, routine monitoring
Discourage wildlife from entering the facilities	Wildlife will be discouraged from entering the facilities until water quality is acceptable	Limit access to facilities with berms Routine monitoring and sampling
Systems are physically and geotechnically stable for the safety of humans and wildlife	Limit access until water quality is acceptable and meet required criteria	Place berms and signs to limit access Physical inspection
Consider community land use expectations and traditional knowledge	Community engagement will continue to be implemented	Public engagement

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

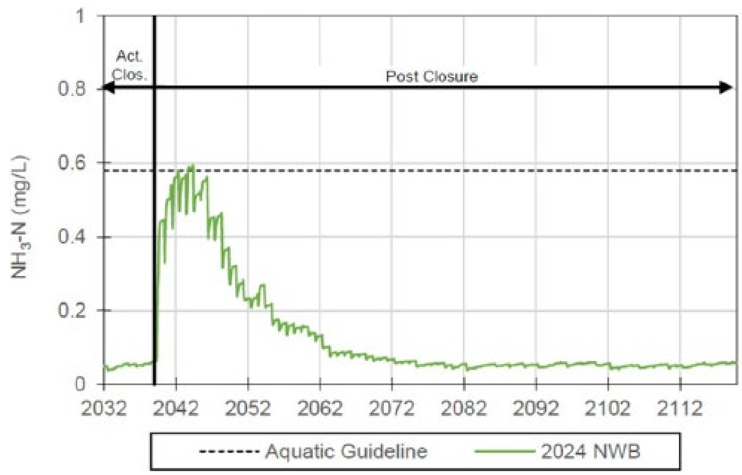
- Support infrastructure should be removed (from recommendation no. R517).

As per Agnico Eagle's Response to Final Written Submissions on the 2024 Meliadine Water Licence Amendment Application 2AM-MEL1631 (Agnico Eagle, 2024d), potential mitigation measures for preventing potential impacts to aquatic life from water quality during post-closure for Lake J1 and SP6 include the following:

Lake J1

With respect to the predicted exceedances from the water quality model in Lake J1, the maximum monthly predicted ammonia concentration is 0.59 mg/L, as compared to the guideline value of 0.58 mg/L (Figure 4-6). In total, there are exceedances predicted for 8 months in 2044, out of 972 months modelled for the Closure and Post-closure phases (0.8% of the model timeline). These slight exceedances are limited in magnitude and duration and are within the range of potential model error. The Meliadine water balance and water quality model will continue to be updated as per the Water Licence requirements, and mitigation measures will be proposed should the predicted ammonia concentrations in Lake J1 continue to exceed water quality guidelines.

Figure 4-6: Predicted Closure and Post-closure ammonia concentrations in Lake J1



SP6

The predicted exceedances from the water quality model in SP6 for nitrate, ammonia, chloride, arsenic, cobalt, phosphorus, and selenium moderate over time following the Active Closure phase, as additional non-contact water flows through the SP6 pond. If continued monitoring data and associated updated model predictions continue to indicate that these (or other parameters) are expected to exceed guidelines during the closure phases, a potential mitigation option would be to flush SP6 with freshwater from Meliadine Lake, prior to actively filling it with pumped lake water. This mitigation is feasible, and the volumes of water required (one pond volume = 1.09 Mm^3) would remain well below the withdrawal rates from Meliadine Lake for active pit filling assessed in the 2014 FEIS (17.06 Mm^3/year).

4.2.7.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for the water management facilities closure are provided by the AANDC/ MVLWB (AANDC/ MVLWB, 2013). Closure activities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- For any water management structures that may be required post-closure, select design parameters to reflect the need to maintain stability in the long term;
- Design water management systems to minimize the migration of potential contaminants;
- Treat non-compliant water in storage and subsequently release upon achievement of discharge criteria;
- Open and level/contour of embankments, berms, dikes and culverts not required for long-term use and restore the pre-disturbance drainage network to the extent possible;
- Locate permanent spillways in competent rock or material;
- Drain and backfill all sumps and collection trenches;
- Drain, dismantle, and remove tanks and pipelines from the site;
- Ensure any remnant embankments or other water management structures have appropriate erosion control measures in place to maintain stability post-closure;

- Stabilize embankments by removing weak or unstable materials from slopes and foundations and/or construct toe berms to flatten overall slope;
- Open water retention dams and drain impoundments, avoid post closure impoundment of water when possible.

All the options listed above will be required to address closure and reclamation of the water management system. Details on the implementation of those considerations are provided as applicable in the following section.

4.2.7.5 Engineering Work Associated with Selected Closure Activity

During mine closure, the water management infrastructure on site will remain in place until mine closure activities are completed, and monitoring demonstrates that the water quality is acceptable for environmental discharge without treatment. Once water quality meets the discharge criteria, the water management systems will be decommissioned to allow the water to naturally flow to the environment.

The containment ponds, dikes and berms will remain in place to collect the surface runoff water and seepage from the mine until the water quality meets discharge criteria. Once the water quality meets discharge criteria, dikes/berms will be breached to allow runoff to follow natural (topographically induced) flow paths. Dikes/berms breaching will involve the removal of a portion of the dikes to a minimum depth of 1 m below average water level or back to original ground levels. Consideration will be given to breach staging, with the above water portions of the dike/berm in the breach area removed during winter periods, when there will be little surface water flow, thereby minimizing the potential release of sediments to the neighboring waterbodies. The remainder of the breach would be conducted during the open water season following freshet. Turbidity curtains would be deployed to minimize any potential sediment release to surface water.

Once monitoring results have indicated that contact water conveyed in channels and sumps meets acceptable water quality, the infrastructure will be graded and/or surface treated according to site specific conditions to minimize wind-blown dust and erosion from surface runoff, if required. This closure activity is intended to enhance site area development for re-colonization by native plants and wildlife habitat.

Culverts will be maintained as required in closure until site water quality monitoring results indicate that water can be released to the environment without further management and without erosion. Culverts on site will be dismantled and disposed of in the on-site landfill and the areas will be re-graded to promote natural drainage.

The long-term, post-closure water quality in the containment ponds and in the flooded open pit lakes are anticipated to meet Metal and Diamond Mining Effluent Regulations (MDMER), Canadian Council of Ministers of the Environment Water Quality Guidelines (CCME-WQG) for the protection of aquatic life and/or the Site-Specific Water Quality Objectives (SSWQO) developed for the Mine.

Overall, the water quality objectives for closure and post-closure will represent baseline conditions or national water quality objectives such as the CCME or SSWQO. The final SSWQO that will be applied for closure will be developed prior to closure and presented in the Meliadine Final Closure and Reclamation Plan.

The waterline system will be decommissioned; the covered sections of waterlines will be excavated, the pipeline network components will be dismantled, removed and disposed on-site in a landfill. The water effluent diffuser will also be dismantled and removed from the shore area and water, using best practices to minimize disturbance, and disposed on-site in the landfill.

Water treatment facilities will remain on site until water quality is suitable for direct discharge to the environment. The water treatment and Meliadine Lake effluent diffuser will be maintained for three (3) water treatment seasons as a contingency before being dismantled and disposed of in an appropriate landfill.

4.2.7.6 Predicted Residual Effects

No significant residual effects have been identified for closure of the water management facilities, as it is predicted that concentrations in post-closure will meet discharge criteria. Changes to terrain caused by the construction and reclamation of the facilities could result in some alteration or loss of plant populations and plant communities.

4.2.7.7 Uncertainties

Uncertainties are related to water quality during closure and post-closure. However, water quality modelling will continue during operation.

4.2.7.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following the closure of the water management facilities, and maintenance strategies as presented by AANDC/ MVLWB (2013):

- Periodically inspect the remaining water management structures to assess their performance;
- Continue monitoring climatic conditions at site to compare them to design assumptions (e.g., regarding storm events) and performance of selected closure activities;
- Monitor the performance of erosion protection on embankment structures, such as riprap, and the physical stability of water management systems including permafrost integrity where applicable;
- Monitor water quality, quantity, and flows to ensure system is working as predicted and water quality objectives are being met;
- Sample surface water as per Water Licence requirement;
- Evaluate post-closure drainage patterns and confirm that they compare to pre-development patterns as described in the closure objectives;
- Periodic inspections will be performed by a geotechnical engineer to visually assess stability and performance of the structures.

4.2.7.9 Contingencies

The water treatment facilities are included as a contingency measure should water on site not be suitable for release to the environment. The diffuser will be maintained in place for three (3) water treatment seasons as a contingency before being dismantled and disposed. Once the underground mining activities are completed, the source of saline groundwater will be eliminated.

Water quality monitoring will occur during mine operation to include in the site water quality and to provide additional information for future closure water quality prediction and planning modifications if required.

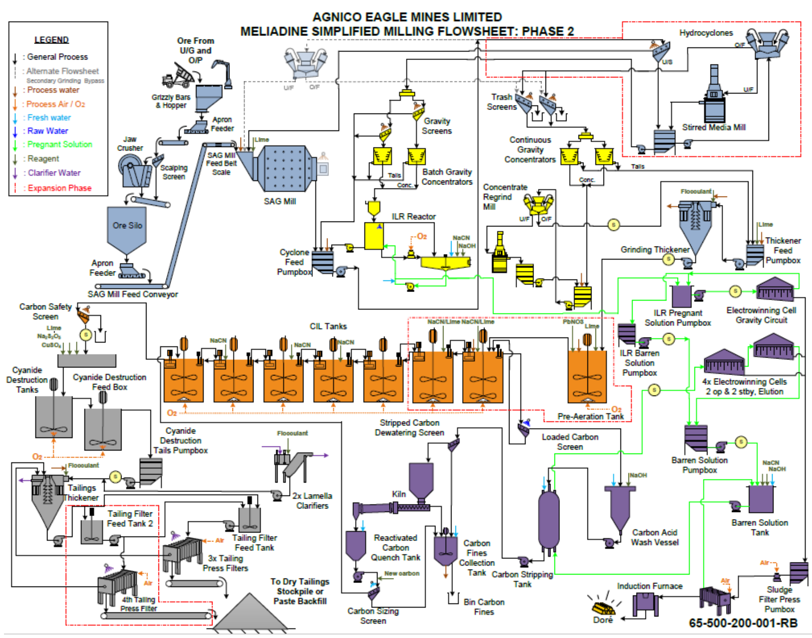
4.2.8 Site Buildings and Equipment

4.2.8.1 Descriptions of the components

During the life of mine, surface infrastructures are required at different periods for mining, processing, accommodation, fuel storage and electricity. Most of the infrastructures are located within the industrial site of Meliadine.

- <u>Mill</u>: The mineral processing facility consists of four (4) main components: a crusher plant, a belt conveyor from crusher to the ore bin, a process plant and a paste backfill plant. The ore processing facility is centrally located relative to the mining site. The facilities will comprise crushing, grinding, gravity recovery, cyanidation, and gold recovery in a carbon-in-leach circuit. The main ore processing streams will be continuous operations, while the carbon-handling and gold recovery circuits will be batch operations. Figure 4-5 presents the Meliadine mineral processing flowsheet.

Figure 4-7 : Meliadine Mineral Processing Flowsheet



- <u>Ore Pads</u>: The ore stockpile is located on a pad close to the process plant pad. No ore will remain in the ore stockpiles by the end of operations. The ore pad (Stage 1) will have a maximum footprint of 10.3 ha, while the ore pad extension (Stage 2), will have a maximum footprint of 6.9 ha.
- <u>Accommodation and Service Building</u>: Due to the remote location of the mine, it is necessary to provide catered accommodation on-site. The permanent camp includes individual rooms, shared bathrooms and recreational facilities. The camp complex is constructed out of insulated structural wood frames resting on a structural steel frame floor on piles. At full operational capacity, the camp will house approximately 800 people. The building houses also the kitchen, dry warehouse, and

offices (administration offices, an engineering and training room, various departmental offices (e.g., human resources, training, geology, engineering, planning, environment).

- Laboratory and Core Shack: The assay laboratory and core shack will be designed to accommodate, but not be limited to, an average of 300 samples/day in a building located on the mine site. The assay laboratory and core shack are in a building near the south of the warehouse. The building is a prefabricated steel frame (foldaway type) structure covered by cladding and roofing panels.
- Maintenance Shops: An industrial mine maintenance shop containing several maintenance bays, a wash bay, a machine shop, and a welding shop is in the industrial area on a concrete foundation. Upon regulatory approval, a wash bay close to the service building, temporary and permanent garage buildings (on concrete blocks or concrete slab) will also be built in the laydown area.
- Emulsion Plant: The Emulsion Plant, raw material storage, and magazines are located north west of the site, away from vulnerable facilities, as stipulated by the federal and territorial Explosives Use Act and Regulations. The explosives trucks are based at the Emulsion Plant. A garage is also included in the building for the maintenance and washing of trucks and equipment used to handle explosives.
- Fuel Storage: The main storage tanks include one (1) tank of 6 ML and one (1) tank of 3 ML. Smaller storage tanks are also located on site.
- Power Plants: The power plant is a diesel-fuelled facility using multiple medium-speed reciprocating engines housed in a building (Murox type building). A separate modular building is required to house all the switchgears, transformers, mechanical rooms, electrical rooms, and heat recovery systems.
- Pads and staging areas: Laydown areas for containers (sea cans) disposal of approximately 51,562 m^2. An approximate total area of 12.5 ha for additional pads and staging areas (within the laydown area) will be constructed upon regulatory approval. The new facilities include a garage area, a warehouse pad, container areas 1 and 2, an ore staging area, a waste staging area and a mobile crusher area. The site layout will be updated with this final infrastructure list.

The equipment fleet include mobile surface equipment and underground mining equipment. The list includes the equipment on site, but additional equipment will be mobilized in the future for the open pits exploitation. The list will be adjusted if required in next version of the ICRP.

4.2.8.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (Agnico Eagle, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

Figure 2-2 presents the main existing infrastructure at the mine site. At closure, the facilities will be dismantled and reclaimed following best practices put in place during operation and in order to minimize long term disturbance. The facilities could also be transferred to the local community upon interest.

4.2.8.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine buildings and equipment are listed in Table 4-9, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and Agnico Eagle, 2015a).

Table 4-9: Closure Objectives and Criteria – Site Buildings and Equipment

Closure Objectives	Closure Criteria	Action / Measurements
Return area to its original state or to a condition compatible with the end land-use targets	Remove all facilities and restore natural/compatible terrain as much as possible	Dismantle and reclaim all infrastructure, fuel reservoirs, chemicals and industrial wastes Surface will be regraded to promote natural drainage, revegetation and to suit the surrounding topography Physical inspection
Transfer of usable surface infrastructure	Any above-ground infrastructure will be offered to the Kivalliq Inuit Association (the landowner) at closure for potential re-use elsewhere, or will be dismantled and demobilize from site	Agreement with the Kivalliq Inuit Association
Remove surface infrastructure Buildings and equipment will not be a source of contamination to the environment or a safety hazard to humans and wildlife	Limit access during closure Remove all facilities and restore natural/compatible terrain as much as possible Clean up and remove machinery, materials and equipment	Place signs to limit access Machinery and equipment will be removed off-site for salvage Dismantle and reclaim all infrastructure and fuel reservoirs Approved demolition waste will be placed in on-site landfill Metals will be separated and shipped off-site as scrap if economical to do so or disposed on-site, salvageable material will be removed off-site for salvage Remaining areas will be scarified and remaining concrete foundations and slabs will be cut in the pieces and buried Soil and water monitoring Physical inspection
Remove all hazardous wastes to avoid contamination	Remove all hazardous material	Remove all hazardous material for disposal by licensed handler
Maintain required site infrastructure during active reclamation	Promote early decommissioning	Reduce the use of facilities as much as possible after closure
Ensure the remaining surface areas are safe for wildlife use and access	Restore natural/compatible terrain as much as possible	Surface will be regraded to promote the use for wildlife Physical inspection
Ensure contaminated soil is removed from site	Remove and remediate contaminated soils	An assessment will be carried out to identify areas where soils may be contaminated by hydrocarbons A more detailed investigations will be carried out of the potential soil contaminated areas (i.e., Phase 1 and 2 ESA investigations) to determine the extent of the contamination

Closure Objectives	Closure Criteria	Action / Measurements
		Selected hydrocarbon contaminated soils will be excavated and hauled to the landfarm for remediation
Control dust generation from demolition and active reclamation activities	Best management practices for controlling dust, fugitive and exhaust emissions during active reclamation	Implement best management practices Routine air quality monitoring
Ensure reclaimed areas support continuation of human land use activities	Human land use of the reclaimed area at post-closure will not compromise people's health	Dismantle and reclaim all infrastructure Surface will be regraded to promote natural drainage, revegetation and to suit the surrounding topography Routine monitoring and physical inspection
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement will continue to be implemented	Public engagement

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- On-site facilities and equipment that are no longer needed should be removed and disposed of in a safe manner. Efforts should be made to sell equipment for reuse elsewhere or to send equipment for recycling, rather than disposing of it in landfill facilities (from recommendation no. R514);
- The walls of on-site buildings should be razed to the ground. Foundations should be removed or covered with a sufficiently thick layer of soil to support re-vegetation (from recommendation no. R515);
- Any remaining structures and foundations should be inspected to ensure that no contamination is present. If contamination is found, it should be remediated as necessary to ensure public health and safety for post-closure land use (from recommendation no. R516);
- Support infrastructure, such as fuel storage tanks, pipelines, conveyors and underground services, should be removed (from recommendation no. R517);
- Electrical infrastructure, including pylons, electrical cables and transformers, should be dismantled and removed (from recommendation no. R520).

4.2.8.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for the buildings and equipment dismantling are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Reclamation activities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Recycling or reusing building materials and equipment where possible to reduce waste and importation of materials to site;
- Dismantle all buildings that are not necessary to achieve the future land use target;
- Raze/level all walls to the ground and remove foundations;

- Remove foundations where possible or cover with natural materials to blend into natural surroundings. Cover materials should be conducive to vegetation growth (this may include lichen) where possible;
- If disposing on site, decontaminate building materials (free of any batteries, fuels, oils, bulk process chemicals, or other deleterious substances), and use toxicity characteristic leaching procedure testing to confirm suitability for non-hazardous disposal;
- Cut, shred, crush, or break demolition debris to minimize the void volume during disposal;
- Maintain photographic records of major items placed into landfills, as well as a plan showing the location of various classes of demolition debris (e.g., concrete, structural steel, piping, metal sheeting, and cladding);
- Remove and dispose of concrete in an approved hazardous waste landfill if it contains contaminants that may pose a hazard over time;
- Backfill/grade all excavations to achieve the final desired surface contours to re-establish the original drainage or a new acceptable drainage;
- Backfill excavations in permafrost to limit permafrost degradation;
- Control dust emission during demolition of buildings that contain or contained asbestos, lead paint, hazardous chemicals, or other deleterious material;
- Remove buried tanks, where they already exist, to prevent subsidence;
- Remove hazardous waste to an approved on- site waste storage facility prior to shipping for off-site disposal;
- If possible, transport equipment off the site for reuse at other locations. This may include sale or salvage to local communities if sufficient interest exists;
- If sale or salvage of equipment is not possible, dispose of decontaminated equipment in an approved landfill or as recommended by the regulatory authorities;
- Decontaminate equipment (free of any batteries, fuels, oils, or other deleterious substances) and reuse or sell (local communities may have interests in some of the materials);
- Reclaim areas to the original topography and drainage or to a new topography or drainage compatible with end land use targets.

4.2.8.5 Engineering Work Associated with Selected Closure Activity

Prior to closure, infrastructure and equipment will be offered to the Kivalliq Inuit Association (the landowner) at closure for potential re-use elsewhere.

At closure, all buildings and structures will be decontaminated, decommissioned and dismantled. Demolition waste that cannot be reused, recycled or provided to local interests will be disposed of in the on-site landfill. Salvageable material will be removed off site and metals will be separated and shipped off-site as scrap if economical to do so.

Any above grade concrete structures or foundation will be demolished, and the rubble will be disposed of in the landfill. Any slabs on grade will be punctured and then left in place and covered with soil or non-potentially acid generating/non-metal leaching waste rock. Any subgrade foundations will be left in place. All disturbed site areas will be re-graded to promote natural drainage, revegetation and to suit the surrounding topography. In areas where the original ground surface was lowered for site grading or structural requirements, the slopes will be stabilized and contoured. Cover materials may be required for erosion and dust control.

Remaining bulk fuel and empty portable fuel storage tanks will be offered to community interests. The tanks will be emptied, cleaned, and dismantled for disposal in the site landfill or shipped south. Fuel not required during the closure and reclamation activities will be sold, returned to suppliers, disposed by a licensed handler, or incinerated.

All hazardous wastes will be removed for disposal by a licensed handler during the dismantling of buildings and infrastructure. An assessment will be carried out to identify areas where soils may be contaminated by hydrocarbons. Any contaminated soil will be excavated and taken to the landfarm for disposition and treatment.

Most of the mobile equipment will be removed once the closure stage is complete. Equipment used for closure activities and long-term maintenance will be removed from the site once they are no longer required. A small subset of equipment will be retained on-site for a portion of the post-closure stage, in order to complete corrective work if required. The equipment selected to be left on site for the post-closure period will be reviewed with qualified personnel, to ensure adequate equipment is available for corrective work. Mobile equipment and local contractors may also be available in the municipality of Rankin Inlet located near the Meliadine site.

If not properly reclaimed, wildlife maybe injured by entering reclaimed areas with depressions and if subsidence occurs. Environmental design features and mitigation, as well as current wildlife management practices used in other mining projects will be implemented at the Meliadine Mine to limit wildlife injury such as re-contouring reclaimed areas to reduce hazards to wildlife. Proper reclamation is also required to leave the site in appropriate conditions that do not present safety risks for humans.

4.2.8.6 Predicted Residual Effects

No significant residual effects have been identified for after closure of the supporting buildings but changes to terrain caused by the construction and subsequent reclamation of the facilities could result in some alteration of the natural terrain and alteration or loss of plant populations and plant communities.

4.2.8.7 Uncertainties

No major uncertainties are related to the closure activity of the site building and equipment. The pre-disturbance terrain was covered by discontinuous vegetation interspersed with few bedrock outcroppings. The reclamation plan will be designed to encourage a natural succession of indigenous plant species within disturbed site areas. Grading and contouring would be done, where appropriate, to control soil stability and promote re-vegetation by natural colonization. Re-vegetation studies will be completed to assess the potential for vegetation to establish in disturbed areas or on rockfill covers (Agnico Eagle, 2015a).

4.2.8.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring and maintenance strategies for the site buildings and equipment as presented by AANDC/MVLWB (2013):

- Periodic inspections will be performed to visually assess the reclaimed areas; and
- All buildings and equipment left on-site during closure will be maintained until no longer required, at which time they will be removed from the site or demolished and disposed in the on-site landfill.

4.2.8.9 Contingencies

There are no activities proposed as contingencies with regards to the closure of the buildings and equipment.

4.2.9 Waste Management Facilities

4.2.9.1 Description of the Components

The waste management facilities include the landfill, landfarm, and incinerator. Hazardous waste management is also part of the global waste management. At the Mine site, wastes are safely managed from the time they are produced to their final disposal. All waste is segregated at the mine site and will predominately be landfilled, incinerated, or recycled. Used oil burning will be maximized as much as possible using the secondary chamber of the incinerator. Remaining wastes on site, including hazardous waste, will be packaged for shipment to a certified waste management facility for treatment, recycling, and/or disposal.

Waste management begins by keeping all materials that can be economically recycled out of the waste stream destined for the landfill or incineration. The three (3) R's of waste management - reduce, reuse, and recycle - is encouraged within the waste management program. Reduce, reuse, and recycle initiatives will be developed at the Project to minimize the quantity of waste incinerated or directed to the landfill. To support this initiative, operating procedures will be developed to maximize the volume of materials that are recycled and/or reused. This will include eliminating the use of disposable materials where possible, and segregating waste destined for reuse, and recycle alternatives.

Similar to the waste management philosophy, plans are to actively work towards minimizing spills through suitable work procedures. Plans developed from the environmental impact study address the management of spills on land, ice, water, and into the marine environment. When spills do occur, the goal is to limit the spread of the spill, and then manage contaminated material resulting from the spill.

The major components of the waste management system are described below.

<u>Landfill</u>:

As described in the Landfill Management Plan, a landfill is required on site for the disposal of non-salvageable, non-hazardous, non-putrescible solid industrial wastes that cannot be incinerated and that result from construction, operations, and closure of Meliadine Mine. The acceptable waste materials are non-salvageable, non-hazardous, non-putrescible solid industrial wastes that have a low leachate and low heat generation potential and cannot be incinerated in the site's incinerator.

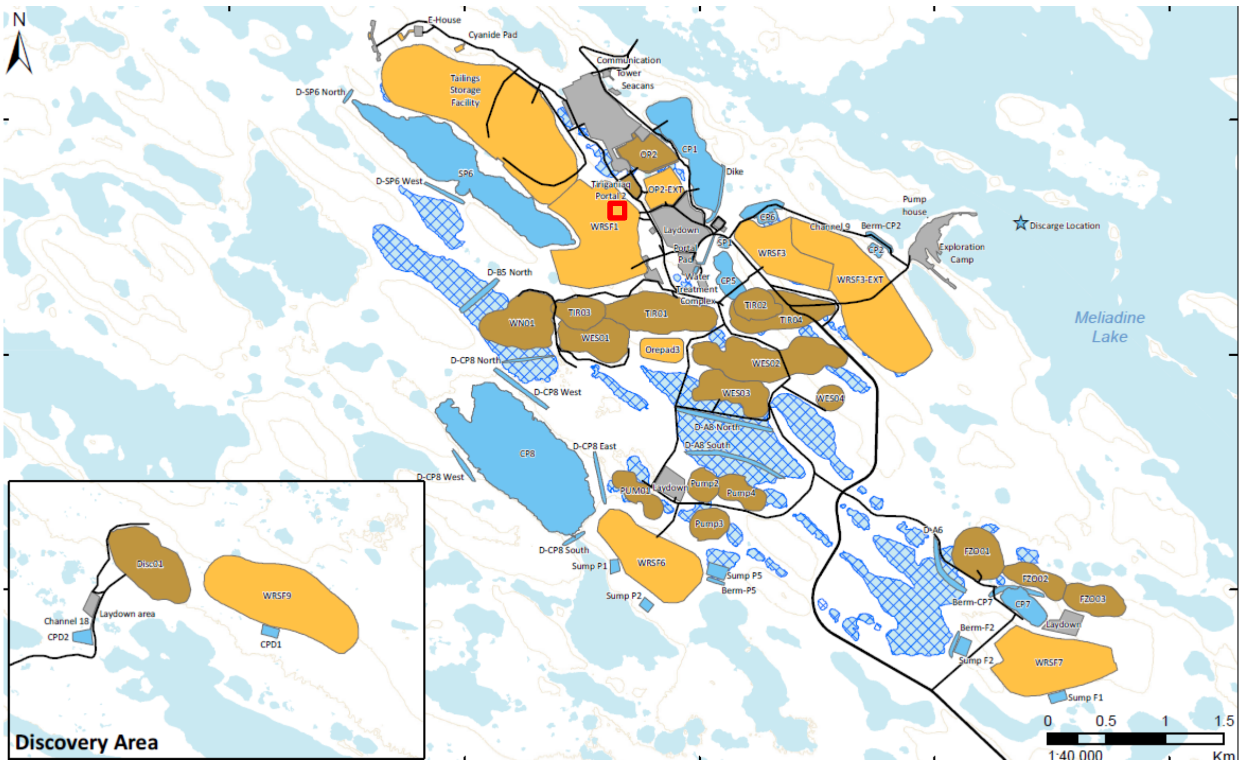
As presented on Figure 4-6, a landfill is situated within the Waste Rock Storage Facility 1 (WRSF1), which is located close to, and northeast of, the main mine infrastructure. The following criteria were considered in determining its location:

- Drainage – sites that will drain into areas where water will be collected and monitored as part of the overall site plan were preferred;
- Disturbed areas – sites within or near areas that will be disturbed as part of the future overall mine plan were preferred to minimise the environmental footprint of the Mine;
- Access – sites located close to existing service or haul roads were preferred; and

- The landfill site had to be large enough to accommodate non-salvageable, non-hazardous, non-putrescible solid industrial wastes for the life of the Mine, including the development of the other pits.

The first three criteria are recommendations from the Mine Site Reclamation Guidelines for the Northwest Territories (INAC 2007).

Figure 4-8 : Operation Landfill Location



The landfill will be used for the construction, operations, and closure phases. It will not be required for post-closure. The schedule for the landfill is as follows:

- Construction: WRSF1 landfill has already been constructed.
- Operations: The landfill will be used continuously during operations.
- Closure: The landfill will be one of the last parts of mine infrastructure to close. It is expected to be extensively used during closure for demolition waste and will remain operational until it is no longer needed.

The landfill will progressively be filled in an orderly manner. Specifically, waste is placed to full height at one end of the landfill and then the active waste area will progressively advance. An “area method” of dumping is used such that materials is dumped in rows and covered as required. Wastes are deposited directly onto the landfill floor and compacted with heavy equipment against the berm or an existing row of debris that was compacted earlier. Areas where the waste has been placed to full height, compacted and levelled is progressively covered by placement of a minimum of 0.3 m thick of rock fill on top of the waste to reduce windblown debris. Owing to its placement within the WRSF1, the landfill will become encapsulated within waste rock. Upon closure, the entire landfill will be covered with 3.7 m of waste rock.

The leachate from the landfill is anticipated to be of very low ionic strength (dilute) due to controls on materials to be placed in the landfill, and, as a result, site-specific landfill leachate management is not considered necessary. In the event there is leachate from the landfill during periods of heavy rainfall or spring freshet, the runoff will be collected and directed to CP1.

Landfarm:

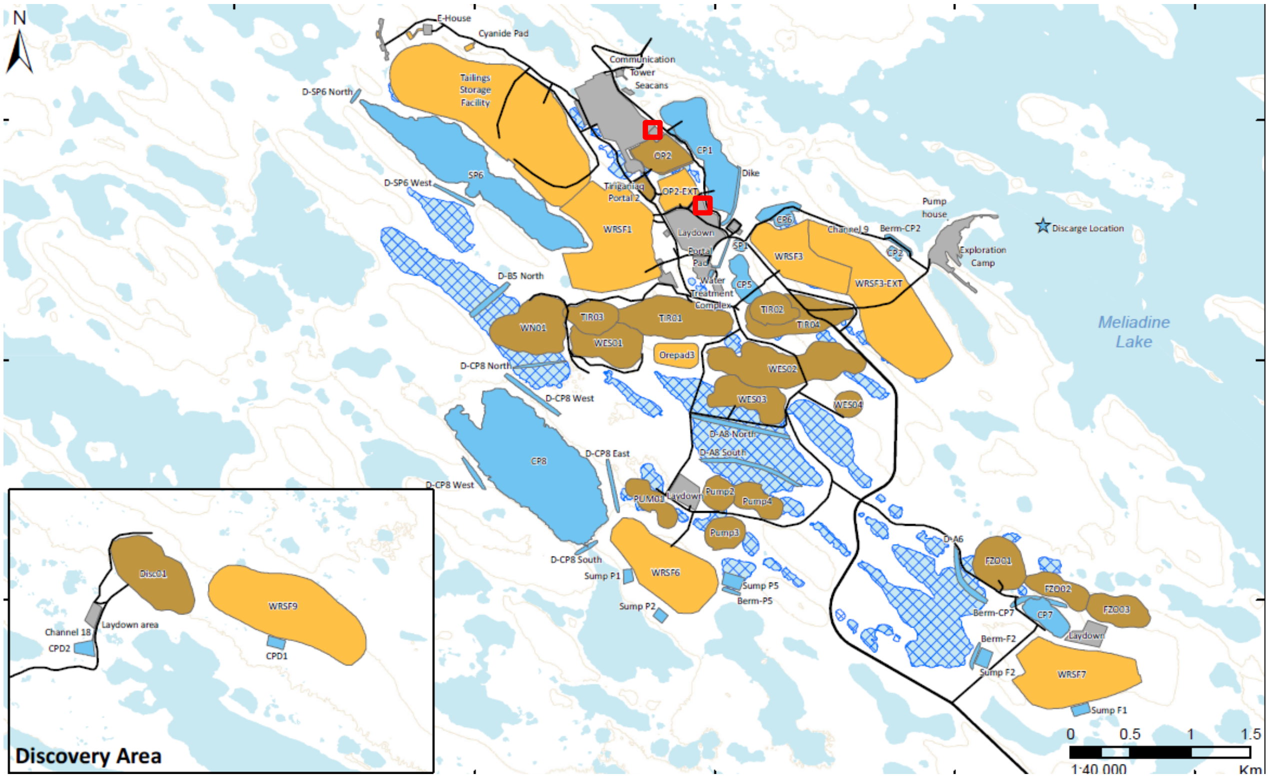
As described in the Landfarm Management Plan, on site storage and remediation has been established as the preferred method for treatment of light petroleum hydrocarbons (PHC) contaminated soil that may be generated at the mine. Specifically, remediation through landfarming has been identified as the primary treatment option and, as such, is the focus of this contaminated soil management plan. It is estimated that soils contaminated with light end PHCs would require three (3) full summer seasons for complete remediation. The location of the landfarm is presented on Figure 4-7. The area has no exposed bedrock and up to 20 m of glacial-fluvial till that has little ground ice and shows no permafrost degradation. The central location of the landfarm was chosen to minimize the footprint of the site and the transport distance of contaminated material from potential spill locations.

The landfarm is designed to receive soils, rock, snow, and ice contaminated with petroleum hydrocarbons. This will include light hydrocarbons such as diesel and gasoline. The design volume of the landfarm is based on allowances for the materials being treated at Meadowbank.

The average floor slope is 3.1% going in the designed direction of northwest to southeast, matching the natural ground slope. This slope is still adequate allowing leachate/drainage from the PHC soils and internal runoff to gradually seep through the filter berm into the sump area. The water collected in the sump will be pumped to the oil separator for oil removal before being discharge into CP1. The sump area was built as per design capacity.

The geomembrane liner crest elevation was installed at an elevation of 74.80 m, it does allow for 0.45 m of freeboard before reaching the geomembrane liner crest elevation.

Figure 4-9 : Landfarm Locations



The landfarm facility will only treat and/or store light PHC contaminated soils that have been generated through mine related activities and which have been transferred from the Mine's advanced exploration camp landfarm upon closure. Material from the Hamlet of Rankin Inlet or other sites will not be accepted without approval from the NWB, Crown-Indigenous Relations and Northern Affairs, Water Resources Inspectors, and the Kivalliq Inuit Association.

The following products are acceptable for treatment in the landfarm if generated on-site and spilled on soil:

- diesel fuel;
- gasoline;
- hydraulic oil
- aviation fuel (Jet A);
- other light oil (e.g., engine oil, lubricating oil).

In the event that the contaminant source is unknown, soil samples will be analyzed for PHCs and possibly additional contaminants prior to placement in the landfarm. These additional parameters could include total metals, oil and grease, and volatile organic compounds. Analysis for additional compounds will be determined by the Environment Department on a case-by-case basis. If there is uncertainty whether or not the material contains additional, unknown contaminants, the material should be placed in totes/drums until lab results confirm that they can be placed in the landfarm.

Concentrations of contaminants are currently compared to the site background values (for metals) and/or criteria in the Government of Nunavut (GN) Guidelines for Contaminated Site Remediation (GN 2009). If this analysis indicates soil contamination above background or GN guidelines for any substance not approved for landfarming (i.e., non-PHC contaminants), the spill material will not be placed in the landfarm. This is to ensure that PHC contaminated soils are not contaminated with other products.

Spills of non-PHC material (e.g., solvents) will be placed in drums and stored on-site for shipment to approved facilities during shipping season.

Incinerator:

Incineration is an essential part of waste management at the Meliadine Mine. The incineration of acceptable solid waste from the accommodation complex, kitchen, lunchrooms, shops, warehouses, and offices diverts waste from directly reporting to the on-site landfill. It has the advantage of eliminating putrescible waste that could potentially attract wildlife to the landfill, thereby reducing possible dangerous interactions between humans and wildlife.

Two incinerators are used at the Meliadine Mine. They are located next to each other on the south end of the infrastructure pad. The primary incinerator is a typical modern controlled-air, batch, dual chamber incinerator model - ECO 1.75TN 1PVC100L 16-1MS. The secondary incinerator is dual-chamber system that operates under starved -air conditions KETEK CY-100-CA-D incinerator.

The ashes collected from the incinerators are disposed into the landfill. Ash testing protocol is implemented to ensure that the incinerator ash is suitable for disposal in the landfill. The incinerators stack design incorporates appropriate sampling ports, with caps where necessary, at appropriate locations to allow for stack testing to be undertaken during incinerator operation.. Performance limits for the incinerator at Meliadine are in accordance with the emission guidelines set out by the CCME: Canada-Wide Standard for Dioxins and Furans, and Canada-Wide Standards for Mercury Emissions.

Hazardous material storage area:

As presented in the Hazardous Waste Management Plan, all hazardous materials are stored in secured areas to prevent tampering, as well as access by unauthorized personnel. Hazardous materials that become waste will be stored and/or disposed of in accordance with specific government regulations and guidelines. The Environment Department monitors the movement of hazardous waste, from the generator to final disposal, through use of a tracking document known as a Waste Manifest. Hazardous wastes at the Itivia docking site in Rankin Inlet will be managed according to the appropriate regulation(s). The Mine requires the use of the following types of hazardous materials:

- Petroleum products and lubricants – diesel fuel, oil, grease, anti-freeze, and solvents used for equipment operation and maintenance;
- Process Plant consumables – chemicals for mineral extraction;
- Water treatment consumables – chemicals;
- Explosives – emulsion, caps, explosives, surfactants, and sodium nitrate used for blasting; and
- Laboratory consumable and wastes – various by-products classified as hazardous waste and chemicals used in the assay laboratory.

4.2.9.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (Agnico Eagle, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

The landfill and landfarm are currently in use at Meliadine and will be until post-closure. The incinerators and the hazardous waste management area are also operating and will be until the end of active closure.

The waste management facilities will be reclaimed following best practices put in place during operation and in order to minimize long term disturbance.

4.2.9.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine waste management facilities are listed in Table 4-10, along with the specific actions and monitoring associated (modified from AANDC/MVLWB 2013 and Agnico Eagle, 2015a).

Table 4-10: Closure Objectives and Criteria – Waste Management Facilities

Closure Objectives	Closure Criteria	Actions/Monitoring
Inadvertent access to landfill debris by humans and wildlife has been prevented	Limit access to facility Dispose only appropriate waste type in landfill	Limit access to the WRSF with berms and signs Avoid food waste in landfill that could attract wildlife Routine inspection of the facilities
Waste disposal areas are not and will not become a source of contamination to the environment	Dispose only appropriate waste type in landfill Treat light hydrocarbon contaminated soil Remove all hazardous waste	Manage and dispose waste in landfill as per operation best practices Treat light hydrocarbon contaminated soil in the landfarm Hazardous wastes will be removed for disposal by licensed handler as per operational practices Routine inspection of the facilities
Erosion and effects to the ground thermal regime have been controlled to ensure physical stability	Appropriate cover and drainage over the landfarm and landfill	The landfill and landfarm area will be covered with waste rock at the end of active closure stage Surfaces will be re-graded to promote natural drainage Inspection during cover construction
Surface runoff and seepage water quality is safe for humans and wildlife	Water quality meets Water Licence requirements Appropriate cover and drainage over the landfarm and landfill	Water quality monitoring
Return area to its original state or to a state compatible with the desired end land use	Human land use of the reclaimed area at post closure will not compromise people and wildlife health	Routine monitoring and physical inspection

The Code of Practice for Metal Mines also provides the following recommendations related to the closure of waste facilities and to the handling of contaminated materials (adapted from EC 2009):

- Waste from the decommissioning of ore processing facilities and site infrastructure, such as waste from the demolition of buildings and the removal of equipment, should be removed from the site and stored in an appropriate waste disposal site or disposed of on site in an appropriate manner in accordance with relevant regulatory requirements. If material is disposed of on site, the location and contents of the disposal site should be documented (from recommendation no. R522);
- Sampling and analysis of soils and other materials should be conducted to ensure that none of the material is contaminated, e.g., with asbestos and mercury from buildings. If contaminated materials are identified, they should be handled and disposed of in an appropriate manner in accordance with all applicable regulatory requirements (from recommendation no. R523).

4.2.9.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for waste management facilities closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the waste management facilities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Plan activities to limit the amount of waste generated throughout the life of the mine;
- Locate waste management facilities away from waterways to minimize environmental impacts that could result from leachate generation/migration;
- Select location and design that will have minimal impact on wildlife habitat and therefore require minimal reclamation effort;
- Divert runoff around waste disposal area with ditches or berms to minimize migration of contaminants;
- Burn domestic waste and special waste (i.e., waste oil) in an approved incinerator;
- Remove hazardous waste to an approved on-site waste storage facility prior to shipping for off-site disposal;
- Cover landfill/landfarm with an appropriately designed cover system to limit infiltration to acceptable levels. The surface of the landfill cover should comprise erosion resistant materials, and the surface landform should be sustainable in the long-term.

4.2.9.5 Engineering Work Associated with Selected Closure Activity

<u>Landfill:</u>

The closure activities planned for the landfill presented herein are taken from the Landfill and Waste Management Plan.

The landfill location serve to minimize the area of surface disturbance, stabilize disturbed land surfaces against erosion, and return the land to a post-mining use that is chemically and physically stable, and consistent with past traditional pursuits and wildlife habitat. While waste rock will be disposed on land and in a manner that encourages freeze back and permafrost aggradation, the design, operation, and/or closure of the WRSFs and landfill do not rely on total freezing. Any unacceptable leachate that is generated following closure of these facilities will be contained, collected, and/or treated, if necessary.

Upon closure, it is estimated that the landfill will have a volume of approximately 63,000 m^3 of waste. The landfill will be covered with a minimum of 3.7 m of waste rock and should thereafter be stable. When finalizing the design for the cover, the need for thermistors to be installed will be evaluated. The cover surface will be left irregular to capture snow, windblown sediment, and collect seeds.

Contact water from the landfill at its closure will continue to be managed using best management practices as in operation. The leachate from the landfill is anticipated to be of very low ionic strength (dilute) due to controls on materials to be placed in the landfill. Moreover, drainage from the landfill is largely expected to freeze within WRSF, with little to none reporting to the water collection infrastructure (FEIS, 2014).

Landfarm:

The closure activities planned for the landfarm presented herein are taken from the Landfarm Management Plan.

After removal of all remediated soil and prior to closure and reclamation of the landfarm, the berm and base will be sampled on a 10 m grid, to determine if these soils are free from PHC contamination. Results of this analysis will be compared to GN criteria. No excavation will be necessary if agricultural/wildlife criteria are met. If industrial criteria are used, the landfarm will be covered with 2 m of waste rock or other material used for reclamation. The surrounding berm will be breached to avoid water accumulation on the landfarm. The liner put in place at the base of the landfarm during construction, is covered by a layer of granular fill material and rockfill, will be left in place and covered with additional material if required.

Incinerator:

Approved waste will be burned in the incinerator(s) during operation and closure. At the end of the active closure phase, the incinerators will be emptied and offered for local use and/or relocation. If there is no local interest, the infrastructure will be demolished and taken to the on-site landfill for disposal or barged out to a southern waste disposal facility.

Hazardous Material:

The hazardous materials will be managed in operations such that minimal quantities remain on site at closure. Any remaining hazardous materials that cannot be used during closure activities will be transported to licensed disposal facilities in the south, as per operation procedures, in accordance with the Hazardous Material Management Plan. Any remaining cyanide reagents will be packaged and transported to licensed facilities in the south or other Agnico Eagle divisions in accordance with the International Cyanide Management Code, and the Hazardous Materials Management Plan.

4.2.9.6 Predicted Residual Effects

No significant residual effects have been identified for closure of the waste management facilities other than changes to terrain caused by the construction and subsequent reclamation of the facilities.

4.2.9.7 Uncertainties

No major uncertainties have been identified regarding closure of the waste management facilities.

4.2.9.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring and maintenance strategies for the waste management facilities as presented by AANDC/MVLWB (2013):

- Test water quality and quantity to measure the success of the selected closure activities for landfills and waste disposal areas;
- Monitor the ground thermal regime and the cover system performance to determine if permafrost has aggraded into the landfill;
- Inspect surface of landfill cover systems for cracking or slumping of the cover and for the underlying waste material's migrating to surface;
- Monitor wildlife and human use to ensure the selected closure activities have been effective in preventing access to these areas.

The landfill and landfarm monitoring programs completed in operation will continue during the closure period.

Hazmat disposal will be audited in closure or post-closure to ensure all material have been disposed off site in appropriate facilities.

4.2.9.9 Contingencies

No specific activities are proposed as contingencies for the closure of the waste management facilities.

5 Progressive Reclamation

5.1 Definition of Progressive Reclamation

Progressive reclamation takes place prior to permanent closure to reclaim components and/or decommission facilities that no longer serve a purpose. These activities can be completed during operations with the available resources to reduce future reclamation costs, minimize the duration of environmental exposure, and enhance environmental protection. Progressive reclamation may shorten the time for achieving closure objectives and may provide valuable experience on the effectiveness of certain measures that might be implemented during permanent closure (AANDC/MVLWB 2013).

The Code of Practice for Metal Mines includes the following recommendations related to progressive reclamation (adapted from EC 2009):

- Progressive reclamation, including that of waste rock piles, tailings management facilities and mine site infrastructure, should be undertaken during the mine operations phase to the extent feasible;
- Progressive reclamation activities should be consistent with the site-specific objectives and intended post closure land use for the site. Planning and implementation should consider final contouring, final drainage, cover requirements, and re-vegetation;
- The project schedule should be used to monitor the status of progressive reclamation, and the schedule should be updated on a regular basis.

5.2 Opportunities for Progressive Reclamation

The key closure activities that have been identified for progressive reclamation are summarized in the following sections for each individual component of the Meliadine Mine. The progressive reclamations activities provided in this ICRP will be updated in future versions of the plan to include new opportunities for progressive reclamation identified during operations. Details related to schedule of progressive reclamation is included in the closure schedule presented in **Appendix I**.

5.2.1 Rankin Inlet Site Facilities

No progressive reclamation activities have been identified for the Rankin Inlet site facilities at this time, as the facilities will be required throughout the operation period and the active closure.

5.2.2 Transportation Routes and Quarries

No progressive reclamation activities on the roads are planned as they will be required for transportation throughout the operation period and the active closure.

The quarries and granular borrow sites no longer required for operations will be progressively reclaimed during operation, as equipment and resources are available. Specific timeline for quarries progressive reclamation during operation will be eventually defined.

In 2018, reclamation work occurred 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 (Agnico Eagle, 2019). In 2019, the following eskers were reclaimed and regraded to re-established natural drainage along the AWAR: B5, B5a, B6, B10, B11a, B12, B13, B15 and B15a (Agnico Eagle, 2020a).

5.2.3 Underground

Mined-out work specific areas are being backfilled for reasons of ground stability, using coarse rock waste, cemented waste rock, paste tailings, or some combination of these during operations. Following completion of underground mining, the flooding of the underground mine workings with natural groundwater seepage will start as progressive reclamation. Most of the waste rock produced underground will be used as underground backfill.

5.2.4 Open Pits

Following completion of open pits mining, the flooding of the open pits with water from Meliadine Lake will start as progressive reclamation.

5.2.5 Waste Rock Storage Facilities

The waste rock and overburden storage facilities will be closed during operations with the deposition of the waste rock, based on the current deposition plan. The WRSF at Discovery will also be closed progressively during operations.

5.2.6 Tailings Storage Facilities

Additional lifts of waste rock will be placed as the tailings surface is brought up as erosion, stability and thermal protection. At the final elevation, the top of the tailings stack will be progressively capped with a layered combination of overburden and waste rock.

5.2.7 Water Management Facilities

No progressive reclamation activities have been identified for the water management facilities at this time. Water management facilities or equipment not used or deemed not necessary will be evaluated and could be removed during operations.

5.2.8 Site Buildings and Equipment

Potential progressive reclamation activities could include removal of equipment and facilities as they are identified as no longer being required for operations. Efforts could also be made to reduce inventories of consumables and sea containers (sea cans) leading up to the end of operations.

5.2.9 Waste Management Facilities

The landfill will be in active use throughout the operation and closure period in order to receive debris from decommissioning. The landfill will be covered with waste rock progressively over time. The final closure of the landfill will occur at the end of the active closure stage. The landfarm will be required in operation and active closure for soil decontamination, so no specific progressive reclamation is identified for the landfarm. The hazardous material will be managed throughout operation and closure.

6 Temporary Closure

Temporary closure occurs when an advanced mineral exploration or mining operation ceases with the intent of resuming activities in the near future. Temporary closure could be due to an unplanned closure or a planned closure of certain facilities in a complex mining project (AANDC/MVLWB, 2013).

The Meliadine Mine operation is planned to be continuous for the full proposed operating period. However, the mine may need to shut down for a short-term or indefinitely (long-term) due to economic, environmental and/or social factors. The plans for both closure periods are discussed below.

Notification of temporary closure would be presented to the staff and the local population with at least 30 days of notice; if the conditions allow, a longer notice period will be provided where possible (Agnico Eagle, 2015a).

As per the Water License 2AM-MEL1631, Part J, Item 3, the Licensee shall notify the NWB in writing, at least sixty (60) days prior to, or as soon as practically possible, the intent to enter into a Care and Maintenance Phase.

As per the Meliadine Inuit Impact and Benefit Agreement (IIBA), written notice of a temporary closure decision would be given immediately to the Kivalliq Inuit Association (KivIA) and the Parties would “enter into good faith negotiations and use commercially reasonable efforts to conclude an agreement on appropriate implementation measures which shall be in keeping with the purpose and the objectives of” the IIBA (KIA, 2017).

6.1 Temporary Closure Goal and Closure Objectives

The goal of temporary closure is ongoing protection of the environment, and regulatory compliance during the shutdown period. Temporary closure measures deemed necessary will depend upon the duration and extent of site activities/presence during the temporary closure. It is anticipated that water management and treatment facilities will function at the same level during temporary shutdown periods as during operations.

The objectives of temporary closure activities are to:

- Maintain all operating facilities and programs necessary to protect humans, wildlife, and the environment, including necessary environmental monitoring;
- Make available appropriate financial resources to continue environmental monitoring and reporting during temporary closure;
- Keep care and maintenance staff at the site and in sufficient number and expertise to care for the site and any potential problems that may arise;
- Make available enough equipment and supplies on site for any maintenance or reclamation activities that may need to take place; and
- Comply with all applicable federal and territorial laws and regulations, in addition to the operator’s Land Use Permits, Land Leases and Water Licence.

6.2 Temporary Closure Activities

The proposed short-term and long-term temporary closure activities are presented in the following subsections. The extent to which the activities listed will be implemented depends on the site conditions at the time of the temporary closure, and the anticipated length of the closure (short-term or long-term). In all cases, access to the sites, buildings, and all other infrastructures will be secured and restricted to authorized personnel only.

In most circumstances, planned temporary closure activities are expected to occur as described above and in the following sections. Should a situation arise in which temporary closure cannot be executed as planned (e.g., major fire or spill, major problem in the open pits or underground, etc.), the affected features will be subject to alternative temporary closure measures, with the planned temporary closure activities resuming as soon as practical.

In most circumstances, the AWAR will continue to be open to public access during any temporary closure of the mine. The status of the road during such periods would be assessed by Agnico Eagle on a case-by-case basis. For short duration temporary shutdowns (short-term temporary closure), the AWAR would remain open and be maintained in the same manner as proposed during the operational phase. While each case would be assessed separately, temporary shutdowns of less than 6 months duration would not change the way the access road is operated or maintained. For temporary shutdowns of greater than six (6) months and less than 12 months in duration, and/or for indefinite shutdowns (period greater than one year: long-term temporary closure), Agnico Eagle would have to change the way it operates and maintains the road. In such an instance, Agnico Eagle would evaluate what level of activity was expected to continue at the site during the shutdown period and adjust its care and maintenance of the access road accordingly.

6.2.1 Short-term Temporary Closure

Short term shut down or closure period is defined as a period of less than one year and could last for a period of weeks or several months (up to 12 months) based on economic, environmental, and social factors. The following Table 6-1 summarizes the measures that will be taken as required during a short-term temporary closure (adapted from SLI, 2018 and Agnico Eagle, 2015a).

Table 6-1 : Short-term Temporary Closure Activities

Sites	Closure Activities
Underground	Warning signs and berms will be erected as needed to block the entrance to underground
	Maintain required activities where possible to ensure stability. Dewatering underground areas will continue as conducted during operations since flooding and subsequent dewatering may adversely impact stability
Open pits	Warning signs and berms will be erected as needed around the pit perimeter
	Dewatering of open pits will continue as conducted during operations since flooding and subsequent dewatering may adversely impact stability
Water Management	Surface water management facilities will be maintained to manage contact water runoff
	Unused water distribution lines will be drained, but would be left in place
	All water will be treated and discharged during a four-month period from June to September each year. If the temporary shutdown occurs during the October to May period (i.e., during the winter period), little or no water will need to be considered for storage or treatment
	The sewage treatment plant and potable water treatment plant will continue to operate as needed
	All mobile equipment except for small service equipment required for pit inspections will be removed and placed in secure on-site storage

Sites	Closure Activities
Infrastructures and services areas	Fuel, lubricants, and hydraulic fluids will be removed from the site, open pit and underground area and stored in designated areas
	Fluid levels in all fuel tanks will be recorded and monitored regularly for leaks, or fuel will be removed from the site
	An inventory of chemicals and reagents, petroleum products, and other hazardous materials will be conducted. These materials will be secured appropriately, or the materials will be removed from the site
	All explosives will be relocated to the main powder magazine and secured, disposed of, or removed from the site
	Minimum staffing levels will be maintained to carry out care and maintenance
	The accommodations will be operated at reduced staffing level
	Critical facilities will have nominal heat to prevent freezing of the facilities and possible damage
	Hazardous wastes on-site will be collected and stored in an appropriate area for annual disposal to a registered disposal facility
	In most circumstances, the AWAR will continue to be open to public access. The status of the road during such periods would be assessed by Agnico Eagle on a case-by-case basis
Monitoring	Monitoring of water quality of the collection ponds will continue as per during operations
	Environmental monitoring and sampling will continue at regular intervals as set out in the Meliadine Mine operations and monitoring program and in accordance with all applicable Licences, permits, and authorizations
	Routine geotechnical stability monitoring and maintenance will continue at a reduced rate compared to that conducted during operations. The pit area will be inspected routinely to check for rock falls, changes to groundwater inflows and overall integrity. Underground will be inspected for geotechnical stability in area safe to do so

6.2.2 Long-term Temporary Closure

Long-term temporary closure (indefinite shutdown) is a cessation of mining and processing operation for an indefinite period greater than one year. The intention is that the mine will resume operations as soon as possible after the cause for the indefinite shutdown has been addressed. The site must maintain safety and environmental stability during this time. Possible causes for an indefinite shutdown could include prolonged adverse economic conditions or extended labor disputes. A decision on the estimated length of the indefinite shutdown would be made after the initial one-year period. Decisions on possible extensions to the indefinite shutdown would be made every 6 months thereafter and would be based on the conditions at that time. At present, the maximum length of time or number of extensions for interim shutdown before moving to final closure has not been defined. Table 6-2 summarizes the measures that will be taken as required in addition to the short-term temporary closure activities presented in Table 6-1 during a long-term temporary closure (adapted from SLI, 2018 and Agnico Eagle, 2015a).

Table 6-2 : Long-term Temporary Closure Activities

<table>
<tr><th>Category</th><th>Closure Activities</th></tr>
<tr><td rowspan="2">Underground and open pits</td><td>Monitoring of the pumps in the underground and open pits will continue and the underground and open pits will be maintained in a dry condition to maintain dry, stable conditions to allow a restart of mining as appropriate</td></tr>
<tr><td>Pumps in the pit will be relocated and the pit will be allowed to flood passively (from rainfall and groundwater inflow)</td></tr>
<tr><td>WRSFs</td><td>If necessary, the working face of the WRSFs slopes will be graded to ensure stability and drainage to the contact water management system adjacent to the rock storage facilities. As the WRSFs will be designed and operated for long-term stability, it is anticipated that any grading required will be localized and minimal. The WRSFs will be monitored to ensure the site stays in compliance with any permits and/or licences</td></tr>
<tr><td rowspan="2">TSF</td><td>The tailings surface area will be re-graded, if needed, to promote slope stability. Erosion control measures will be implemented, if required, to reduce the potential mobilization of tailings by wind, such as a minimum 0.75 to 1 m cover of non-potentially acid generating waste rock placed over the exposed tailings to control dust</td></tr>
<tr><td>The TSF will be subject to routine geotechnical stability monitoring and maintenance. Monitoring will be at the same frequency as that of operations, to ensure the site stays in compliance with any permits and/or licences. Maintenance will be completed as required</td></tr>
<tr><td rowspan="3">Water Management</td><td>The dikes/dams will be monitored and maintained, and none of the dikes/dams will be opened and reconnected to adjacent lakes</td></tr>
<tr><td>Surface water control structures will be maintained as required. In areas where water quality is suitable for discharge, natural drainage courses may be re-established</td></tr>
<tr><td>Unused water distribution lines will be drained. Unused lines on surface will be removed and placed in a secure lay down area to reduce impacts on wildlife</td></tr>
<tr><td>Infrastructures and services areas</td><td>Dependent on the cause of the closure, the AWAR may be inaccessible during the winter for cars and trucks. If continued presence on-site is required, then it is likely Agnico Eagle would maintain the road open in some manner over the winter</td></tr>
<tr><td>Monitoring</td><td>Environmental and geotechnical monitoring and sampling will continue at the regular level as set out in the mine operations and monitoring program, and in accordance with all applicable Licences, permits and authorizations</td></tr>
</table>

6.3 Temporary Closure Monitoring, Maintenance, and Reporting

Monitoring and reporting during the short-term and long-term temporary closure will continue at the regular level as set out in the mine operations and monitoring program, and in accordance with all applicable Licenses, permits and authorizations. Adjustment of monitoring frequencies for long term temporary closure might be made only following approval from the licensing and permitting authorities concerned.

As required by the Meliadine Water Licence 2AM-MEL1631, Part J, Items 3, 4 and 5:

> *3. The Licensee shall notify the Board in writing, at least sixty (60) days prior to, or as soon as practically possible, the intent to enter into a Care and Maintenance Phase.*

4. The Licensee shall provide the Board for review, within thirty (30) days of the Licensee providing notice of intent to enter into Care and Maintenance under Part J, Item 3, a Care and Maintenance Plan that details the Licensee's plans for maintaining compliance with the Terms and Conditions of the Licence.

5. The Licensee shall provide the Board for approval in writing, within ninety (90) days of the Licensee providing a notice of intent to enter into Care and Maintenance under Part J, Item 3, all operational revised Plans to reflect the Care and Maintenance status.

The reclamation security deposit will also be kept up to date during temporary closure.

The numbers of personnel on-site would be reduced to reduce operation costs. The staff present at site during temporary closure would be sufficient in number and expertise to successfully carry out care, maintenance and monitoring duties, and to address and remediate any potential problems that may arise. An adequate number of equipment and supplies/reagents would be left on-site for any maintenance or reclamation activities that may need to take place.

6.4 Temporary Closure Contingency Program

The key staff present at site during temporary closure would be sufficient in number and expertise to successfully address and remediate any conditions or unforeseen events that may arise through the monitoring programs. The key staff at the site would also have access to external consultants and advisors, as required. The contingency options and actions for events or incidents defined for operations would be also implemented during the temporary closure (i.e., spill responses and reports) (Agnico Eagle, 2015a).

6.5 Operational Monitoring Strategies

The overall objectives during operations are to provide programs to identify and mitigate potential adverse Project related impacts so that construction and operational activities do not cause any undue harm to water quality, sediment quality, vegetation, biota, wildlife, and wildlife habitats. The various monitoring programs required during operation will be reviewed and updated during operation to reflect conditions at the site as the mine approaches closure. The changes would allow the basic portions of the monitoring plans to continue to be used to cover the closure period activities.

6.6 Temporary Closure Schedule

Mining activities during short-term closure are typically stopped. However, activities such as care-and maintenance, monitoring, intermittent testing, periodic operation of equipment and appropriate facilities will be on-going as described above. Activities related to ensuring public and wildlife safety would be a priority and would focus upon maintenance and monitoring of all facilities and equipment to maintain physical and chemical stability. A sufficient number of care-and-maintenance staff would be present on site, and an appropriate level of security would be implemented at selected facilities. Access to temporarily inactive facilities would be restricted to authorized personnel only.

The temporary closure schedule would depend on when temporary closure occurs (i.e., what year of the operations stage) and its duration, both of which are commonly uncertain. Therefore, the schedule for the activities presented in Section 6.2 would be developed as temporary closure advances. Establishing a temporary closure schedule inherently contains uncertainty as this is not a planned activity, and the duration of a temporary closure will vary based on the cause for closure. As a result, the schedule will be progressive (Agnico Eagle, 2015a).

The sequence of activities for short-term and long-term temporary closure would, in summary, be as follows:

- Restrict access to the site, buildings, and infrastructures to authorized personnel as required;
- Carry out an inventory of chemicals and reagents, petroleum products, and other hazardous materials and secure the inventory appropriately or remove some of it from site;
- Post warning signs and berms as needed around the open pit's perimeter and underground openings;
- Remove all mobile equipment except for small service equipment required for open pits and site inspections and place them in secure on-site storage;
- Temporary closure of unnecessary facilities and systems;
- Continue with environmental and geotechnical monitoring and sampling required for care, maintenance and monitoring at the regular level as set out in the mine operations and monitoring program, and in accordance with all applicable Licenses, permits, and authorizations.

7 Integrated Schedule of Activities

Reclamation of the Meliadine site can be divided into the following three (3) general stages:

- Operations (Progressive Reclamation Stage): during which reclamation of the TSF will start with the initial placement of the cover material over the tailings surface. Reclamation of the open pits and underground mining will start at the end of operations;
- Active Closure: during which the decommissioning of major facilities will occur, and active flooding of the open pits will continue using water pumped from Meliadine Lake. Active care, maintenance and monitoring will be required for the decommissioned and remaining facilities throughout this stage;
- Post Closure: during which continued monitoring and maintenance will be carried out at a reduced frequency than during Operations and Active Closure stages, depending on the results of the monitoring and measures of success selected for closure.

The preliminary schedule of the Meliadine closure is presented in Appendix I and provides a schedule detailing the closure stages of major components of the Meliadine progressive closure, active closure and post closure. The main key periods included in the schedule are presented in Table 7-1.

Table 7-1 : Meliadine - Closure and Post-Closure Main Phases

Period (note 1)	Operations/Closure Main Phases
2020 to 2031	Mining and processing operations at Meliadine
2032 to 2038	Active Closure Monitoring
2039 to 2048	Post-Closure Monitoring
2020 to 2031	Progressive reclamation of TSF
2032 to 2034	Passive flooding of underground mine
2032 to 2038	Active open pits flooding
2032 and 2034	Infrastructures and facilities demolition
2042	Decommission WTP and Meliadine Lake effluent diffuser (Assuming that the required water management facilities, WTP and Meliadine Lake effluent diffuser will be maintained for 3 years as a contingency after the closure stage and that site water quality is acceptable for direct discharge to the environment.)
After 2038	Breach dikes/berms and reclaim channel and pond areas once water quality closure objectives are met.
2048	AWAR closure (end of post-closure period)

Note 1: Preliminary only. To be confirmed with the final closure and reclamation plan.

It is anticipated that the schedule will be refined throughout the Meliadine Mine life as the designs for closure are advanced and the closure methods and strategies are further developed. The schedule is subject to changes following mine plan and development as well as market conditions.

8 Post-Closure Site Assessment

The ICRP is a live document and includes a commitment to adaptive management and monitoring during all stages of the mine life to demonstrate the safe performance of the facilities and to reduce any contamination on the site or in the adjacent area after operations cease. Monitoring during operations and in closure will identify non-compliant conditions, allow timely maintenance and clean up as needed, allow timely planning for adaptive and corrective measures, and enable successful completion of the ICRP. In this way, the Meliadine Mine is not anticipated to contribute residual impacts to the environment after closure and reclamation.

Monitoring programs is already ongoing and will continue throughout operation to provide additional baseline information on which to base the Final Closure and Reclamation plan document. The adaptive management plans to be used in closure will follow the actions completed during operations and will be coordinated with the existing operational monitoring programs to set appropriate trigger levels, and mitigation plans and actions.

Monitoring programs will be initiated during pre-development and operations to provide additional baseline information on which to base the ICRP and FRCP documents. The adaptive management plans to be used in closure and post-closure will follow the actions completed during operations and will be coordinated with the operational monitoring programs to set appropriate trigger levels, and mitigation plans and actions.

Monitoring and maintenance programs that are implemented during the closure and post-closure phases of the Mine life will use the data collected during operational monitoring to assess the performance of the reclamation and closure procedures, and to identify long-term maintenance requirements, if any. The data collected during post-closure monitoring will allow the procedures and activities to be adjusted or modified as necessary to confirm ongoing environmental protection.

The general arrangement at the end of the operations phase and in post-closure is presented in **Appendix H**. As the engineering work for water management in closure and post-closure progresses, the general arrangement for closure and post-closure stages will be refined. Future versions of the Meliadine ICRP will include maps illustrating closure and post-closure drainage conditions to and from the pit lakes. The maps will also identify connectivity between surface waters and remnant water management structures in post-closure, and highlight connecting streams with potential for fish passage.

8.1 Closure and Post-Closure Monitoring Strategies

Guidance on monitoring and maintenance programs for closure and post-closure is provided in the guidelines for closure and reclamation (AANDC/MVLWB, 2013). «Post-closure monitoring will be required to confirm the success of the closure objectives once operations cease indefinitely. Closure criteria will assist in the development of post-closure monitoring programs and will provide clear interpretation of monitoring results. If it is determined that closure objectives were not met for individual project components (as demonstrated by the closure criteria not being met), the proponent will need to implement ongoing monitoring, maintenance measures, and possibly contingency plans. Where a catastrophic event or natural disaster occurs prior to relinquishment, additional monitoring and maintenance may be necessary. Proponents should consider establishing monitoring programs with involvement from local Aboriginal communities. If closure criteria are achieved, then a cessation in monitoring activities for the reclamation of an individual project component may be approved by the Boards. However, if risks to the site remain, additional monitoring may be necessary. When closure criteria have been achieved and verified by Inspectors for specific components, the proponent is then eligible to request the appropriate reduction in their security deposit».

Development of monitoring and maintenance programs is an iterative process in consultation with communities and regulators as the Project advances. The closure and post-closure monitoring and maintenance programs will be extensions of efforts undertaken during the operations phase and would reflect the success of the management of the site during operations to limit the effect on the environment.

The actual conditions or impact from the operations within the mine footprint will be analysed and this information will be integrated to modify monitoring plans moving to closure and post closure. It is anticipated that monitoring and maintenance will be carried out during the active closure stage at frequencies similar to those required during operations. Post closure monitoring and maintenance will be carried out at a reduced frequency depending on the results of the monitoring and the measures of success selected for closure. As the closure effort is completed and the post-closure period begins, the various monitoring programs will be reviewed and updated again to cover the remaining (post-closure) monitoring period. It is also anticipated that after several years in the post-closure period, monitoring would no longer be required. The monitoring plan for closure and post-closure will be included in the Final Closure and Reclamation Plan.

The review and update of the onsite water quality forecast for Meliadine will be done throughout operations to foresee water quality during operations, closure and post-closure, as per the Water License 2AM-MEL1631 requirement. Water quality monitoring will use the Water Licence requirements and criteria. The future versions of the Meliadine ICRP will include additional details on the closure and post-closure water quality monitoring program within the plan, as information becomes available from operational data and from future versions of applicable management plans. The water quality monitoring plan for closure and post-closure will be presented in the Final Closure and Reclamation Plan.

Soil quality monitoring will be conducted to ensure soils are free from contamination. At this time, concentrations of contaminants are compared to the site background values (for metals) and/or criteria in the Government of Nunavut (GN) Guidelines for Contaminated Site Remediation (GN 2009). The closure and post closure monitoring plan for soil quality will be presented in the Final Closure and Reclamation Plan, based on information available from operational data and from future versions of applicable management plans.

It is planned to maintain access to the site with the AWAR until maintenance requirements at the Project site are anticipated to be minor and could be achieved with small crews sent to site via helicopter in the summer. It is anticipated that the need for ongoing maintenance would be reduced with time and will not be required once the site is physically and chemically stable.

8.2 Reporting

The preparation of the following reports is suggested in the AANDC/MVLWB (2013) guidelines for closure and reclamation of all components of mine sites:

- **Annual Closure and Reclamation Plan Progress Report:** The general purpose of these annual reports is to provide an opportunity for all parties to track, modify, and report on reclamation. The annual review of research results also provides an opportunity to identify missing research tasks, which allows the research plans to continually evolve. The progress reports keep all parties informed about closure planning and allow the NWB to confirm that the proponent has remained on schedule. Any proposed changes to the Closure Reclamation Plan (CRP) should be presented with supporting rationale in these reports for NWB approval;

- **Reclamation Completion Report:** The general purpose of the reclamation completion report is to provide details, including figures, of the actual reclamation work completed, and an explanation of any work that deviated from the original or approved CRP. The report should also provide a preliminary assessment on whether appropriate closure objectives and criteria have been achieved. With each reclamation completion report, there may be an opportunity to revise the financial security estimate depending on the stage of the operation and the current CRP;
- **Performance Assessment Report:** A performance assessment report is prepared at the completion of the reclamation work and following submission of the reclamation completion report. The general purpose of the performance assessment report is to provide a detailed comparison of conditions at the site against the appropriate closure objectives and closure criteria. With each performance assessment report, there may be an opportunity to revise the security estimate depending on the stage of the operation and the current CRP.

The timelines for preparation and submission to NWB of the above-described reports will be according to the Meliadine Mine approved Water Licence requirements.

9 Financial Security

A permanent closure and reclamation financial security cost estimate has been prepared with the present Mine layout and infrastructure. The cost estimate covers the closure and reclamation of all Project facilities as described in this report and was prepared using RECLAIM Version 7.0 for permanent closure of the Mine.

Agnico Eagle is required to submit a detailed financial security cost estimate for the Meliadine ICRP to Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and to the Kivalliq Inuit Association (KivIA) to support land use and water licensing requirements. RECLAIM Version 7.0 workbook has been used for this estimate, as per the Guidelines for Closure and Reclamation Cost Estimates for Mines, issued by Crown-Indigenous Relations and Northern Affairs Canada, Mackenzie Valley Land and Water Board and the Government of the Northwest Territories (INAC, MVLWB, GNWT, 2017).

This cost estimate provides for the closure measures described in detail in this ICRP. Most closure activities will occur within the active closure period, from 2032 to 2038 inclusively. The schedule of closure activities presented in **Appendix I** outlines the major closure measures and their expected timeline considered for the cost estimate.

For the purpose of this financial security cost estimate, no progressive rehabilitation measures have been considered. It will be possible to consider these measures in the upcoming calculations of the financial security cost estimate if they have been completed.

As per Schedule C of the Water Licence, the Global Security Amount for the Meliadine Mine represents a total of $158,450,658.

9.1 Payment Schedule

As per Schedule C of the Amended Water Licence, the tranches and security milestones are described in Table 9-1.

Table 9-1 Tranches and Security milestones as per Schedule C of the Amended Water Licence

Tranche	**Years**	**Activity**	**Total Security (Security held under the Licence) Current to Amendment No. 2**	**Additional Security Required Per Tranche**	**Global Security Amount**	**Security Held Under the Licence Per Tranche**
1	2024-2026	Tiriganiaq and Pump deposits and associated infrastructure	$69,687,246 **($34,843,623)**	$43,541,542	$113,228,788	**$56,614,394**
2	2027-2029	F Zone and Wesmeg deposits and associated infrastructure		$13,760,946	$126,989,734	**$63,494,867**
3	2030-2031	Discovery deposit and associated infrastructure		$31,460,924	$158,450,658	**$79,225,329**

As per Part C, Item 1 of the Amended Water Licence, the Licensee shall provide the Board with at least ninety (90) days notice prior to reaching the milestone(s) described in Schedule C of this Licence and shall furnish and maintain the specified additional security amounts set out in Schedule C with the Minister and the Kivalliq Inuit Association at least thirty (30) days before proceeding with the activities, works and undertakings associated with the milestone(s).

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Appendix A: Glossary of Terms and Definitions

The following terms are utilized in this document following the definitions provided in the Mine Site Reclamation Guidelines for the Northwest Territories (INAC 2007), the Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories (AANDC/MVLWB, 2013) and the Meliadine Gold Project Type “A” Water Licence 2AM-MEL1631.

This Appendix includes discipline-specific technical terms and key closure and reclamation planning terms (Adapted from SLI, 2021).

Abandonment: The permanent dismantlement of a facility so it is permanently incapable of its intended use. This includes the removal of associated equipment and structures.

Acid Base Accounting (ABA): Acid base accounting; a static test that defines the amounts, and relative balance, of potentially acid-generating and acid-neutralizing (or base) minerals in a sample.

Acid Rock Drainage (ARD): Acid rock drainage/metal leaching. The production of acidic leachate, seepage or drainage from underground workings, open pits, ore piles, waste rock or construction rock that can lead to the release of metals to groundwater or surface water during the life of the Project and beyond closure.

Active layer: The layer of ground above the permafrost which thaws and freezes annually.

Adaptive management: A management plan that describes a way of managing risks associated with uncertainty and provides a flexible framework for mitigation measures to be implemented and actions to be taken when specified thresholds are exceeded.

Advanced mineral exploration: Any appurtenant undertaking in which the proponent requires a Type A or Type B water licence in order to carry out the proposed activities.

All-Weather Access Road (AWAR): The all-weather access road and associated water crossings between the Hamlet of Rankin Inlet and the Meliadine Gold Mine site.

Aquatic Effects Monitoring Plan (AEMP): A monitoring program designed during the Environmental Impact Statement stage of the Project to determine the short and long-term effects in the aquatic environment resulting from the Project, to evaluate the accuracy of impact predictions, to assess the effectiveness of planned impact mitigation measures and to identify additional impact mitigation measures to avert or reduce environmental effects. An overarching “umbrella” program that conceptually provides an opportunity to integrate results of individual, but related, monitoring programs in accordance with the Water Licence.

Backfill: Material excavated from a site and reused for filling the surface or underground void created by mining.

Background: An area near the site under evaluation not influenced by chemicals released from the site, or other impacts created by onsite activity.

Baseline: A surveyed condition and reference used for future surveys.

Berm: A mound or wall, usually of earth, used to retain substances or to prevent substances from entering an area.

Best management practices: Any program, technology, process, operating method, measure, or device that controls, prevents, removes, or reduces pollution and impact on the environment.

Biodiversity: The variety of plants and animals that live in a specific area.

Bioremediation: The use of microorganisms or vegetation to reduce contaminant levels in soil or water.

Borrow pit: A source of fill or embanking material.

Canadian Council of the Minister of Environment (CCME): The organizations of Canadian Ministers of Environment that set guidelines for environmental protection across Canada such as the Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life.

Care and maintenance: A term to describe the status of a mine when it undergoes a temporary closure. In respect of a mine, means the status of the facility when the License ceases production or commercial operation temporarily for an undefined period of time.

Closure: When a mine ceases operation without the intent to resume mining activities in the future.

Closure criteria: Details to set precise measures of when the objective has been satisfied.

Closure goal: The guiding statement that provides the virion and purpose of reclamation. Attainment of the closure goal happens when the proponent has satisfied all closure objectives. By its nature, the closure goal is a broad, high-level statement and not directly measurable.

Closure objectives: Statements that describe what the selected closure activities are aiming to achieve; they are guided by the closure principles. Closure objectives are typically specific to project components, are measurable and achievable, and allow for the development of closure criteria.

Closure options: A set of proposed alternatives for closing and reclaiming each mine components. The closure options are evaluated to determine the selected closure activity, which must be approved by the NWB.

Closure principles: The four core closure principles are 1) physical stability, 2) chemical stability, 3) no long-term active care requirements, and 4) future use (including aesthetics and values). The principles guide the selection of closure objectives.

Commercial operation: In respect of a mine, an average rate of production that is equal to or greater than 25% of the design capacity of the mine over a period of ninety consecutive days.

Construction: Activities undertaken to construct or build any components of, or associated with, the development of the Meliadine Gold Project.

Contact water: Any water that may be physically or chemically affected by mining activities.

Contaminant: Any physical, chemical, biological or radiological substance in the air, soil or water that has an adverse effect. Any chemical substance with a concentration that exceeds background levels or which is not naturally occurring in the environment.

Contouring: The process of shaping the land surface to fit the form of the surrounding land.

Core Receiving Environmental Monitoring Program (CREMP): A monitoring program designed to determine the short and long-term effects in the aquatic environment resulting from the Project, to evaluate the accuracy of impact predictions, to assess the effectiveness of planned impact mitigation measures and to identify additional impact mitigation measures to avert or reduce environmental effects.

Cumulative Effects: The combined environmental impacts that accumulate over time and space as a result of a series of similar or related actions or activities.

Decommissioning: The process of permanently closing a site and removing equipment, buildings and structures. Rehabilitation and plans for future maintenance of affected land and water are also included.

Deleterious substances: A substance as defined in section 34(1) of the Fisheries Act.

Dike: Retaining structure designed for water control to enable safe open pit mining and for containing tailings impoundments.

Discharge: The release of any water or waste to the receiving environment.

Disposal: The relocation, containment, treatment or processing of unwanted materials. This may involve the removal of contaminants or their conversion to less harmful forms.

Domestic waste: All solid waste generated form the accommodations, kitchen facilities and all other site facilities, excluding those hazardous wastes associated with the mining and processing of ore.

Drainage: The removal of excess surface water or groundwater from land by natural runoff and permeation, or by surface or subsurface drains.

Effluent: Treated or untreated liquid waste material that is discharged into the environment from all site water management facilities or from a structure such as a settling pond or a treatment plant.

End land use: The allowable use of disturbed land following reclamation. Municipal zoning and/or approval may be required for specific land uses.

Engagement: The communication and outreach activities a proponent is required to undertake with affected communities and Aboriginal organizations/governments prior to and during the operation of a project, including closure and reclamation phases.

Engineered structure: Any facility, which was designed and approved by a Professional Engineer registered with the Association of Professional Engineers, Geologists and Geophysicists of Nunavut.

Environment: The components of the Earth, and includes: land, water and air, including all layers of the atmosphere; all organic and inorganic matter and living organisms; and the interacting natural systems that include the aforementioned components.

Environmental assessment: An assessment of the environmental effects of a project that is conducted in accordance with the Canadian Environmental Assessment Act and its regulations.

Environmental management system: A management system that incorporates environmentally and socially responsible practices into the project operations.

Erosion: The wearing away of rock, soil or other surface material by water, rain, waves, wind or ice; the process may be accelerated by human activities.

Explosives: Gunpowder, blasting powder, nitroglycerine, gun-cotton, dynamite, blasting gelatine, gelignite, fulminates of mercury or of other metals and every other substance made, manufactured or used with a view to producing a violent effect by explosion.

Final discharge point: In respect of an effluent, an identifiable discharge point of a mine beyond which the operator of the mine no longer exercises control over the quality of the effluent (Metal Mining Effluent Regulations).

Fish habitat: Areas used by fish for spawning, nursery, rearing, foraging and overwintering.

Geotechnical Engineer: A professional engineer registered with the Association of Professional Engineers, Geologist and Geophysicists of Nunavut and whose principal field of specialization with the engineering properties of earth materials in dealing with man-made structures and earthworks that will be built on a site. These can include shallow and deep foundations, retaining walls, dams, and embankments.

Geothermal analysis: The analysis of temperature below the ground surface.

Glacial till: Unsorted and unlayered rock debris deposited by glacier.

Greywater: The component of effluent produced from domestic use (i.e. washing, bathing, food preparation and laundering), excluding sewage.

Ground thermal regime: Temperature conditions below the ground surface; a condition of heat losses and gains from geothermal sources and the atmosphere.

Groundwater: All subsurface water that occurs beneath the water table in rocks and geologic formations that are fully saturated. Water that occupies pores and fractures in rock and soil below the ground surface in a liquid or frozen state.

Habitat: The place where animal or plant naturally lives and grows.

Hazardous materials/waste: A contaminant which is a dangerous good that is no longer used for its original purpose and is intended for recycling, treatment, disposal or storage. Materials or contaminant which are categorized as dangerous goods under the Transportation of Dangerous Good Act (1992) and/or that is no longer used for their original purpose and is intended for recycling, treatment, disposal or storage.

Humidity cell test (HCT): A type of kinetic test in which a small sample (about 1 kg) is placed in an enclosed chamber in a laboratory, alternating cycles of moist and dry air is constantly pumped through the chamber, and once a week the sample is rinsed with water; chemical analysis of rinse water yields concentrations of elements and other parameters used to calculate reaction rates.

Hydrology: The science that deals with water, its properties, distribution and circulation over the Earth's surface.

In situ treatment: A method of managing or treating contaminated soils, sludges and waters "in place" in a manner that does not require the contaminated material to be physically removed or excavated from where it originated.

Incinerator: The dual chamber, high temperature facility designed with the capacity to service the camp.

Interim Closure and Reclamation Plan (ICRP): A conceptual detailed plan on the reclamation of mine components which will not be closed until the end of the mining operations, and operational detail for components which are to be progressively reclaimed throughout the mine life.

Kinetic test: A geochemical procedure for characterizing the chemical status of a sample through time during continued exposure to a known set of environmental conditions, such as a humidity cell.

Land owner: The responsible authority with administrative control and ownership of a type of land classified as crown land, commissioners land or Inuit Owned Land.

a. Crown land is a land belonging to Her Majesty or in respect of which Government has the power of disposition. In Nunavut, this power rests with Aboriginal Affairs and Northern Development Canada (AANDC).

b. Commissions land is a land belonging to the Commissioner for the Government of Nunavut; which typically is a land within an established municipality administered by a Municipal Corporation and/or the Department of Community Government and Services (CGS).

c. Inuit Owned Land (IOL) are those lands vested in the Designated Inuit Organization (DIO) pursuant the Nunavut Land Claims Agreement. For this Project the DIO is the Kivalliq Inuit Association.

Land use permit:

a. For Crown land a Class A Permit or Class B Permit as required by the Territorial Land Use Regulations SOR/82-217, s.1; SOR/88-169, s.2 administered by AANDC Lands Department.

b. For IOL's- Land Use Licence I, II or III or Commercial Lease I, II, III as defined by the DIO.

c. For Commissioners land - a permit or lease as required by the Municipal Land Administration Policy.

Landfarm: The lined, engineered facility designed to treat petroleum hydrocarbon contaminated snow and soil that may be generated during mining activities using bioremediation.

Landfill: An engineered waste management facility at which waste is disposed by placing it on or in land in a manner that minimizes adverse human health and environmental effects.

Leachate: Water or other liquid that has washed (leached) from a solid material, such as a layer of soil or water; leachate may contain contaminants.

Long-term active care: A post-closure mine site is in long-term active care when sustained monitoring and maintenance of active facilities is required (e.g., for more than 25 years). This should be avoided whenever possible.

Metal leaching: The mobilization of metals into solution under neutral, acidic or alkaline conditions.

Migration: The movement of chemicals, bacteria, and gases in flowing water or vapour.

Mine design: The detailed engineered designs for all mine components stamped by a design engineer.

Mine plan: The plan for the development of the mine, including the sequencing of the development.

Mine water: Any water, including groundwater, which is pumped or flows out of any underground workings or open pit.

Mitigation: The process of rectifying an impact by repairing, rehabilitating or restoring the affected environment, or the process of compensating for the impact by replacing or providing substitute resources or environments.

Monitoring: Observing the change in geophysical, hydrogeological or geochemical measurements over time.

No net loss: A term found in Canada's Fisheries Act. It is based on the fundamental principle of balancing unavoidable losses of fish habitats with habitat replacement on a project-by-project basis in order to prevent depletion of Canada's fisheries resources.

Non-contact water: The runoff originating from areas unaffected by mining activity that does not come into contact with developed areas.

Nunavut Agreement: The "Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada," including its preamble and schedules, and any amendments to that agreement made pursuant to it.

Objectives: Objectives describe what the reclamation activities are aiming to achieve. The goal of mine closure is to achieve the long-term objectives that are selected for the site.

Operations: The set of activities associated with mining, ore processing and recovery of gold; excluding construction and decommissioning activities.

Operator: The person who operates, has control or custody of, or is in charge of a mine or recognized closed mine.

Ore: Rock that is considered economic according to the parameters used in the ore reserve estimate. Ore will be processed at the mineral processing plant after it is mined from the Project underground mine and open pits.

Overburden: A general term referring to soil and broken rock, lying above ore and mine rock, that can usually be removed without blasting; at mines in soft sedimentary rock like coal, overburden can be synonymous with mine rock.

Passive long-term care: Occasional monitoring, coupled with infrequent maintenance or repairs that takes place following reclamation in the post closure phase of the mine site. Many mine sites require ongoing passive care, which can be an acceptable practice.

Passive Treatment: Treatment technologies that can function with little or no maintenance over long periods of time.

Permafrost: Permafrost is defined as ground that remains at or below 0°C for at least two years. Permafrost does not necessarily contain ice; rather, the definition is based solely on temperature criteria of the mineral or organic parent material.

Permafrost Aggradation: A naturally or artificially caused increase in the thickness and/or area extent of permafrost.

Permanent Closure: Final closure of the mine site after mining has ceased, when no further exploration, mining, or processing activities are anticipated at the site.

Permeability: The ease with which gases, liquids, or plant roots penetrate or pass through soil or a layer of soil. The rate of permeability depends upon the composition of the soil.

pH: A measure of the alkalinity or acidity of a solution, related to hydrogen ion concentration; a pH of 7.0 being neutral.

Piezometer: An instrument used to monitor pore water pressure.

Pore water pressure: The pressure of groundwater held within the spaces between sediment particles.

Pore water: The groundwater present within the spaces between sediment particles.

Post-closure: The period of time after active closure of the mine.

Potentially acid generating (PAG): Rock with an NP/AP ratio less than 2 as determined by static tests, as defined by MEND (2009). PAG rock can also be operationally defined based on the results of static testing such as ABA and NAG testing.

Progressive Reclamation: Actions that can be taken during mining operations before permanent closure, to take advantage of cost and operating efficiencies by using the resources available from mine operations to reduce the overall reclamation costs incurred. It enhances environmental protection and shortens the timeframe for achieving the reclamation objectives and goals.

Project: The Meliadine Gold Project as outlined in the Final Environmental Impact Statement. It comprises two (2) open pit mines, an underground mine, an All Weather Private Access Road from Rankin Inlet to the mine site, and site facilities in the Hamlet of Rankin Inlet (Itivia Harbor).

Proponent: Applicant for, or a holder of, a water licence and/or land use permit.

Quarry: The areas of surface excavation for extracting rock material for use as construction materials along the All Weather Private Access Road and facilities at the mine site.

Receiving environment: The aquatic and terrestrial environments that receive any discharge resulting from the Project.

Reclaim Pond: The pond located within the active zone of the Tailings Storage Facility, designed to contain process (tailings related) water, and where water in the pond will be used to satisfy mill process water make up requirements.

Reclamation: The process of returning a disturbed site to its natural state or one for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.

Reclamation Research: Literature reviews, laboratory or pilot-scale tests, engineering studies, and other methods of resolving uncertainties. Proponents conduct reclamation research to answer questions pertaining to environmental risks; the design of reclamation research plans aims to provide data and information which will reduce uncertainties for closure options, selected closure activities, and/or closure criteria.

Rehabilitation: Activities to ensure that the land will be returned to a form and productivity in conformity with a prior land use plan, including a stable ecological state that does not contribute substantially to environmental deterioration and is consistent with surrounding aesthetic values.

Remediation: The removal, reduction, or neutralization of substances, wastes or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety now or in the future.

Restoration: The renewing, repairing, cleaning-up, remediation or other management of soil, groundwater or sediment so that its functions and qualities are comparable to those of its original, unaltered state.

Re-vegetation: Replacing original ground cover following a disturbance to the land.

Ripping: A method of loosening rock or soil using steel tynes attached to the rear of a bulldozer. The tynes are lowered into the ground and as the bulldozer moves forwards the soil or blocks of rock are displaced by the tynes.

Risk assessment: Analysis of potential threats and options for mitigation for a given site, component, or condition. Risk assessments consider factors such as risk acceptability, public perception of risk, socio-economic impacts, benefits, and technical feasibility. It forms the basis for risk management.

Runoff: Water that is not absorbed by soil and drains off the land into bodies of water.

Salvageable Materials: Decommissioned materials which can be sold or reused elsewhere.

Scarification: Seedbed preparation to make a site more amenable to plant growth. This is typically conducted with a grader.

Security deposit: Funds held by the Crown or land owner that can be used in the case of abandonment of an undertaking to reclaim the site, or carry out any ongoing measures that may remain to be taken after the abandonment of the undertaking.

Sediment: Solid material, both mineral and organic, that has been moved by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Seepage: Any water that drains through or escapes from any structure designed to contain, withhold, divert or retain water or waste. Seepage also includes any flows that have emerged through open pits, runoff from rock storage facilities, ore stockpile areas, quarries, and landfill or landfarm areas.

Seismic: Relating to an earthquake or to other tremors of the Earth, such as those caused by large explosions.

Selected closure activity: The closure and reclamation activity chosen from the closure options for each Project component.

Sewage: All toilet wastes and greywater.

Stakeholders: Industry, federal agencies, the territorial government, Aboriginal organizations/governments, land owners, affected communities, and other parties with an interest in a project.

Sump: An excavation in impermeable soil for the purpose of catching or storing water or waste.

Surface water: Natural water bodies such as river, streams, brooks, ponds and lakes, as well as artificial watercourses, such as irrigation, industrial and navigational canals, in direct contact with the atmosphere. Sustainable development: Industrial development that does not detract from the potential of the natural environment to ensure benefits for future generations.

Tailings: Material rejected from a mill after most of the recoverable valuable minerals have been extracted.

Tailings Storage Facility: The facility designed to permanently contain the solid fraction of the mill tailings.

Taliks: Unfrozen zones that can exist within, below, or above permafrost layers. They are usually located below deep water bodies.

Temporary closure: When a mine ceases operations with the intent to resume mining activities in the future. Temporary closures can last for a period of weeks, or for several years, based on economical, environmental, political, or social factors.

Total dissolved solids: A measure of the amount of dissolved substances in a waterbody.

Total suspended solids: A measure of the particulate matter suspended in the water column.

Traditional knowledge: A cumulative, collective body of knowledge, experience, and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change. The practical knowledge that has been gathered through the experience of living in close contact with nature and has been passed along or communicated orally and handed down from generation to generation.

Turbidity: The degree of clarity in the water column typically reflected as the amount of suspended particulate matter in a waterbody.

Type A water licence: A Type A water licence is required if the use is of a type set out in column 2 of Schedule 2 and satisfies a criterion set out in column 5 in respect of an undertaking set out in column 1 of the Nunavut Water Regulations SOR/2013-69

(Note: despite definition of Type B water licence item a), a Type A licence is the appropriate licence for a use of waters if a Type A licence is required for another use of waters, or a deposit of waste, in respect of the same undertaking.)

Type B water licence: A Type B water licence required if

a) The use is of a type set out in column2 of Schedule 2 and satisfies a criterion set out in column 4 in respect of an undertaking set out in column 1, or

b) The use satisfies the criterion set out in paragraph 4(1)(a) but does not satisfy one or more criterion set out in paragraphs 4(1)(b) to (d) of the Nunavut Water Regulations SOR/2013-69.

Waste rock: All rock materials, except ore and tailings that are produced as a result of mining operations. All unprocessed rock materials that are or were produced as a result of mining operations and have no current economic value.

Wastewater: The water generated by site activities or originates on-site that requires treatment or any other water management activity.

Wastewater treatment system: A tertiary treatment plant designed to remove organic material and nutrients.

Watershed: A region or area bordered by ridges of higher ground that drains into a particular watercourse or body of water.

Water table: The level below where the ground is saturated with water.

Appendix B: List of Acronyms, Abbreviations, Units, and Symbols

List of Acronyms and Abbreviations

AANDC	Aboriginal Affairs and Northern Development Canada (formerly known as Indian and Northern Affairs Canada)
ABA	Acid-Base Accounting
AEMP	Aquatic Effects Monitoring Plan
Agnico Eagle	Agnico Eagle Mines Limited
AMSRP	Abandoned Military Site Remediation Protocol
ANFO	Ammonium Nitrate/Fuel Oil
ARD	Acid Rock Drainage
AWAR	All-weather Access Road
BIF	Banded Iron Formation
CAAQS	Canadian Ambient Air Quality Standards
CCDS	Canadian Climate Data and Scenarios
CCME-WQG	Canadian Council for Ministers of the Environment Water Quality Guidelines
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CLARC	Community Lands and Resources Committee
CLEY	Culture, Language, Elders and Youth
CGS	Community and Government Services
Comaplex	Comaplex Mines Corporation
CP	Collection Pond
CRA	Commercial, Recreational and Aboriginal
CRP	Closure and Reclamation Plan
D-CP	Water Retention Dike
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
EEM	Environmental Effects Monitoring
EMPP	Environmental Management and Protection Plan
EWTP	Effluent Water Treatment Plant
FCRP	Final Closure and Reclamation Plan
FEIS	Final Environmental Impact Statement
Golder	Golder Associates Ltd.
GN	Government of Nunavut
GWMP	Groundwater Management Plan

HADD	Harmful Alteration Disruption or Destruction
HDD	Horizontal Directional Drilling
HDPE	High Density PolyEthylene
HCT	Humidity Cell Test
HTO	Hunters and Trappers Organizations
ICRP	Interim Closure and Reclamation Plan
IDF	Inflow Design Flood
IIBA	Inuit Impact & Benefit Agreement
INAC	Indian and Northern Affairs Canada
IOL	Inuit Owned Land
IPCC	Intergovernmental Panel on Climate Change
ISQG	Interim Sediment Quality Guidelines
ISV	Inuit Societal Values
IQ	Inuit Qaujimajatuqangit
KivIA	Kivalliq Inuit Association
KHTO	Kangiqliniq Hunters and Trappers Organization
Licence	Type A Water Licence 2AM-MEL1631
LSA	Local Study Area
MDMER	Metal and Diamond Mining Effluent Regulations
MEND	Mining Environment Neutral Drainage
Mine	Meliadine Gold Project
ML	Metal Leaching
MDMER	Metal and Diamond Mining Effluent Regulations
MVLWB	Mackenzie Valley Land and Water Board
NAAQS	Nunavut Ambient Air Quality Standards
NAG	Net Acid Generation
NAP	Noise Abatement Plan
NIRB	Nunavut Impact Review Board
NMP	Noise Monitoring Plan
non-PAG	non-Potentially Acid-Generating
NPR	Net Potential Ratio
NRC	Natural Resources Canada
NTI	Nunavut Tunngavik Incorporated

NWB	Nunavut Water Board
NWR	Nunavut Water Regulations
NWNSRTA	Nunavut Waters and Nunavut Surface Rights Tribunal Act
PAG	Potentially Acid-Generating
PEL	Probable Effect Level
PHC	Petroleum Hydrocarbons
PM	Particulate Matter
POR	Points of Reception
Project	Meliadine Gold Project
RCP	Representative Concentration Pathway
RMMS	Risk Management and Monitoring System
RSA	Regional Study Area
RO	Reverse Osmoses
SD	Support Document
SFE	Shake Flask Extraction
SRES	Special Report on Emission Scenarios
SSA	Site Study Area
SSWQO	Site Specific Water Quality Objectives
STP	Sewage Treatment Plant
SETP-WTC	Saline Effluent Treatment Plant – Water Treatment Complex
TDS	Total Dissolved Solids
TEMMP	Terrestrial Environment Management and Monitoring Plan
TK	Traditional Knowledge
TSF	Tailings Storage Facility
TSP	Total Suspended Particulates
TSS	Total Suspended Solids
WMP	Water Management Plan
WRSF	Waste Rock Storage Facility
WRTP	Waste Rock Transfer Pad
WTP	Water Treatment Plant
XRD	X-Ray Diffraction

List of Units and Symbols

%	percent
°	degrees
°C	degrees Celsius
°C/m	degrees Celsius per metre
Bgs	below ground surface
cm/s	centimetre per second
dBA	decibels
g	gravity
H:V	horizontal to vertical
ha	hectares
km	kilometre
km/h	kilometres per hour
km²	square kilometres
kPa	kilopascal
m	metres
m²	square metres
m²/year	cubic metre per year
m³	cubic metres
m³/day	cubic metres per day
m³/hour	cubic metre per hour
m³/s	cubic metre(s) per second
m³/year	cubic metre per year
masl	metres above sea level
mg	milligram
mm	millimetres
mm/hour	millimetres per hour
mm/year	millimetres per year
mg/L	milligrams per litre
mg/kg	milligrams per kilogram
M-m3	million cubic metres
M-m³/year	million cubic metre per year
Mt	million tonnes

t	tonnes
t/m³	tonne per cubic metre
tpd	tonnes per day
μm	micrometre

Appendix C: Record of Engagement

This is a table that outlines all engagement specific to closure that has occurred to date. No issue has been identified. Progressive reclamation work planned or completed is presented in the ICRP.

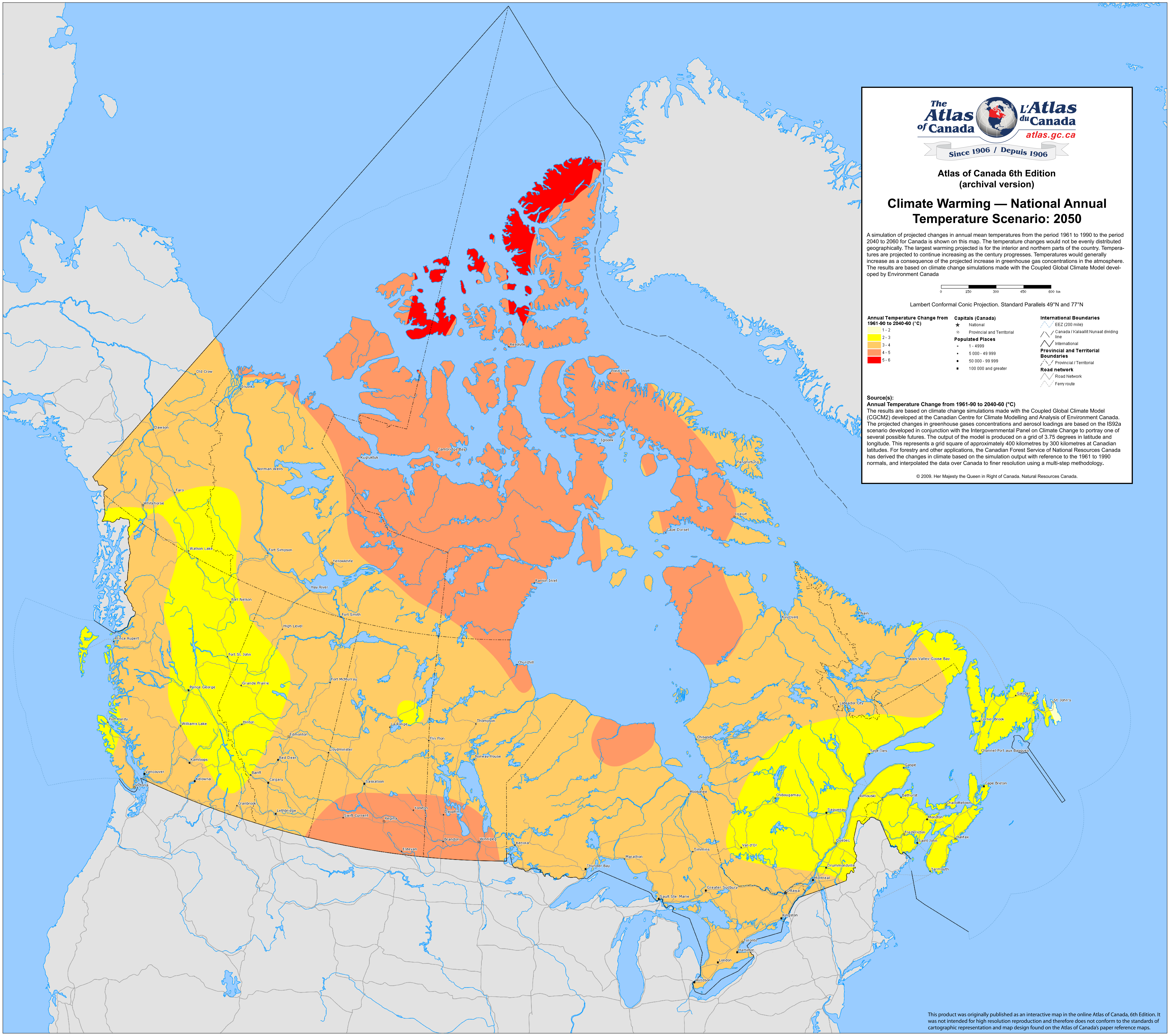
Engagement specific to closure
In 2018, reclamation work occurred at the Itivia quarry. Agnico Eagle proceeded to the reclamation according to the quarry conditions by removing all equipment and material, stabilizing and gently sloping the walls. Once the reclamation work was completed, a GN Regional Lands Administrator and a Hamlet foreman inspected the quarry and confirmed that they were satisfied with the current state of the Itivia quarry site.

Appendix D: Regulatory Instruments

Permits and Licenses for Meliadine Mine

Ownership	Lease / Licence / Permit	Purpose
KivIA	KVPL11D01	Production Lease
KivIA	KVCA07Q08	Quarry Permit (on-site)
KivIA	KVCA11Q01	Quarry Permit (along AWAR)
KivIA	KVRW11F02	Road Lease
GN-ED&T	LE-03-320-0036	Itivia Laydown Area Lease
GN-ED&T	LE-03320-0046	Bypass Road Lease
GN-CGS	L-51870BL	Bypass Road Lease
GN-CGS	L-51871BL	AWAR
GN	Authorization letter	Waterline routing at Apache Pass
CIRNAC	55K/16-42-3	Diffuser Lease
Transport Canada	2019-600003	Placement of the diffuser
NWB	2BE-MEL2434	Bulk Sampling and Exploration Drilling (expires July 21, 2034)
NWB	2AM-MEL1631	Mining (expires March 31, 2031)
NIRB	Project Certificate No. 006	No expiry

Appendix E: Permafrost Map



The Atlas of Canada
L'Atlas du Canada
atlas.gc.ca
Since 1906 / Depuis 1906

Atlas of Canada 6th Edition
(archival version)

Climate Warming — National Annual Temperature Scenario: 2050

A simulation of projected changes in annual mean temperatures from the period 1961 to 1990 to the period 2040 to 2060 for Canada is shown on this map. The temperature changes would not be evenly distributed geographically. The largest warming projected is for the interior and northern parts of the country. Temperatures are projected to continue increasing as the century progresses. Temperatures would generally increase as a consequence of the projected increase in greenhouse gas concentrations in the atmosphere. The results are based on climate change simulations made with the Coupled Global Climate Model developed by Environment Canada

0 150 300 450 600 km

Lambert Conformal Conic Projection. Standard Parallels 49°N and 77°N

Annual Temperature Change from 1961-90 to 2040-60 (°C)
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6

Capitals (Canada)
- National
- Provincial and Territorial

Populated Places
- 1 - 4999
- 5 000 - 49 999
- 50 000 - 99 999
- 100 000 and greater

International Boundaries
- EEZ (200 mile)
- Canada / Kalaallit Nunaat dividing line
- International

Provincial and Territorial Boundaries
- Provincial / Territorial

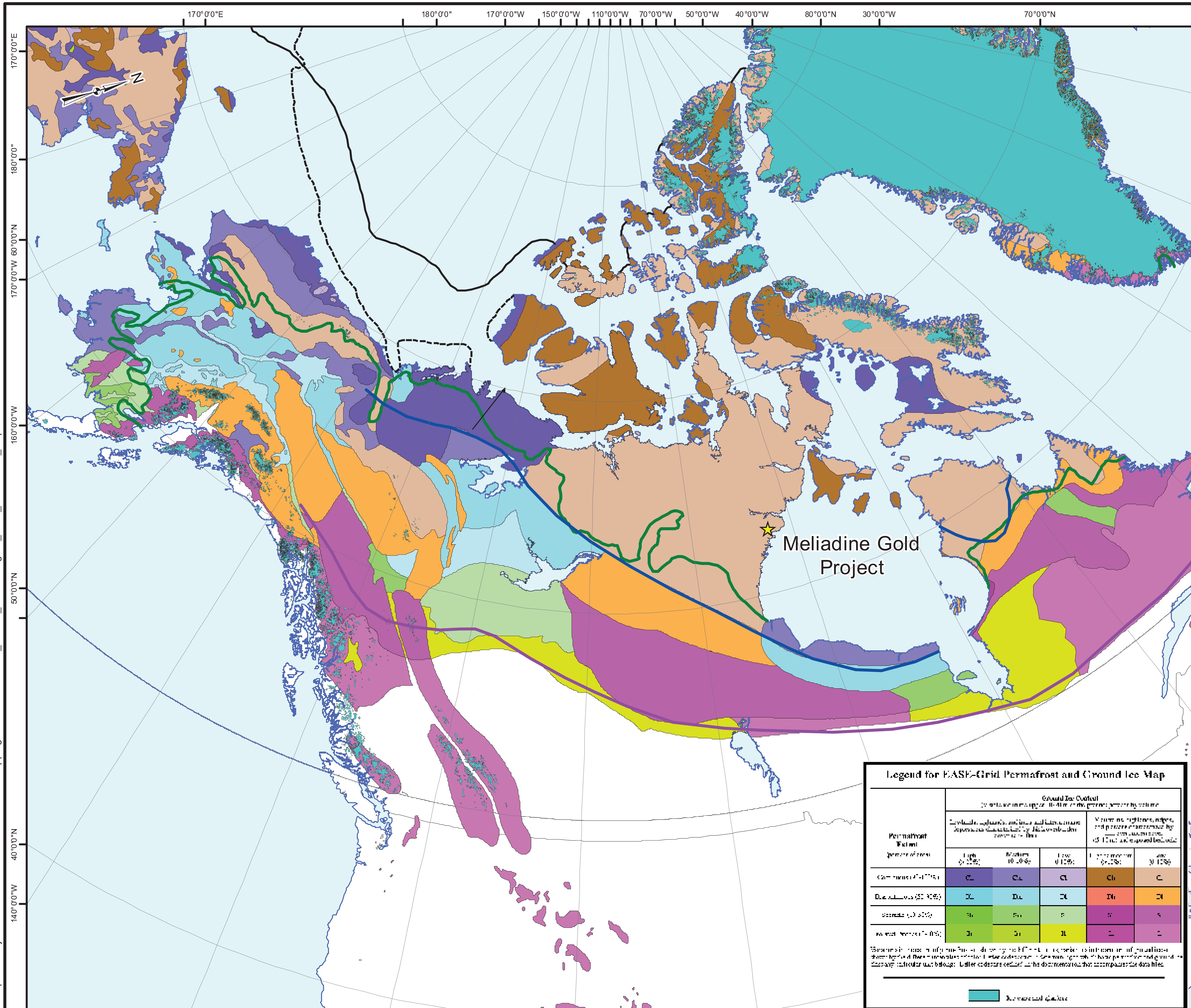
Road network
- Road Network
- Ferry route

Source(s):
Annual Temperature Change from 1961-90 to 2040-60 (°C)
The results are based on climate change simulations made with the Coupled Global Climate Model (CGCM2) developed at the Canadian Centre for Climate Modelling and Analysis of Environment Canada. The projected changes in greenhouse gases concentrations and aerosol loadings are based on the IS92a scenario developed in conjunction with the Intergovernmental Panel on Climate Change to portray one of several possible futures. The output of the model is produced on a grid of 3.75 degrees in latitude and longitude. This represents a grid square of approximately 400 kilometres by 300 kilometres at Canadian latitudes. For forestry and other applications, the Canadian Forest Service of National Resources Canada has derived the changes in climate based on the simulation output with reference to the 1961 to 1990 normals, and interpolated the data over Canada to finer resolution using a multi-step methodology.

This product was originally published as an interactive map in the online Atlas of Canada, 6th Edition. It was not intended for high resolution reproduction and therefore does not conform to the standards of cartographic representation and map design found on the Atlas of Canada's paper reference maps.

Natural Resources Canada | Ressources naturelles Canada

Canada



LEGEND

- ★ Meliadine Gold Project
- Southern boundary of continuous permafrost - Present
- Southern boundary of discontinuous permafrost - Present
- Treeline
- Sea-Ice Edge Limit
- Subsea Permafrost Limit

REFERENCE

Brown, J., O.J. Ferrians Jr., J.A. Heginbottom, and E.S. Melnikov. 1998. Circum-Arctic Map or Permafrost and Ground-Ice Conditions. Boulder, Co: National Snow and Ice Data Centre/World Data Centre for Glaciology. Digital Media. Predicted Permafrost Boundaries Based On Woo *et al.*, 1992.

Datum: NAD83 Projection: UTM Zone 15

500 0 500

KILOMETRES

PROJECT

AGNICO EAGLE

AGNICO EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PERMAFROST MAP OF CANADA

Golder Associates

PROJECT		10-1373-0076	FILE No.
DESIGN	JC	27 July 2011	SCALE AS SHOWN — REV. 1
GIS	AL	27 July 2011	
CHECK	JC	28 Jun. 2012	FIGURE 6.3-2
REVIEW	CJC	28 Jun. 2012	

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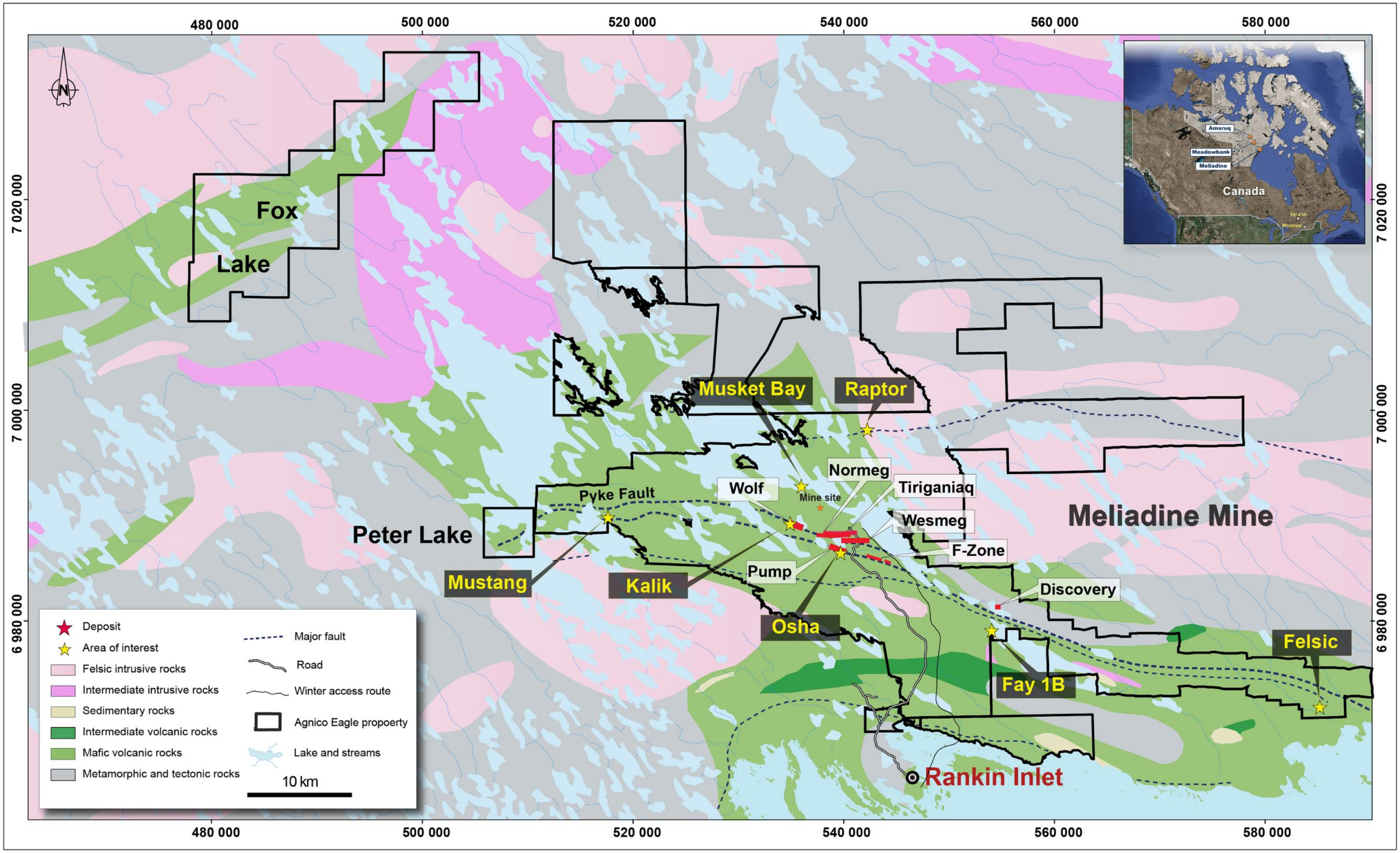
Appendix F: Meliadine Geology, Seismic Zone, Groundwater Flow and Bathymetry

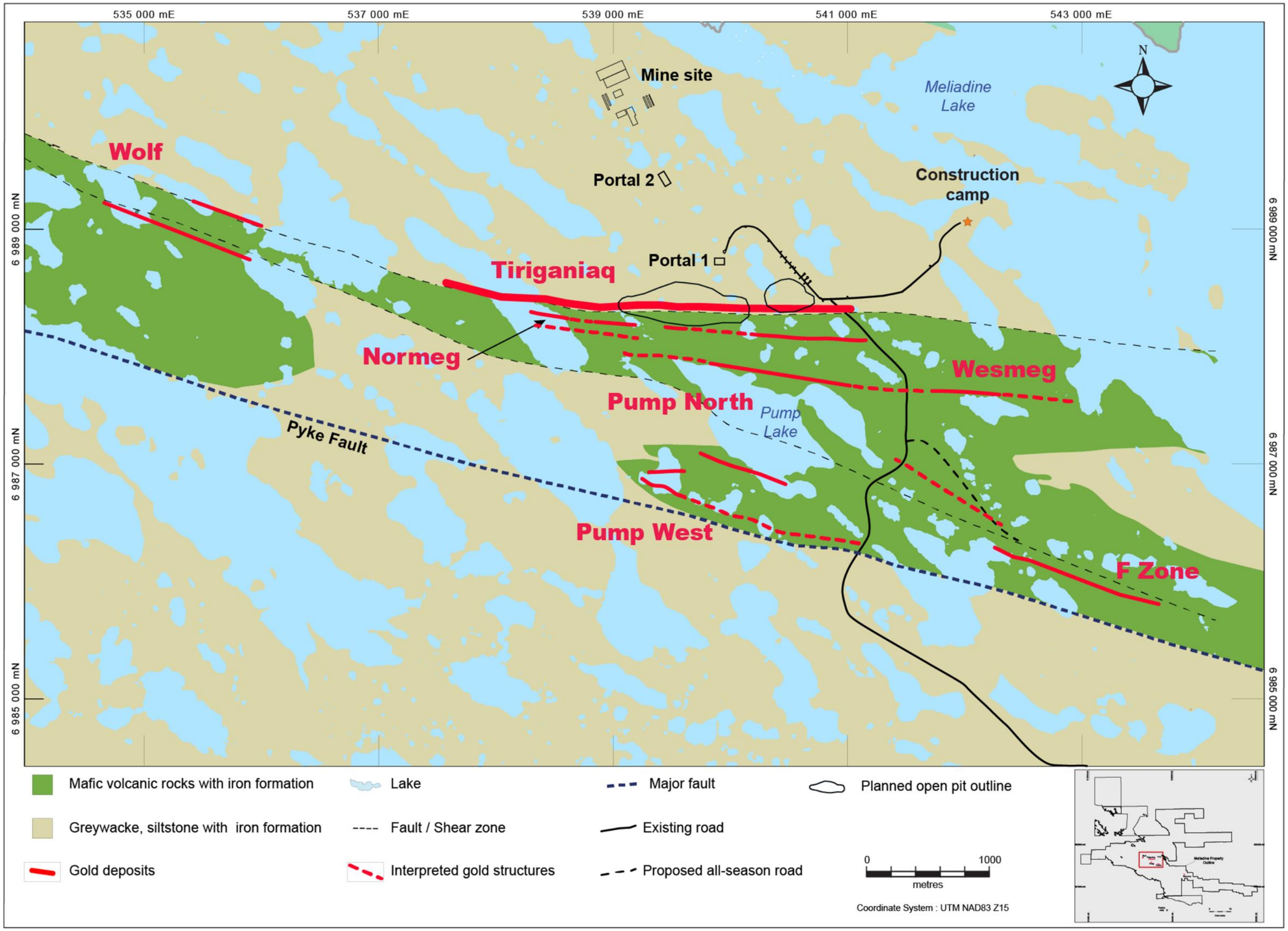
300000
400000
500000
600000
7300000
7200000
7100000
7000000
6900000
AMARUQ PROJECT
GOT
YUKA
STARK
MEADOWBANK
CERSEI
ARYA
MUSKOX
MEADOWBANK MINE
GREYHOUND
51% AEM- 49 % Aura Silver
GREY HILL
SAM
WHITE HILLS
Baker Lake
CONE HILL
PARKER LAKE
FOX LAKE
MELIADINE PROJECT
PETER LAKE
MELIADINE
Rankin Inlet
FAT LAKE NTI
TYRON
FAT LAKE INAC
Whale Cove
SNOW
Amaruq
Meadowbank
Meliadine
Canada
Val-d'Or
Agnico Eagle property
Archean greenstone belt
All-weather road
Camp and maintenance buildings
0
50
Km

AGNICO EAGLE

Meliadine Mine - Regional Geology Map



Meliadine Mine - Local Geology Map



2015 National Building Code Seismic Hazard Calculation

INFORMATION: **Eastern Canada English (613) 995-5548 français (613) 995-0600 Facsimile (613) 992-8836**
Western Canada English (250) 363-6500 Facsimile (250) 363-6565

Site: 63.023N 92.218W **User File Reference:** Meliadine Mine Site 2019-11-25 14:04 UT

Requested by: SNC-Lavalin (for Agnico Eagle Mines Limited)

Probability of exceedance per annum	0.000404	0.001	0.0021	0.01
Probability of exceedance in 50 years	2 %	5 %	10 %	40 %
Sa (0.05)	0.047	0.027	0.017	0.005
Sa (0.1)	0.067	0.039	0.026	0.009
Sa (0.2)	0.066	0.042	0.028	0.011
Sa (0.3)	0.057	0.037	0.026	0.009
Sa (0.5)	0.047	0.031	0.021	0.007
Sa (1.0)	0.028	0.018	0.012	0.004
Sa (2.0)	0.013	0.008	0.005	0.001
Sa (5.0)	0.003	0.002	0.001	0.000
Sa (10.0)	0.001	0.001	0.001	0.000
PGA (g)	0.037	0.022	0.015	0.005
PGV (m/s)	0.035	0.022	0.014	0.004

Notes: Spectral (Sa(T), where T is the period in seconds) and peak ground acceleration (PGA) values are given in units of g (9.81 m/s^2). Peak ground velocity is given in m/s. Values are for "firm ground" (NBCC2015 Site Class C, average shear wave velocity 450 m/s). NBCC2015 and CSAS6-14 values are highlighted in yellow. Three additional periods are provided - their use is discussed in the NBCC2015 Commentary. Only 2 significant figures are to be used. **These values have been interpolated from a 10-km-spaced grid of points. Depending on the gradient of the nearby points, values at this location calculated directly from the hazard program may vary. More than 95 percent of interpolated values are within 2 percent of the directly calculated values.**

References

National Building Code of Canada 2015 NRCC no. 56190; Appendix C: Table C-3, Seismic Design Data for Selected Locations in Canada

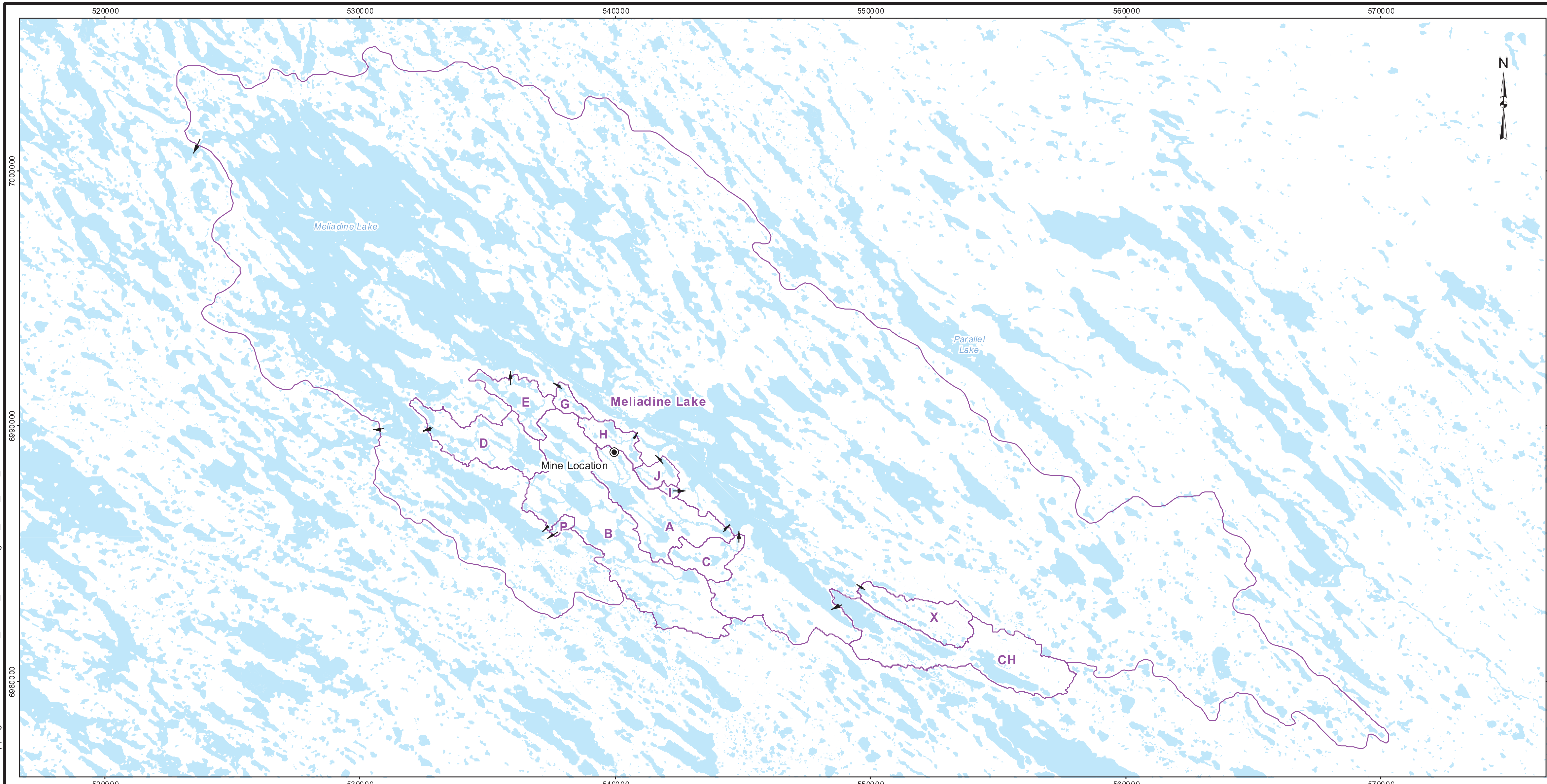
Structural Commentaries (User's Guide - NBC 2015: Part 4 of Division B)
Commentary J: Design for Seismic Effects

Geological Survey of Canada Open File 7893 Fifth Generation Seismic Hazard Model for Canada: Grid values of mean hazard to be used with the 2015 National Building Code of Canada

See the websites www.EarthquakesCanada.ca and www.nationalcodes.ca for more information

Natural Resources Canada Ressources naturelles Canada

Canada



LEGEND

- Direction of Flow at Watershed Outlet
- Watercourse
- Watershed Boundary
- Waterbody

REFERENCE

Base data obtained from Agnico Eagle Mines Limited (AEM).
Datum: NAD 83 Projection: UTM Zone 15

N:\Bur-Graphics\Projects\2013\1428\13-1428-0007\GIS\Mapping\MXD\FEIS\Volume_7\Main_Volume\Figure_7.3-1_LSA_Watersheds.mxd

PROJECT

AGNICO EAGLE

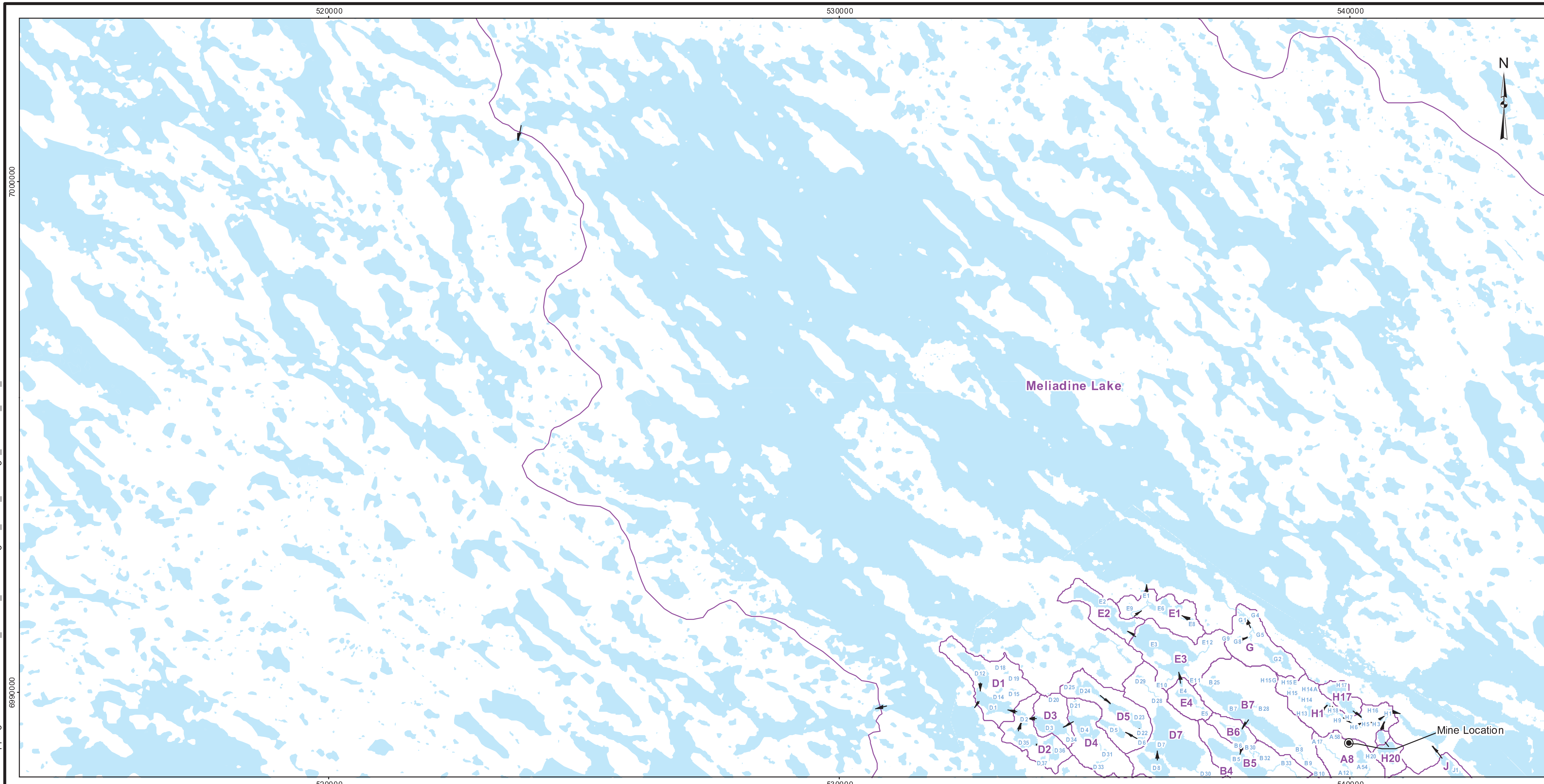
AGNICO EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

LSA WATERSHEDS

Golder Associates

PROJECT NO.	10-1373-0076		FILE No.	
DESIGN	JL	20 Aug. 2012	SCALE AS SHOWN	REV. 0
GIS	DSC	21 Aug. 2012		
CHECK	DW	20 Jan. 2013	**FIGURE 7.3-1**	
REVIEW	DW	20 Jan. 2013		



LEGEND

- Direction of Flow
- Watercourse
- Sub-Watershed Boundary
- Waterbody

REFERENCE

Base data obtained from Agnico Eagle Mines Limited (AEM).
Datum: NAD 83 Projection: UTM Zone 15

PROJECT

AGNICO EAGLE

AGNICO EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

DRAINAGE PATTERNS OF LSA WATERSHEDS (NORTH)

Golder Associates

PROJECT NO.	10-1373-0076		FILE No.
DESIGN	JL	20 Aug. 2012	SCALE AS SHOWN / REV. 0
GIS	DSC	22 Aug. 2012	
CHECK	DW	20 Jan. 2013	FIGURE 7.3-2
REVIEW	DW	20 Jan. 2013	

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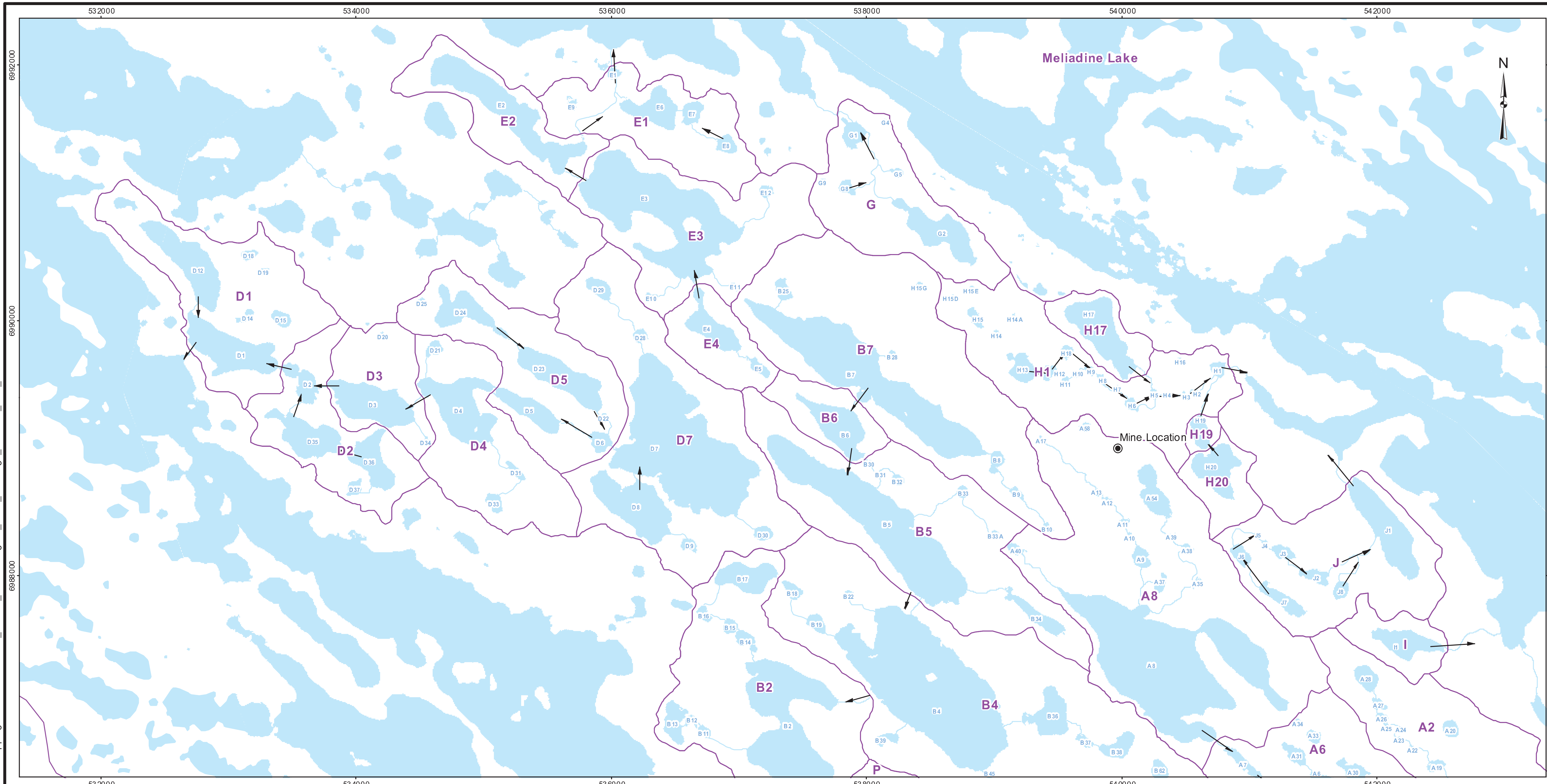

LEGEND

- Direction of Flow
- Watercourse
- Sub-Watershed Boundary
- Waterbody

750 0 750

METRES

REFERENCE

Base data obtained from Agnico Eagle Mines Limited (AEM).
Datum: NAD 83 Projection: UTM Zone 15

PROJECT

AGNICO EAGLE

AGNICO EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

DRAINAGE PATTERNS OF LSA WATERSHEDS (CENTRAL)

PROJECT NO.	10-1373-0076		FILE No.	
DESIGN	JL	20 Aug. 2012	SCALE AS SHOWN	REV. 0
GIS	DSC	22 Aug. 2012		
CHECK	DW	20 Jan. 2013	FIGURE 7.3-3	
REVIEW	DW	20 Jan. 2013		

Golder Associates

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LEGEND

- Direction of Flow
- Watercourse
- Sub-Watershed Boundary
- Waterbody

750 0 750
METRES

REFERENCE

Base data obtained from Agnico Eagle Mines Limited (AEM).
Datum: NAD 83 Projection: UTM Zone 15

PROJECT
AGNICO EAGLE
AGNICO EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

DRAINAGE PATTERNS OF LSA WATERSHEDS (SOUTH)

PROJECT NO.	10-1373-0076		FILE No.	
DESIGN	JL	20 Aug. 2012	SCALE AS SHOWN	REV. 0
GIS	DSC	21 Aug. 2012		
CHECK	DW	20 Jan. 2013	FIGURE 7.3-4	
REVIEW	DW	20 Jan. 2013		

Golder Associates

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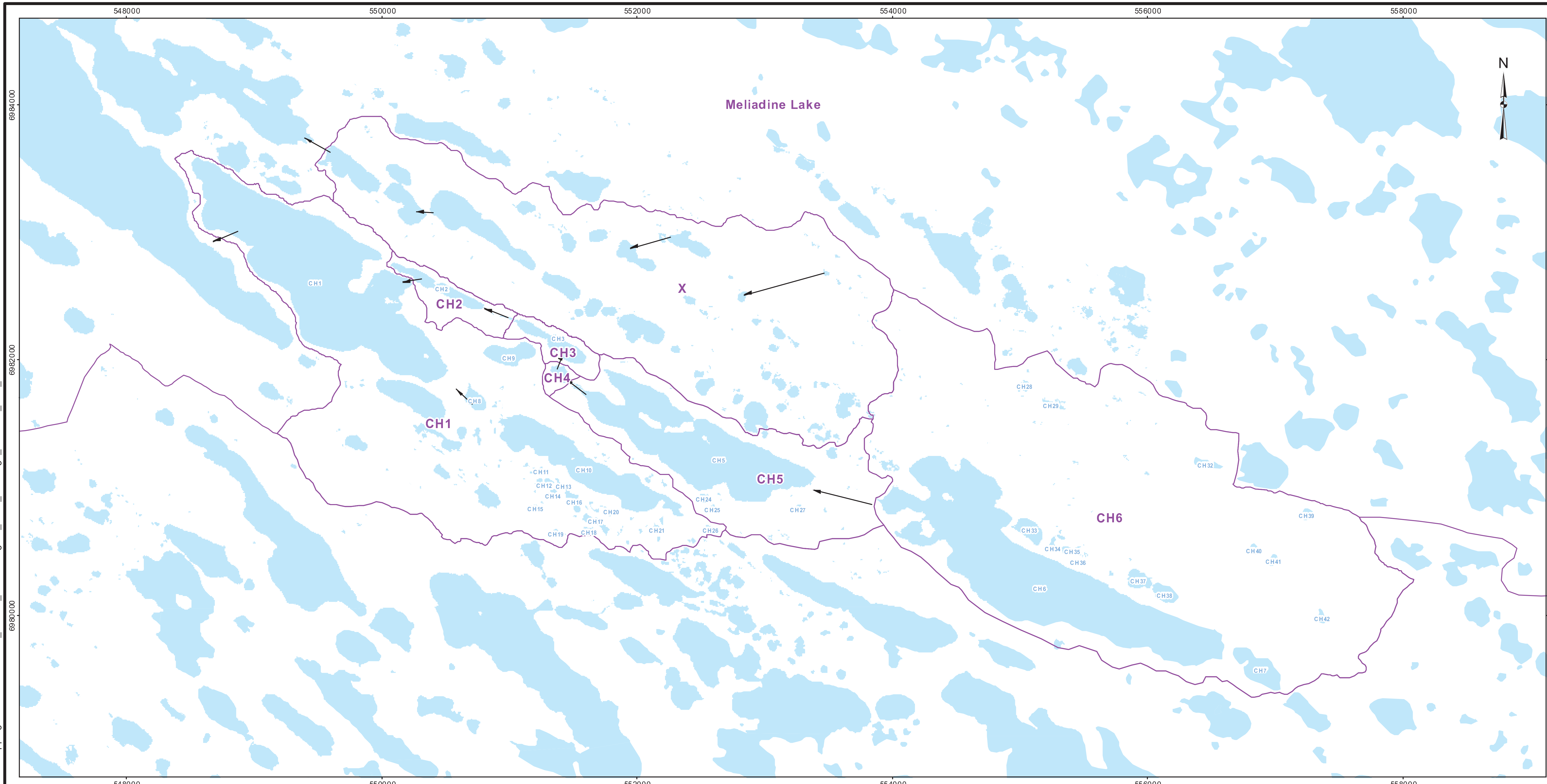


N:\Bur-Graphics\Projects\2013\1428\13-1428-0007\GIS\Mapping\MXD\FEIS\Volume_7\Main_Volume\Figure_7.3-5_Drainage_Patterns_LSA_East.mxd

LEGEND

- Direction of Flow
- Watercourse
- Sub-Watershed Boundary
- Waterbody

REFERENCE

Base data obtained from Agnico Eagle Mines Limited (AEM).
Datum: NAD 83 Projection: UTM Zone 15

PROJECT

AGNICO EAGLE

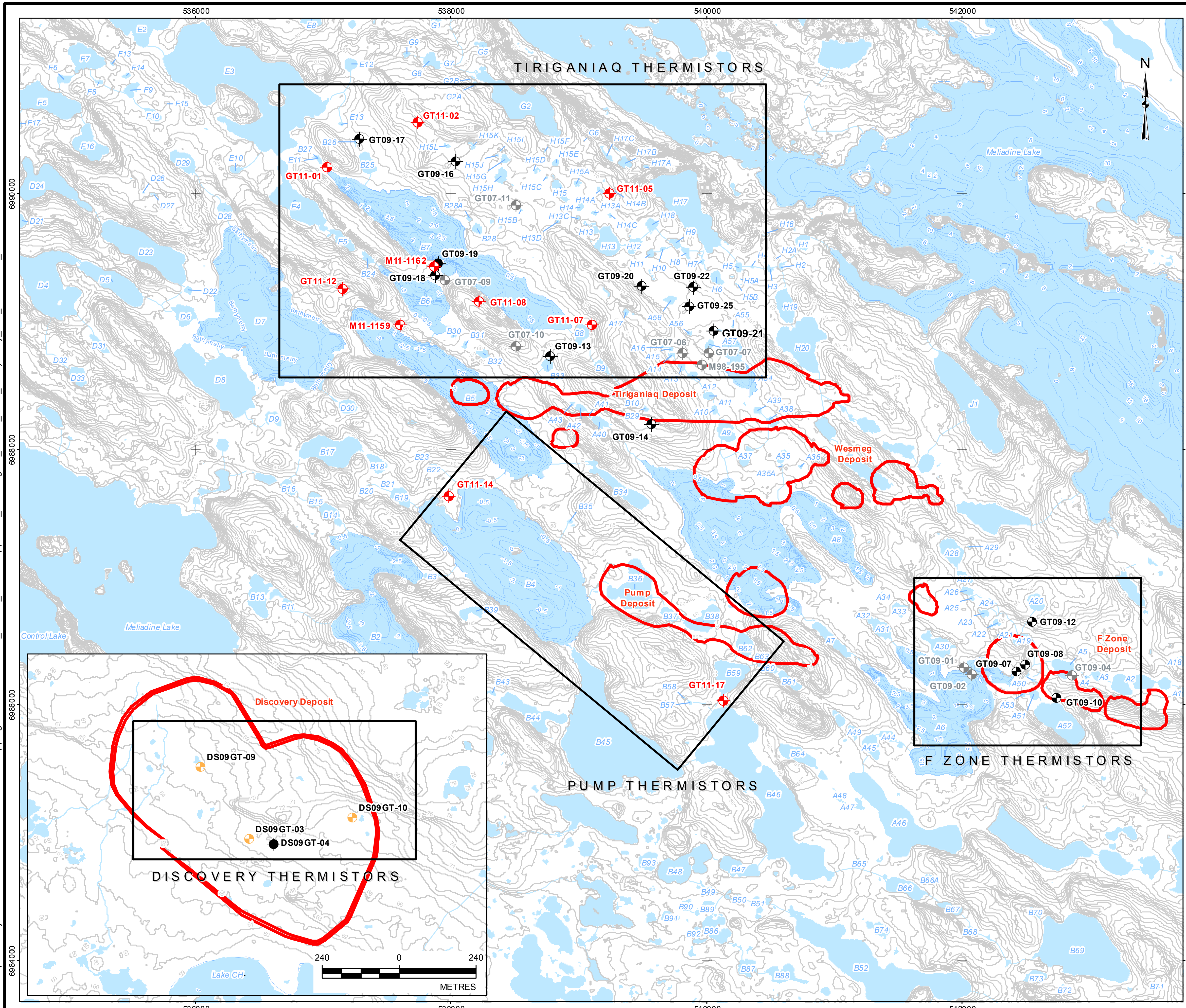
AGNICO EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

DRAINAGE PATTERNS OF LSA WATERSHEDS (EAST)

Golder Associates

PROJECT NO.	10-1373-0076		FILE No.	
DESIGN	JL	20 Aug. 2012	SCALE AS SHOWN	REV. 0
GIS	DSC	21 Aug. 2012		
CHECK	DW	20 Jan. 2013	**FIGURE 7.3-5**	
REVIEW	DW	20 Jan. 2013		



LEGEND

- GEOTECHNICAL BOREHOLE WITH THERMISTOR (2011)
- GEOTECHNICAL BOREHOLE WITH THERMISTOR (2009)
- HYDROGEOLOGICAL TESTING BOREHOLE WITH THERMISTOR (2009)
- HISTORIC GEOTECHNICAL BOREHOLE WITH THERMISTOR
- F ZONE GEOTECHNICAL BOREHOLE WITH THERMISTOR (2009)
- DISCOVERY GEOTECHNICAL BOREHOLE WITH THERMISTOR (2009)
- DEPOSIT OUTLINE
- TOPOGRAPHIC CONTOUR (1.0 m INTERVAL ABOVE SEA LEVEL)
- BATHYMETRIC CONTOUR (0.5 m INTERVAL AS DEPTH)
- WATERCOURSE
- WATERBODY

REFERENCE

BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED (AEM).
DATUM: NAD 83 PROJECTION: UTM ZONE 15

500 0 500
METRES

PROJECT
AGNICO EAGLE
AGNICO EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
LAKE BATHYMETRY AND THERMISTOR LOCATIONS

Golder Associates

PROJECT NO. 10-1373-0076			PHASE No. 3000
DESIGN	JC	28 Sep. 2011	SCALE AS SHOWN / REV. 1
GIS	AL	21 Oct. 2011	
CHECK	JC	28 Jun. 2012	**FIGURE 6.3-F1**
REVIEW	CJC	28 Jun. 2012	

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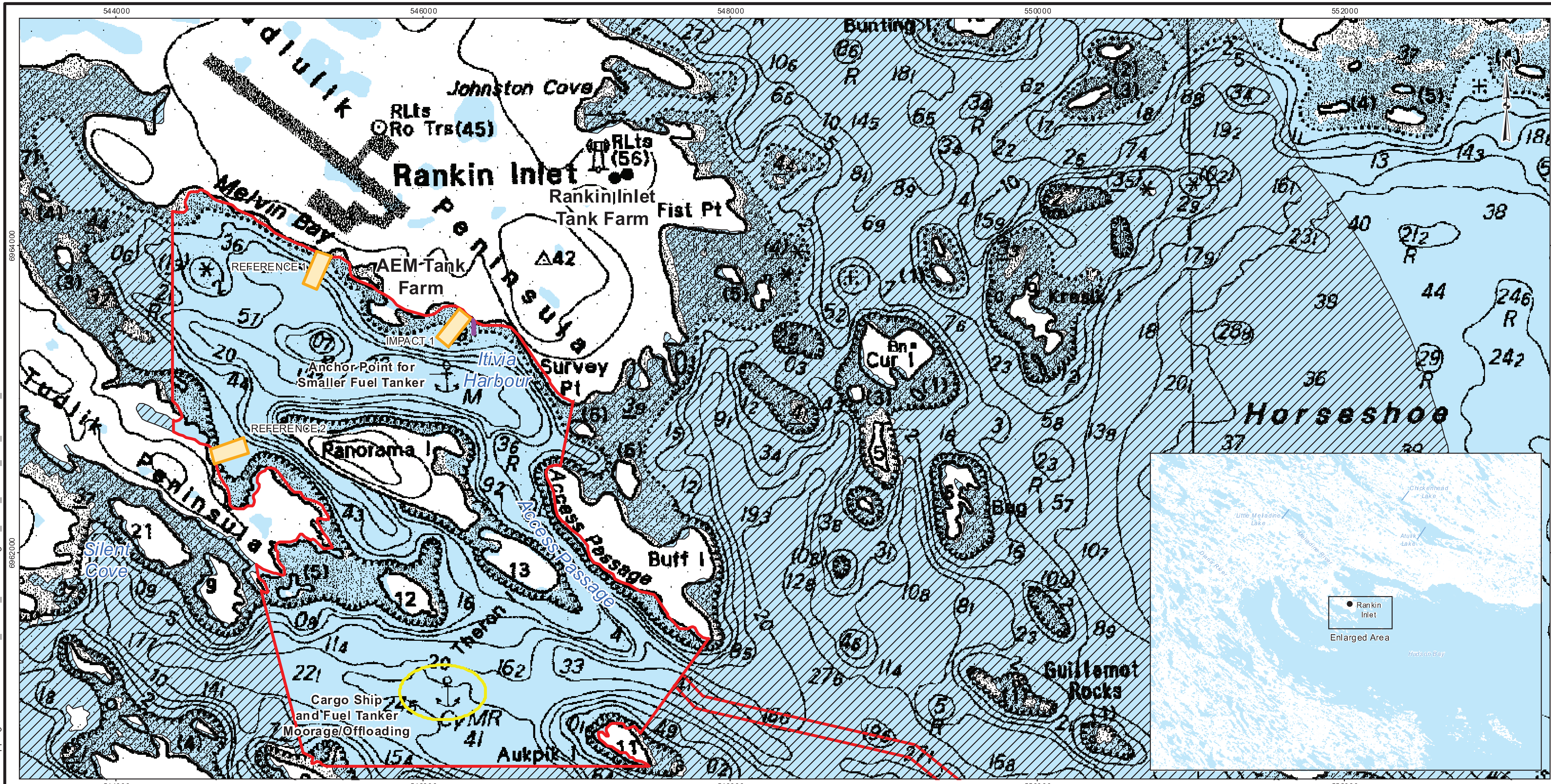

LEGEND

- Proposed Spud Barge
- Baseline Sampling Area
- Moorage and Offloading
- Marine Regional Study Area (Marine RSA)
- Marine Local Study Area (Marine LSA)
- Bathymetric Depth Contour
- Waterbody

500 0 500
METRES

REFERENCE

Base data obtained from Agnico Eagle Mines Limited (AEM). Baseline Sampling and Spud Barge obtained from Nunami Stantec on behalf of Agnico Eagle Mines Limited (AEM). Atlas of Canada data Obtained from © Department of Natural Resources Canada. All rights reserved. Nautical chart data obtained from the Canadian Hydrographic Service. Country background data obtained from ESRI.
Datum: NAD 83 Projection: UTM Zone 15

PROJECT
AGNICO EAGLE
AGNICO EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
MARINE LOCAL STUDY AREA

Golder Associates

PROJECT NO.	10-1373-0076		FILE No.	
DESIGN	AK	25 Jul. 2012	SCALE AS SHOWN	REV. 0
GIS	DSC	25 Jul. 2012		
CHECK	PR	18 Jan. 2013	FIGURE 8.1-1	
REVIEW	DW	18 Jan. 2013		

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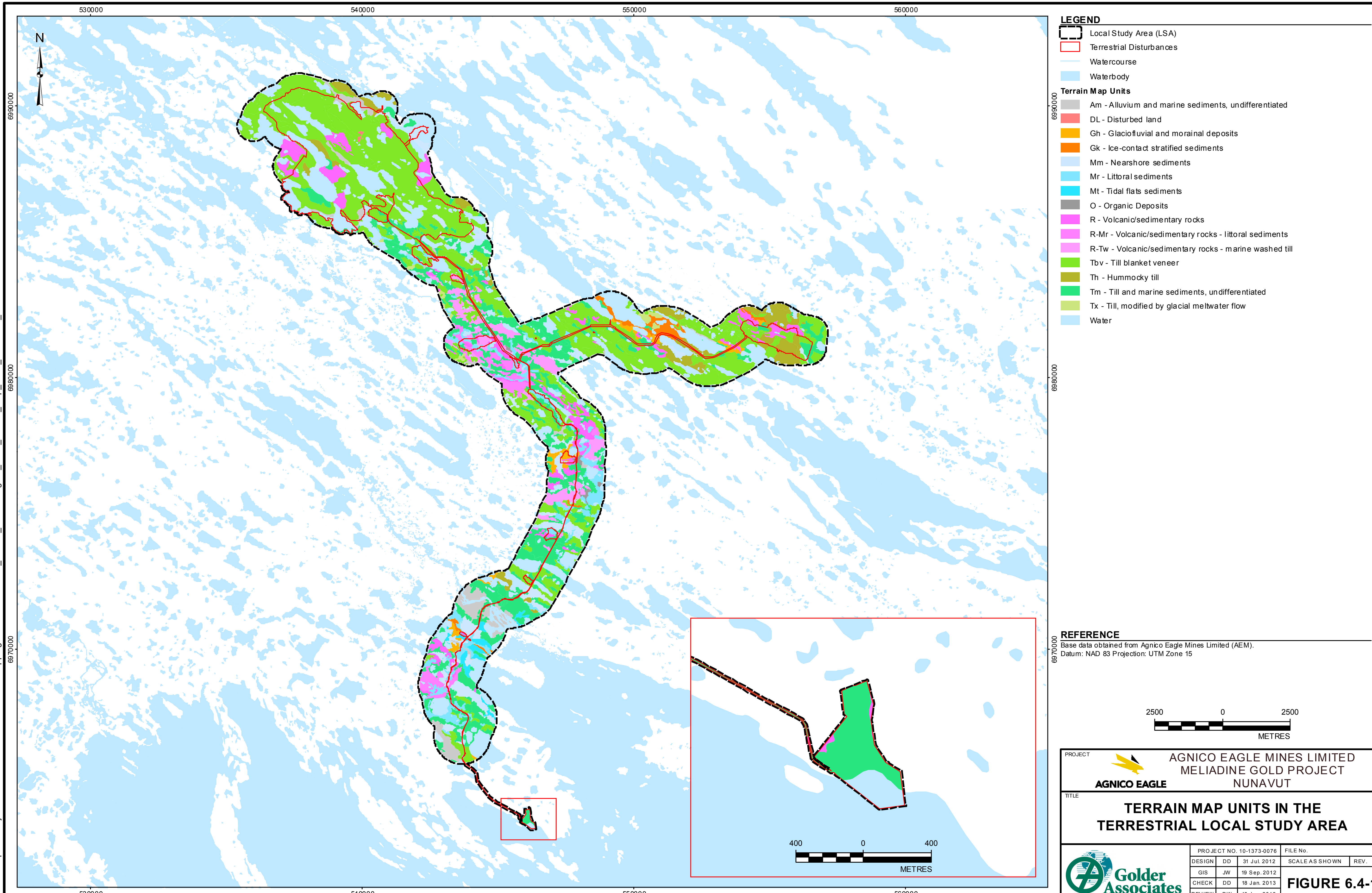
Appendix G: Ecological Land



N:\Bur-Graphics\Projects\2013\1428\13-1428-0007\GIS\Mapping\MXD\FEIS\Volume_6\Main_Volume\Figure_6.4-1_Terrain_Map_Units_Terrestrial_LSA.mxd