AGNICO EAGLE

Meliadine Gold Mine

Monitoring Plan for the Phase 1 AWAR between Rankin Inlet and the Meliadine Site

AUGUST 2021
VERSION 3

DOCUMENT CONTROL

Version	Date (YM)	Section	Page	Revision
1	November 2011			First draft of the Phase 1 AWAR Monitoring Plan
2	January 2012			Updated report based on comments from regulatory agencies (ECCC and CIRNAC)
3	August 2021	All		General Plan Update as per Part I, Item 3 of the Type A Amended Water Licence 2AM-MEL1631

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ACRONYMS

Agnico Eagle	Agnico Eagle Mines Limited
AWAR	All Weather Access Road
FEIS	Final Environmental Impact Statement
GN	Government of Nunavut
IOL	Inuit Owned Lands
KHTO	Kangiqliniq Hunters and Trappers Organization
KIA	Kivalliq Inuit Association
KWB	Kivalliq Wildlife Board
MDMER	Metal and Diamond Mining Effluent Regulations
Mine	Meliadine Gold Mine
NIRB	Nunavut Impact Review Board
NTU	Nephelometric Turbidity Units
NWB	Nunavut Water Board
SEMP	Sediment and Erosion Management Plan
TEMMP	Terrestrial Environment Management and Monitoring Plan
TSF	Tailings Storage Facility
TSS	Total Suspended Solids
WMP	Water Management Plan
WRSF	Waste Rock Storage Facility

UNITS

h	hour
km	kilometre
km^2	square kilometre
mg/L	milligram per litre
Mt	million tonnes

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Gold Mine (the Mine), located approximately 25 kilometres (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the Mine site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8'' N, 92°13'6.42"W), on Inuit Owned Lands (IOL). The Mine is located within the Meliadine Lake watershed of the Wilson Water Management Area (Nunavut Water Regulations Schedule 4).

The Mine is subject to the terms and conditions of both the amended Project Certificate issued by the Nunavut Impact Review Board (NIRB) in accordance with the Nunavut Land Claims Agreement Article 12.5.12 on February 26, 2019 (NIRB, 2019) and the Type A Amended Water Licence No. 2AM-MEL1631 (the Licence), issued by the Nunavut Water Board (NWB) on May 13, 2021.

This document presents an updated version of the Monitoring Plan for the Phase 1 AWAR between Rankin Inlet and the Meliadine Site, being submitted as per Part I, Item 3 of the amended Licence.

The mine plan includes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine.

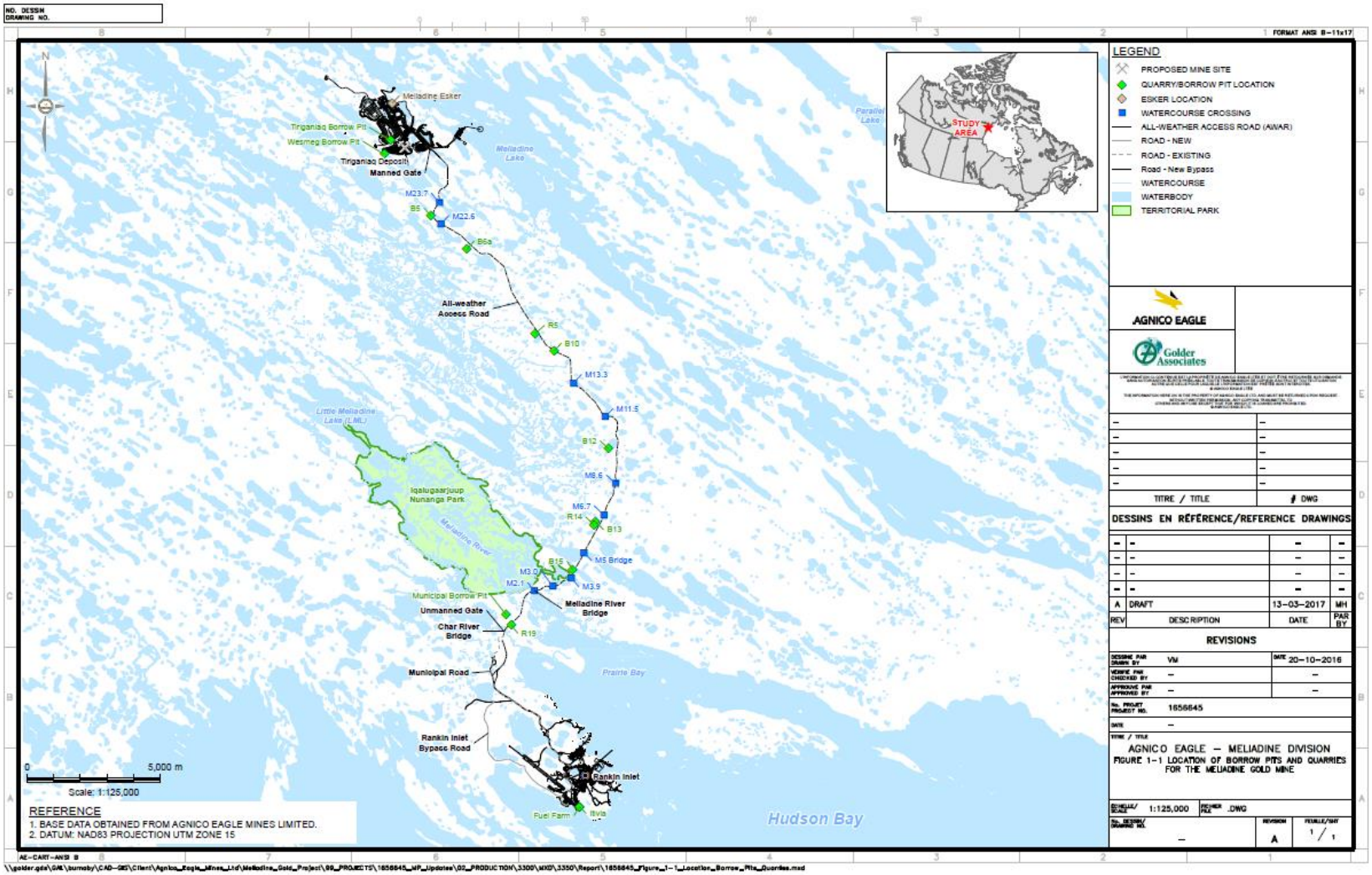
The Mine is expected to produce approximately 15.0 million tonnes (Mt) of ore, 32.8 Mt of waste rock, 8.0 Mt of overburden waste, and 15.0 Mt of tailings. The following phased approach is proposed for the development of the Tiriganiaq gold deposit;

- Phase 1: 3.5 years for Mine Construction (Q4 Year -5 to Q2 Year -1);
- Phase 2: 8.5 years for Mine Operations, beginning in 2019 (Q2 Year -1 to Year 8);
- Phase 3: 3 years Mine Closure (Year 9 to Year 11); and;
- Phase 4: Post-Closure (Year 11 forward).

Mining facilities on surface include a plant site and accommodation buildings, an ore stockpile, a tailings storage facility (TSF), two waste rock storage facilities (WRSFs), a water management system that includes containment ponds, water diversion channels, retention dikes/berms, and a series of water treatment plants.

There is presently a controlled access, Phase 1 All-weather Access Road (AWAR) between the mine site and Rankin Inlet (constructed in 2013/2014). A bypass road was built around the Itivia site and links to the AWAR outside of Rankin Inlet. The remote location of the Project necessitates that access, service, and haul roads be built to support the development of the mine. Figure 1 provides an overview of the Meliadine access road network and quarries.

Figure 1: Meliadine Access Road Network and Quarries



This plan summarizes the main monitoring programs implemented for the operation and closure of the Phase 1 AWAR.

Agnico Eagle has developed several management plans that contain dispositions related to environmental monitoring which are related to the present document. In fact, the Monitoring Plan for the Phase 1 AWAR is a summary of the related management plans which are listed in Table 1 below.

Table 1 Related Management Plans

Related Management Plans
Roads Management Plan
Terrestrial Environment Management and Monitoring Plan
Sediment and Erosion Management Plan
Water Management Plan
Dust Management Plan
Air Quality Monitoring Plan
Borrow Pits and Quarries Management Plan
Interim Closure and Reclamation Plan

The original management plans listed above should be considered as the most up-to-date references and have precedence over the present document.

SECTION 2 • WILDLIFE MONITORING

Agnico Eagle has implemented a monitoring program to record on a systematic basis the prevalence of wildlife seen along the Meliadine Phase 1 AWAR. This program will be developed further with the input of the local Kangiqliniq Hunters and Trappers Organization (KHTO) and the KIA as needs change. The program will focus on caribou, muskox, bears, wolves, migratory birds and raptors. Agnico Eagle and the KHTO collaborate in order to incorporate local knowledge into our wildlife surveys.

The current wildlife monitoring program consists of year-round weekly ground surveys of wildlife observed along the roads. The survey details are recorded and includes type of wildlife observed, estimate of numbers, and nearest kilometre marking along the roads. The data is aggregated and presented in the annual report for the mine. Complete details on wildlife monitoring can be found in the Terrestrial Environment Management and Monitoring Plan (TEMMP) (Agnico Eagle, 2020).

During caribou migration, daily AWAR surveys are completed. If more than 50 caribou are detected within 100 m of the AWAR, the road utilization will be suspended as per protocol detailed in the TEMMP.

Wildlife is occasionally expected to be observed on or near the AWAR. Caribou and other wildlife have the right-of-way at all times. In case of problems (e.g., aggregations of caribou), the environmental personnel on-site will be in charge of managing the situation and, with the collaboration of the security department, will advise road users by patrolling the road. The Mine personnel will be notified by dispatch radio if any wildlife is observed on or near the road. The protocol used when wildlife is on or near the road is presented in Appendix 1.

SECTION 3 • WATER QUALITY MONITORING

The AWAR between Rankin Inlet and the Meliadine Site could impact water quality. This would largely occur due to sediment transport from erosion or road dust settling on receiving waters. Dust mitigation and monitoring is discussed in section 5 of this document.

The Sediment and Erosion Management Plan (SEMP) (Agnico Eagle, 2021) provides consolidated information on the management and monitoring of potential areas susceptible to erosion, including the Phase 1 AWAR. The SEMP was developed as per NIRB Meliadine Project Certificate No.006 Condition 28, to prevent or minimize the effects of destabilization and erosion that may occur due to Mine activities. The plan also details sediment control plans to prevent and/or mitigate sediment loading into surface water within the Mine area.

All surface runoff and/or discharge from drainage management systems, at the Monitoring Program Stations MEL-SR-1 to MEL-SR-TBD during the Construction/Operation of any facilities and infrastructure associated with this project, including the AWAR, where flow may directly or indirectly enter a water body, shall not exceed the Effluent quality limits in Table 2 below as per in Part D, Item 18 of the Licence.

Table 2 Surface Runoff and Discharge from Drainage Management Systems Quality Limits

Parameter	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
Total Suspended Solids (TSS) (mg/L)	50.0	100.0
Oil and Grease	No Visible Sheen	No Visible Sheen
pH	Between 6.0 and 9.5	Between 6.0 and 9.5

The frequency of water and turbidity sampling are in accordance with the requirements of the Licence and the Metal and Diamond Mining Effluent Regulations (MDMER). The frequency will be increased if required during the freshet season or during heavy rainfall events. Procedures for turbidity monitoring are detailed in the SEMP.

If Agnico Eagle is actively working in an area with elevated turbidity – the work will stop until the level of clarity returns to an acceptable level. Monitoring will be documented with site photographs and inspection forms.

Various mitigation measures, as outlined in the SEMP could be used, if required, to reduce risks associated with erosion and sedimentation.

Post closure monitoring includes the monitoring of all water crossings where the culverts and bridges have been removed. Particular attention will be paid to sediment transport from the reclaimed streams/rivers. Should sedimentation be evidenced downstream of the reclaimed water crossing,

best management practices will be employed, which include standard erosion and sediment control measures. Decommissioning and reclaiming of the road after post-closure is discussed in the Interim Closure and Reclamation Plan (SNC Lavalin, 2021) and the Roads Management Plan.

SECTION 4 •WATER MANAGEMENT INFRASTRUCTURE MONITORING

Detailed information on the water management infrastructure monitoring procedures can be found in the SEMP and Water Management Plan (WMP; Agnico Eagle 2021).

In order to monitor potential erosion and sedimentation, smaller water management infrastructure along the Phase 1 AWAR such as culverts, cross drains, surface runoff and ditches are inspected up to daily during freshet (minimum of weekly), on a monthly basis thereafter and daily after significant rain events. Larger culverts and bridges are inspected more often if they represent a risk for road integrity, for the receiving environment or for the health and safety of workers.

More specifically, the following aspects are monitored during visual inspections:

- Damage to the inlet or outlet of the culvert which may impede flow capacity;
- Bed erosion upstream and downstream of watercourse crossing structures;
- Scour under bridge abutments and abutment foundations;
- Erosion along cutslopes and fillslopes of embankments (rill and gully erosion);
- Blockages within the culvert including snow, ice, debris; and
- Snow cover or snow piles which would prevent routing of water towards the inlet of the culvert (only applicable prior to freshet).

In the case that any of the above conditions are observed, corrective actions will be taken to optimize culvert/water crossing function and integrity.

SECTION 5 • DUST MONITORING

The Dust Management Plan (Agnico Eagle, 2020) addresses in detail the actions that Agnico Eagle takes to suppress dust generated by road traffic during the non-winter months when dust can become an issue.

In general, the amount of dust generated along a road is dependent on the driving surface. Regular grading of the roads combined with the addition of granular material to the driving surface is needed. This improves road safety and reduces the amount of dust generated. Dust is also mitigated by maintaining posted speed limits.

In areas or periods identified by the Agnico Eagle road supervisor as being prone to high dust levels, where safe road visibility is impaired, or in areas where dust deposition could impact fish habitat and/or water quality, the road supervisor arranges mitigation measures as appropriate. This could involve actions such as grading of the road surface, placement of new coarser topping, and/or watering of the road surface. Use of chemical dust suppressants, such as Calcium Chloride, is only used as a last resort and only in accordance with the Guideline for Dust Suppression on Unpaved Roads published by the Government of Nunavut Department of Environment (GN 2014). When water is selected to suppress dust, Agnico Eagle will use it with a greater frequency near critical areas along the roads. Water for dust suppression is sourced from the freshwater intake system, ponded water located along the AWAR, or small ponds proximal to the road. Surface contact water from CP1 is applied as dust suppression within the site surface contact water system catchment.

The Air Quality Monitoring Plan (Agnico Eagle, 2020) outlines the dust monitoring (dustfall) to be carried out throughout all phases of the mine along the AWAR. 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 AWAR.

The Air Quality Monitoring Plan outlines how dust monitoring data helps in verifying if the actual effects from air emissions are less than those predicted in the Final Environmental Impact Statement (FEIS; Agnico Eagle 2014). The data collected provides feedback for continuous improvement in dust mitigation measures. If the dust monitored indicates more dust than expected, adaptive management will be used to understand the reason for the elevated levels and recommend mitigation measures to reduce it. These adaptive management strategies are contained within the Air Quality Monitoring Plan.

SECTION 6 • ROAD FILL MATERIAL

Dispositions related to the road fill material used for the Phase 1 AWAR are described in the Borrow Pits and Quarries Management Plan (Agnico Eagle 2018) and are summarized below.

The construction of the Phase 1 AWAR was completed in 2013. The borrow pits and quarries selected for the road construction and maintenance are immediately next to the road route thereby minimizing the haul distances for road maintenance. Of the borrow pits and quarries selected, only R19 (closed and rehabilitated), Site D (Municipal Borrow Pit) and the proposed Itivia Quarry (being reviewed by NIRB) are located on municipal land; the remainder are located on IOL administered by the Kivalliq Inuit Association (KIA).

Other considerations in the selection of the borrow pits and quarries include: the volume of material available, proximity to receiving waters, acid rock drainage/metal leaching (ARD/ML) potential, archaeological resources in the immediate vicinity, surface area to be disturbed, and wildlife and territorial park concerns (Golder 2011). The goal in selecting the quarries/borrow pits is to avoid or minimize, wherever possible, potential negative effects to the environment.

Initial testing of potential quarry and borrow pit materials was completed in 2010 (Golder 2010) and in 2016 and 2017 for the Itivia Quarry, Rankin Inlet Fuel Farm Quarry, Emulsion Esker and Meliadine Esker quarries. Static methods were used to assess the chemical composition of the potential building material, its potential to generate acid rock drainage (ARD), and its potential to leach metals into the receiving environment upon exposure to ambient conditions.

Sampling and testing prior to use of any quarry or borrow pit significantly reduces the risk of ARD/ML. The quarries and borrow pits selected for road building and maintenance materials showed no potential to generate acid drainage due to the high buffering capacity and low sulphide content in the bedrock and glacial-fluvial deposits. In early testing, some potential quarries/borrow pits were rejected due to potential metal leaching (Golder 2010). Avoiding the use of undesirable or questionable road building materials ranks this mitigation measure as highly beneficial.

Additional measures will be used while the quarries and borrow pits are operational. Visual examinations of the quarry material for sulphur species and additional testing for ARD/ML will be conducted during construction of the roads and pads. As recommended by Price (2009), for every 100,000 tonnes of material removed from a borrow pit or rock quarry, eight samples will be collected for static testing and analysis (ARD/ML). This will include samples of wall rock (Agnico Eagle 2012). If ARD/ML materials are found, these materials will not be used for construction and the area will be covered with a minimum two-meter-thick layer of non-acid generating borrow material to encapsulate it below the active layer.

The same procedures will be used should any new quarry and/or borrow pit be developed.

SECTION 7 • PERMAFROST MONITORING

Measures to prevent permafrost degradation are presented in the Roads Management Plan and are summarized below.

The AWAR has been designed with a minimum fill thickness to maintain permafrost conditions within the subgrade soils. The thermal modelling indicated a minimum road fill thickness of 1 m is required above ice poor subgrade soils to maintain the soil in a frozen condition year-round. Similarly, a minimum road fill thickness of at least 1.3 m is required above ice rich subgrade soils.

To the greatest extent possible, roads are constructed in the winter when the subgrade soils are frozen to prevent insulation of thawed subgrade soils. A rough base is advanced at the full road width so that the base of the roads is laid down in winter frozen ground conditions. The stream crossing culverts are also installed in the winter. Once the rough base and stream culverts were installed, the remainder of the construction was completed by building up the rough base primarily under winter conditions and placing the final topping materials during the spring and early summer.

Mitigation and environmental design features to reduce the potential for permafrost degradation are as follows:

- Road alignments avoid, where possible, fine-grained, poorly drained, ice-rich, frost susceptible soil conditions as noted by geomorphologic mapping, due to their susceptibility to thaw related settlement;
- Regions of high ground relief (higher elevations) are sought to provide better drainage conditions, to minimize the potential for snow drifting on the road and to avoid organic depressions and/or other poor ground conditions, which are more abundant in the low-lying areas;
- Road fill material was placed directly over the existing soil layer without cutting, stripping, or grubbing to avoid disturbing the subgrade soils;
- Thick drifted snow was removed before road fills were placed;
- The road fill thickness was a minimum of 1 m in thaw-stable soils, and 1.3 m in thaw-sensitive soils; and
- Construct access, service, and haul roads in the winter when the subgrade soils are frozen to prevent insulation of thawed subgrade soils, to the greatest extent possible.

The road and its shoulders are inspected weekly (at a minimum) during the summer period (June to August) for evidence of seasonal freeze and thaw adjacent to the toe of the road embankment. Such movements are expected and may lead to longitudinal cracking and thaw settlement especially for portions of the road founded on thaw susceptible (ice rich) soils. When such areas are discovered, the affected area is repaired using granular material and/or crushed rock. Agnico Eagle will maintain stockpiles of such material in select borrow/quarry areas along the road.

SECTION 8 • REFERENCES

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Agnico Eagle, 2021. Meliadine Gold Mine Water Management Plan. Version 11. 6513-MPS-11. August 2021.

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Government of Canada. (2002). Metal and Diamond Mining Effluent Regulations. SOR/2002-222. Minister of Justice of Canada. Last amended on June 10, 2021.

Nunavut Impact Review Board (NIRB). 2019. NIRB Meliadine Gold Mine Project Certificate [NO.: 006] Amendment. February 26, 2019.

Nunavut Water Board (NWB). 2021. Amended Water Licence: No: 2AM-MEL1631. May 13, 2021.

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APPENDIX A • PROTOCOL FOR WILDLIFE ON OR NEAR THE AWAR

The following protocol is implemented on the AWAR for the protection of wildlife:

- Vehicle traffic speeds are limited to 50 km/h;
- Where small to moderate aggregations of caribou (i.e., 1 to 50 animals) are observed within 100 m of a road, travel speeds are reduced to 30 km/h;
- Where large aggregations of caribou (i.e., 50 or more) are observed within 100 m of a road, the protocol outlined in Road Access Management Agreement is followed:
    - During periods when large aggregations of caribou (greater than 50 individuals) are detected within 1 km of the AWAR, the southern gate is closed to public cars and trucks. Public access using ATVs will still be allowed;
    - In consultation with the Kivalliq Wildlife Board (KWB), as required under the Nunavut Wildlife Act, Agnico Eagle will seek the establishment of a no-shooting zone (1 km wide) on either side of the road. If the KWB, other agencies and the public are in agreement, AWAR use by hunters will be conditional on observing the 1 km no-shooting zone;
    - Dedicated 'road monitors' patrol the road to ensure compliance relating to public safety and wildlife. Monitoring is increased during periods of road closure when large aggregations of caribou are present;
    - All incidents of hunting involving shooting along or across the AWAR are reported by the Agnico Eagle to the GN;
    - During periods when large aggregations of caribou are detected near the Mine, harvest monitoring intensity is increased to properly document harvesting levels of caribou.
- Caribou and all wildlife are given right-of-way on the road: vehicles must stop until the animal is off the road;
- Locations of large aggregations of animals are reported to the road supervisor who will inform all potentially affected employees and the environmental representative, and put the protocol in Section 10.2 into effect. Agnico Eagle's environmental coordinator will then inform the KIA, the Hamlet, HTO, and the GN Conservation Officer in Rankin Inlet;
- All incidents between vehicles and wildlife are reported to the Agnico Eagle road supervisor and the environmental representative whether they are:
    - Near-miss;
    - Collision with injury to the wildlife; or
    - Accidental death.
- Each incident is investigated by the road supervisor and the Environment Department, and measures taken to avoid re-occurrence are put in place. Disciplinary measures will be taken against any employee if the investigation concludes that the accident is the result of negligence; and

- In the case of accidental death of an animal, the Environmental Coordinator will contact the GN Conservation Officer in Rankin Inlet. The carcass will be removed from the road and incinerated to avoid attracting scavengers such as Arctic foxes, wolves, grizzly bears, and/or wolverines.