APPENDIX 25 2023 TERRESTRIAL ENVIRONMENT MANAGEMENT AND MONITORING PLAN REPORT

REPORT

Agnico Eagle Mines Limited - Meliadine Division

2023 Terrestrial Environment Management and Monitoring Plan Annual Report

Submitted to:

Agnico Eagle Mines Limited

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Submitted by:

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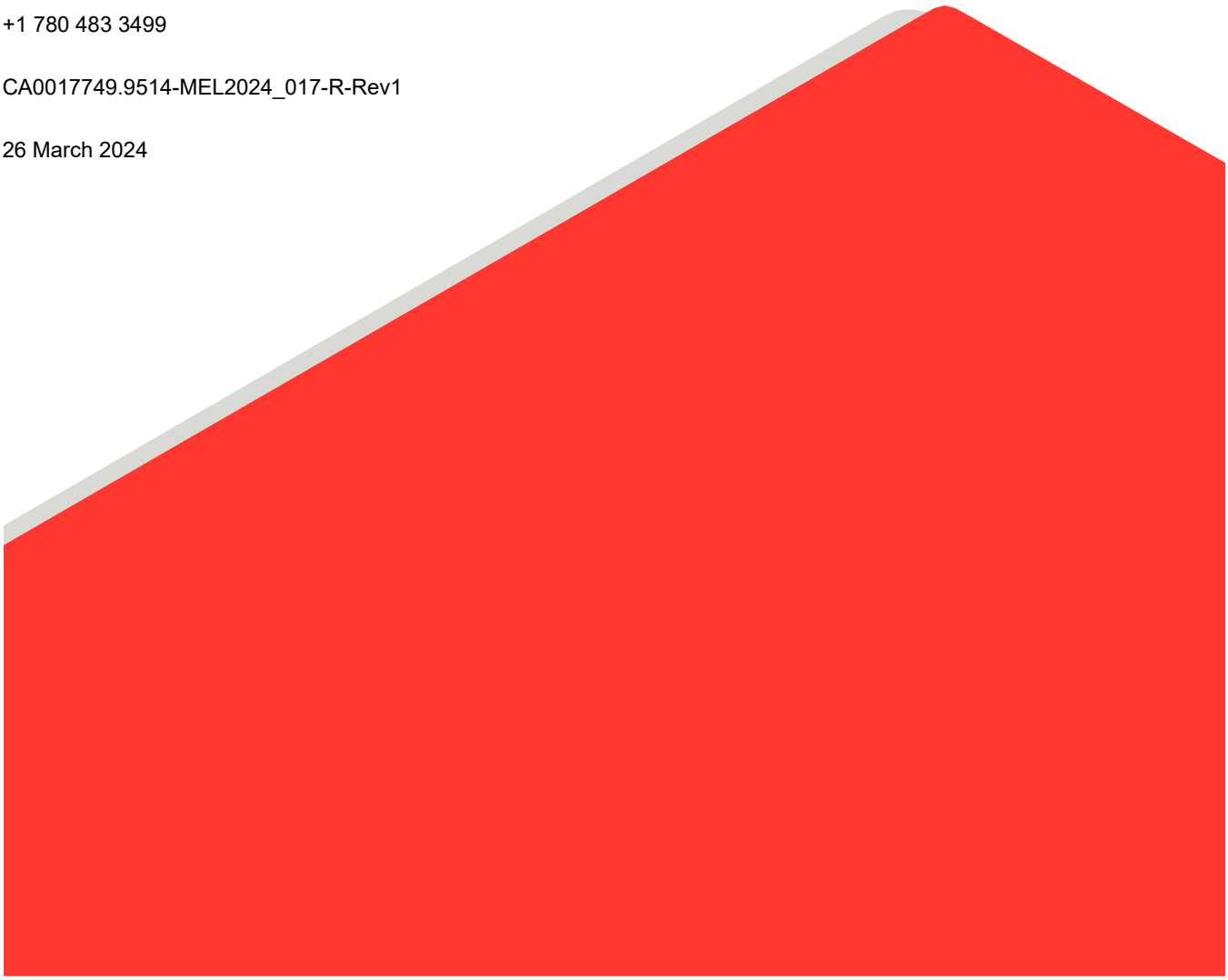

Distribution List

1 Electronic Copy - Agnico Eagle Mines Limited

1 Electronic Copy - Nuqsana Golder

Study Limitations

On behalf of Agnico Eagle Mines Limited (Agnico Eagle), Nuqsana Golder Engineering and Environmental Inc. (Nuqsana Golder) has prepared this Terrestrial Environment Management and Monitoring Plan (TEMMP) Annual Report for the 2023 Monitoring Period at the Meliadine Gold Mine near Rankin Inlet, Nunavut.

This report was prepared, based in part, on information obtained from Agnico Eagle and other external information sources. In preparing the report, WSP has relied in good faith on the information provided. We accept no responsibility for any deficiency or inaccuracy contained in this report because of our reliance on the aforementioned information.

The findings and conclusions documented in this report have been prepared for the specific application to this Project and have been developed in a manner consistent with that level of care normally exercised by environmental professionals currently practicing under similar conditions in the jurisdiction.

With respect to regulatory compliance issues, regulatory statutes are subject to interpretation. These interpretations may change over time and should be reviewed regularly.

If new information is discovered during future work, the conclusions of this report should be re-evaluated, and the report amended, as required, prior to any reliance upon the information presented herein.

Executive Summary

The Agnico Eagle Mines Limited (Agnico Eagle) Meliadine Gold Mine (the Project or the Mine), received a Project Certificate (No. 006) from the Nunavut Impact Review Board (NIRB) in February 2015, and was amended in February 2019 (Amendment No. 001) and in March 2022 (Amendment No. 002). A Terrestrial Environment Management and Monitoring Plan (TEMMP) for the Project was prepared for submission with the Project Final Environmental Impact Statement (FEIS; Golder 2014, 2015) and forms a component of the documentation series produced in accordance with the Project, updated and submitted to the NIRB in April 2022 (TEMMP Version 4; Agnico Eagle 2022b). This report addresses requirements of the Terms and Conditions of the NIRB Project Certificate (No. 006), as relevant to the TEMMP.

The objectives of the TEMMP Annual Report are to summarize annual data collected from wildlife and vegetation monitoring programs, and to describe natural variation and potential Project-related effects to wildlife populations within and adjacent to the Project. The data was collected according to procedures and sampling or monitoring intervals outlined in the Project's Standard Operating Procedures (SOPs) and the TEMMP. The 2023 TEMMP Annual Report describes monitoring objectives and methods, 2023 survey results, mitigation activities, and management recommendations (i.e., adaptive management). The following summary documents monitoring information collected for the 2023 TEMMP for the Meliadine Project located in the Kivalliq Region of Nunavut.

Incorporation of Inuit Qaujimajatuqangit

- In 2023, Inuit Qaujimajatuqangit (IQ) was collected during ten meetings, two site visits, and two cultural activities. Four local field assistants worked on site in 2023.

Direct Habitat Loss

- Direct habitat loss is assessed every three years and was last assessed in 2021. The next assessment is scheduled for 2024.

Indirect Habitat Loss

- Indirect habitat loss for caribou and wildlife habitat (soils and vegetation) is assessed every three years and was last assessed in 2022. The next full assessment is scheduled for 2025.

Soil and Vegetation Monitoring

- Soil and vegetation health monitoring (dust and metals survey) is assessed every three years and was last assessed in 2022. The next full assessment is planned for 2025.

Non-native Plants

- Non-native plant surveys were completed along the AWAR; no non-native plant species were detected.

Environmental Variables

- The maximum annual temperature of 27.0°C was recorded on 5 August 2023 and the minimum annual temperature of -39.8°C was recorded for 4 days in January (27, 28, 29, and 30 January) and for 12 days in February (1, 2, 3, 5, 6, 17, 18, 19, 20, 21, 22, and 23 February) 2023. The mean annual temperature was -7.8°C. Total recorded annual precipitation was 188.8 mm and snowmelt began 8 May 2023 when the average daily air temperature exceeded 0°C. The green-up date for the RSA was estimated between 26 June and 12 July 2023, based on normalized difference vegetation (NDVI) values averaged across the RSA (obtained from MODIS VI satellite).

Birds

Shoreline Surveys

- A total of 36 nests of 13 species were detected in 2023.

Point Counts

- Point count surveys could not be completed in 2023 due to road closures during the post-calving caribou migration. Point count surveys will be conducted in 2024.

PRISM

- Only one PRISM survey plot was completed in 2023 due to road closures during the post-calving caribou migration. PRISM surveys will be continued in 2024.

Raptors

- Arctic Raptors conducted a formal survey and analysis for all known raptor nesting sites in the entire regional study area (RSA) in 2023. The study design included two surveys: one to assess the location of occupied territories during the pre-incubation and incubation periods, and one to assess site productivity during the late brood rearing period. Occupancy models were used to determine influence of disturbance on nest occupancy for peregrine falcons and rough-legged hawks. The analyses did not find an effect of distance to disturbance on nest occupancy for either species.

Pre-Clearance Surveys

- Nests from seven different bird species were observed during pre-clearance surveys. When applicable, a setback perimeter was applied.

Wildlife Observations

Wildlife Sighting/Track Surveys

- Wildlife sighting/track surveys were completed by Agnico Eagle personnel along the All-Weather Access Road (AWAR) and Mine infrastructure throughout the year.
- A total of 8,303 individuals from 16 identified wildlife species and 5 unidentified wildlife species groups (e.g., duck species [spp.], gull spp., loon spp., merganser spp., and ptarmigan spp.) were recorded during surveys along the AWAR in 2023.
- A total of 985 individuals from 12 identified wildlife species and 6 unidentified wildlife species groups (e.g., bird spp., duck spp., gull spp., loon spp., ptarmigan spp., and scaup spp.) were recorded during surveys at Mine infrastructure other than the AWAR in 2023.

Wildlife Incidentals

- There were 142 incidental observations recorded, representing 242 individuals of 14 species and one species group (i.e., duck spp.), around the Mine site (including the camp area) and the AWAR in 2023.

Den Sites

- Surveys were completed for the Project between May and August 2023 to locate dens of Arctic fox, grey wolf, polar bear, grizzly bear, and wolverine.
- Seven historical fox dens were revisited; no sign of activity was observed. A total of four new fox den locations were found in 2023. Of these dens, three were active with Arctic fox and one was active with Arctic ground squirrel (sik sik).

Bird Nests

- Six incidental bird nests were observed on the Mine site or along the AWAR in 2023.

Incidents and Mortalities

- A total of eight mortalities across six different species were reported at the Project from 9 June to 19 September 2023; all of these mortalities were suspected or confirmed to be caused as a direct result of Project activities. No caribou mortalities were reported in 2023.

Wildlife Deterrents

- Wildlife deterrents (i.e., propane cannons and deterrent balloons) were implemented at five locations to deter birds from nesting on site. Active deterrence, including hazing of incidental observations of wildlife, were also completed by environmental technicians; all activities were successful.

Barren-ground Caribou

Caribou Behaviour Monitoring

- Statistical analyses of 2020 to 2023 data found that caribou farther from infrastructure (i.e., greater than 300 m) displayed lower proportions of response behaviours.
- The proportion of response behaviours in caribou groups increased following disturbances, but behaviours usually returned to baseline levels within two sampling periods (i.e., within six minutes).
- Caribou displayed a greater likelihood of walking, alert, or running behaviours in surveys where there were disturbances such as vehicle traffic.

Caribou Remote Camera Study

- Between 2020 and 2023, a study was conducted using motion-triggered cameras to study caribou interactions with the Project infrastructure during their annual migration, focusing on the AWAR.
- The cameras were successful at capturing many caribou crossing the AWAR, with peak caribou passage occurring three weeks earlier in 2023 versus 2022, which was consistent with patterns of inter-annual variability observed in caribou global positioning system (GPS) collar data. Caribou crossing timing and locations in 2023 were consistent with locations identified from 2020 to 2022, and with locations identified by IQ from Inuit Elders and community members.

- Physical attributes of the road did not appear to influence crossing locations. More caribou were observed on cameras on the northern half of the road. Esker material is more common as a substrate on the northern half of the road, which might suggest caribou prefer crossing on esker material. However, it is more likely that this is due to broad scale caribou movement patterns.
- Caribou were detected in the Mine and Discovery areas throughout the study period, with small groups around the mine and larger migratory groups along the proposed Discovery Road.

Collared Caribou Inventory

- Individuals from the Qamanirjuaq herd have been present in the RSA for 16 of the 31 years where collar data are available. Since 2011, collared Qamanirjuaq caribou have typically entered the RSA in late June to mid-July and have remained in the RSA for 1 to 5 days.
- Individuals from the Qamanirjuaq herd have been present in the LSA for 15 of the 31 years where collar data are available. Collared caribou typically enter the LSA in early to mid-July and leave the LSA on the same day; some individuals enter the LSA several times over the course of one summer but remain in the LSA for a day or less during each interaction. The length of time Qamanirjuaq caribou are spending in the LSA has not varied since collared caribou began interacting with the LSA in 2006.
- Fewer than 30% of Qamanirjuaq caribou come within 5 km of the Project and 99% of caribou that came within 5 km of the AWAR or Mine for a specific year remained for less than 24 hours. In consideration of these results, impacts to the Qamanirjuaq herd due to the Project have the potential for limited transboundary effects.

Caribou Advisory

- Surveys to monitor migration of the Qamanirjuaq herd through the Project were performed from 16 January through 23 January and 30 May through 25 July. Closure of the Mine site and/or AWAR was triggered between 20 January and 21 January and between 11 June to 11 July.
- Shutdowns affecting different components of the Mine were implemented to facilitate the safe migration of caribou through the Project. The AWAR was closed for 386 hours across 26 days. Vehicle traffic on site and open pit operations were restricted for 281 hours across 20 days. Activities at the Exploration Camp were restricted for 81 hours across 5 days. Activities at the Main Camp were restricted shutdown for 264 hours across 18 days. Waterline work was cancelled for 296 hours across 28 days.
- Eleven flights were cancelled to mitigate disturbance to caribou on 19, 20, 21, 26, and 27 June as well as 6 and 7 July.

Hunter Harvest

- The 2023 Hunter Harvest Study included 56 participants amongst which 37 reported harvesting caribou. A total of 483 caribou were reported as harvested in 2023.
- A total of 14 muskox, 3 wolverine, and 4 wolves were harvested in 2023. Other reported harvested terrestrial mammals included 1 Arctic hare and 4 polar bears. In the marine environment, beluga (45 individuals) was the most common species harvested followed by ringed seal (29 individuals), bearded seal (5 individuals), narwal (2 individuals), and walrus (2 individuals).
- More birds were harvested by Rankin Inlet participants in 2023 (202 birds) than in 2022 (136 birds), but fewer than in 2021 (394 birds). In 2023, Canada goose and snow goose were harvested at the highest levels and made up 45% of all harvest bird species. Common eider, gull spp., ptarmigan, sandhill crane, northern pintail, and tundra swan were also harvested.
- Arctic char (2,525 fish), lake trout (122 fish), and Arctic cod (54 fish) were the most common species caught by fisherman. Relatively small numbers of Arctic grayling (3 fish), lake whitefish (6 fish), and burbot (1 fish) were caught in 2023.

Table of Contents

TABLES

FIGURES

APPENDICES

Acronyms

Acronym	Full Term
AI	Artificial Intelligence
AIC	Akaike Information Criterion
ATV	All Terrain Vehicle
AWAR	All-Weather Access Road
CCME	Canadian Council of Ministers of the Environment
CESCC	Canadian Endangered Species Conservation Council
ECCC	Environment and Climate Change Canada
ERM	ERM Consultants Canada Ltd.
FEIS	Final Environmental Impact Statement
GIS	Geographic Information System
GLM	Generalized Linear Model
GN	Government of Nunavut
GN DoE	Government of Nunavut Department of Environment
GNWT ENR	Government of Northwest Territories Department of Environment and Natural Resources
GPS	Global Positioning System
HHS	Hunter Harvest Study
HTO	Hunters and Trappers Organization
IOL	Inuit Owned Lands
IQ	Inuit Qaujimajatuqangit
KEAC	Kivalliq Elders Advisory Committee
KHTO	Kangiqliniq Hunters and Trappers Organization
KivIA	Kivalliq Inuit Association
LSA	Local Study Area
MOU	Memorandum of Understanding
N/A	Not Applicable
NIRB	Nunavut Impact Review Board
NRV	Natural Range of Variability
NWMB	Nunavut Wildlife Management Board
PRISM	Program for Regional and International Shorebird Monitoring
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percent Difference
RIBR	Rankin Inlet Bypass Road
RSA	Regional Study Area
SARA	Species At Risk Act
SLRA	Screening Level Risk Assessment
SNU	Statues of Nunavut

Acronym	Full Term
SOP	Standard Operating Procedures
spp.	Species
SQG	Soil Quality Guidelines
UAS	Unmanned aircraft system
UTM	Universal Transverse Mercator
TAG	Terrestrial Advisory Group
TBD	To Be Determined
TEMMP	Terrestrial Environment Management and Monitoring Plan
TEMMP Report	Terrestrial Environment Management and Monitoring Plan Annual Report
TK	Traditional Knowledge
ToR	Terms of Reference
VEC	Valued Ecosystem Component
WRSA	Waste Rock Storage Area
WSP	WSP Canada Inc.

1.0 INTRODUCTION

1.1 Background

The Agnico Eagle Mines Limited (Agnico Eagle) Meliadine Gold Mine (the Project), located in the Kivalliq Region of Nunavut (Figure 1), received a Project Certificate (No. 006) from the Nunavut Impact Review Board (NIRB) in February 2015 (with Amendment 001 in February 2019 for saline discharge activities and with Amendment 002 in March 2022 for saline discharge activities and the Waterlines proposal). The subsequent Water Licence and leases allowed for the construction of a gold mine and ancillary facilities including an All-weather Access Road (AWAR), barge unloading facilities, lay-down area, and a fuel tank farm in Rankin Inlet. A conceptual Terrestrial Environment Management and Monitoring Plan (TEMMP) for the Mine was prepared for submission with the Project Final Environmental Impact Statement (FEIS; Golder 2014, 2015). The TEMMP will be reviewed and updated on an as-needed basis as the Mine proceeds from detailed design and construction through operations, closure, and post-closure. The TEMMP was updated in April 2022 and was issued to the NIRB (TEMMP Version 4; Agnico Eagle 2022b). Version 5 of the TEMMP is currently being drafted and has not yet been issued to the NIRB; as such, Version 4 of the TEMMP (Agnico Eagle 2022b) remained in effect during 2023.

This report addresses requirements of Project Certificate No. 006, which were first included in the 2017 Annual TEMMP Report (Golder 2018) and are listed in Table 1 of this report. The 2023 TEMMP Annual Report (this document) is the sixth of a series of annual TEMMP summary reports for the Mine and captures the fourth year of operations (Mine operations commenced in 2019). The purpose of this report is to summarize the 2023 data collected from wildlife and vegetation monitoring programs, and to describe natural variation and potential Project-related changes in wildlife populations within and adjacent to the Mine. The 2023 Annual Report describes monitoring objectives and methods, annual results, mitigation activities, and management recommendations (i.e., adaptive management). The Mine is anticipated to be operational through to 2027, with closure and post-closure activities continuing until 2037.

1.2 Project Description

The Project is located approximately 25 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 Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1’23.8’’ N, 92°13’6.42"W), on Inuit Owned Lands (IOL).

Mine facilities on surface include a plant site and accommodation buildings, ore stockpiles, a tailings storage facility (TSF), two waste rock storage facilities (WRSFs), an incinerator, landfarms (A and B), a landfill, a water management system that includes collection ponds, water diversion channels, retention dikes/berms, and water treatment plants.

Environmental baseline studies were completed in the Project area prior to Project approval and integrated into the current project design according to the TEMMP (Agnico Eagle 2022b). Vegetation and wildlife Valued Ecosystem Components (VECs) were identified in consultation with regulatory agencies, the Kivalliq Inuit Association (KivIA), and the Kangiqliniq Hunters and Trappers Organization (KHTO). Vegetation VECs include plant populations and communities, listed (rare) plant species, and traditional use plant species. Wildlife VECs include ungulates (caribou [*Rangifer tarandus groenlandicus*] and muskox [*Ovibos moschatus*]), carnivores (grey wolf [*Canis lupus*] and polar bear [*Ursus maritimus*]), raptors, waterbirds, and upland birds (including migratory birds). Further details on VEC selection can be found in the FEIS (Golder 2014) and the TEMMP (Agnico Eagle 2022b).

LEGEND

- MINE INFRASTRUCTURE (2023)
- MINE FOOTPRINT (2023)
- APPROVED PROPOSED TERRESTRIAL LOCAL STUDY AREA (LSA)
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK

0 2,500 5,000

1:125,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE LIMITED.
2. DATUM: NAD83 PROJECTION: UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PROJECT LOCAL STUDY AREA

CONSULTANT

wsp

YYYY-MM-DD	2024-03-20
DESIGNED	JW
PREPARED	CDB
REVIEWED	MB
APPROVED	CDLM

PROJECT NO.	CONTROL	REV.	FIGURE
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1.2.1 Concordance with Terms of Reference

Concordance with Terms and Conditions of NIRB Project Certificate No. 006 (Amendment 2) is reflected in Table 1. NIRB recommends the following related to standardization of data for monitoring programs:

> *"all monitoring plans should be designed so that results from these programs can be coordinated with ongoing regional initiatives or programs with relevant government organizations, or regional authorities." NIRB guidelines, Section 9.3, page 78-79.*
>
> *"When designing data collection or baseline studies, it is recommended that the Proponent coordinate with ongoing programs with relevant developments, government organizations, regional authorities, and researchers. This recommendation applies to data collected for the Nunavut General Monitoring Program (NGMP), as per Article 12 of the Nunavut Land Claims Agreement (NLCA), the Proponent's project-specific monitoring programs, as well as any regional monitoring initiatives in which the Proponent will participate. The Proponent is expected to coordinate on any initiatives undertaken by government organizations in respect to the NGMP and to liaise with the NGMP Secretariat whenever possible." NIRB guidelines, Section 7.7.1, page 40-41.*

Agnico Eagle will comply with these principles and has already established several programs that involve collaborations with regional initiatives and contribute to monitoring cumulative effects. These include:

- **Caribou Collar Program:** Support the Government of Nunavut's (GN) caribou satellite-collaring program for the Qamanirjuaq herd (and other herds in the Kivalliq Region that may interact with the Mine), facilitating monitoring of cumulative effects at the herd level (Agnico Eagle 2022b; Sections 2.2 and 4.7).
- **Regional Muskoxen Surveys:** Agnico Eagle has provided the GN Department of Environment (DoE) with in-kind contributions and support for previous muskoxen surveys and will continue to do so when requested.
- **Hunter Harvest Program:** Agnico Eagle renewed its Collaboration Agreement with the KHTO to develop and implement a methodology to document harvesting around the Meliadine Mine, and to participate in Mine site studies and monitoring. This will contribute to an understanding of cumulative effects by increasing understanding of the regional distribution and seasonality of hunting (Agnico Eagle 2022b; Sections 2.2 and 4.8).
- **Raptor Monitoring Program:** Agnico Eagle, in collaboration with the Arctic Raptor Project, implemented a raptor monitoring program (Agnico Eagle 2022b; Section 4.9). This will directly align monitoring efforts at Meliadine with this long-term regional research program, which involves government, non-government, Indigenous communities, and academic partnerships.
- **Waterfowl and Shorebird Monitoring:** Agnico Eagle, in collaboration with Environment and Climate Change Canada (ECCC), agreed to implement the Program for Regional and International Shorebird Monitoring (PRISM) (Agnico Eagle 2022b; Section 4.11). This will directly align monitoring efforts at Meliadine with other Agnico Eagle properties for waterfowl and shorebirds.
- **Wildlife Surveys**: Agnico Eagle conducts wildlife surveys along the AWAR and around the Mine site with Environmental Technicians (Agnico Eagle 2022b; Section 4.3) and also receives monthly wildlife reports for along the AWAR from KHTO. This will contribute to an understanding of cumulative effects in the region by collecting routine wildlife survey data (including caribou) and assist in anticipating large herd migrations, communicating with the KHTO, KivIA, and managing mine activities during migration events.

Table 1: Concordance Table with Nunavut Impact Review Board Project Certificate No. 006 (Amendment 002) Terms and Conditions

Term	Condition	Annual Report Section
37	The Proponent shall incorporate protocols for monitoring for the potential introduction of invasive vegetation species (e.g., surveys of plant populations in previously disturbed areas) into its Terrestrial Environment and Monitoring Plan. Any introductions of non-indigenous plant species must be promptly reported to the Government of Nunavut Department of Environment (GN DoE).	7.0
38	The Proponent shall conduct sampling to determine baseline levels for metals in soils found in areas with berry-producing plants near the Project area and shall update relevant vegetation sections within the Terrestrial Management and Monitoring Plan to incorporate ongoing monitoring of these parameters prior to commencing operations.	6.0
39	The Proponent shall develop and establish an on-going monitoring program to determine the distribution, abundance, and health of vegetation species used as caribou forage (such as lichens) near Project areas, prior to commencing operations.	5.1, 6.0
40	The Proponent shall review, on an annual basis, all monitoring information and the vegetation mitigation and management plans developed under its Environmental Management Plan and Terrestrial Environment Management and Monitoring Plan (TEMMP) and adjust such plans as may be required to effectively prevent or reduce the potential for significant adverse project effects on vegetation abundance, diversity and health, taking into account lessons learned at other northern mining developments where appropriate.	5.1, 6.0
44	In consultation with the Government of Nunavut (GN) and other relevant parties, such as the Terrestrial Advisory Group, the Proponent shall further develop its Terrestrial Environment Management and Monitoring Plan (TEMMP) to include increased caribou monitoring across the regional study area and additional details on the scope and design of monitoring programs. The Proponent shall also demonstrate consideration for contributing to existing and planned regional monitoring initiatives associated with terrestrial wildlife and wildlife habitat and the incorporation of Inuit Qaujimaningit, Inuit Qaujimajatuqangit, Traditional and Community Knowledge, as appropriate. Monitoring should be adequate to test impact predictions, monitor impact thresholds and trends over time, and to support implementation of mitigation measures as proposed in the Final Environmental Impact Statement and any subsequent Addenda submitted by the Proponent. The Proponent in consultation with the Terrestrial Advisory Group shall revise the 2021 Technical Memorandum entitled “Collared Caribou Meliadine All-Weather Access Road Interactions” describing the crossings and deflections of caribou in relation to the all-weather access road as assessed using caribou collar data and shall provide a copy to the NIRB prior to construction/installation of the waterlines.	3.0
45	The Proponent shall demonstrate consideration for cooperating with existing and planned regional and/or community-based monitoring initiatives associated with terrestrial wildlife and wildlife habitat that produce information pertinent to mitigating project-induced impacts. The Proponent shall give special consideration for supporting regional studies of population health and harvest programs for Qamanirjuaq caribou which help address areas of uncertainty for Project impact predictions.	3.0
46	The Proponent shall update its Terrestrial Environment Management and Monitoring Plan (TEMMP) for the Project to include a detailed harvest study prepared in consultation with the Government of Nunavut (GN) and other affected parties. The design of the harvest study should demonstrate consideration for the following: a. Hiring of a dedicated local survey coordinator through local Hunters and Trappers Organizations (HTOs) and provision of adequate resources for the HTOs to run the program; b. The potential effects on caribou populations and on caribou behaviour resulting from increased human access caused by the all-weather access road and associated roads and trails; and, c. Increasing local knowledge of the project development areas, including establishing baseline harvesting levels prior to unrestricted public access on the all-weather access road.	13.0
47	The Proponent shall share information with the Government of Nunavut (GN) relating to the migration of caribou and include the GN as a party respecting caribou monitoring and movement through Project development areas, including the all-weather access road and associated roads and trails.	12.0
52	The Proponent shall undertake periodic surveys and a habitat assessment for muskoxen in the regional study area by partnering with, or complementing, the existing regional muskox monitoring programs.	11.0
53	Prior to construction of Project infrastructure including the waterlines and Phase 2 of the all-weather access road, the Proponent shall conduct a survey that is sufficient to locate any dens of foxes, bears or wolverines that could be damaged or destroyed during construction or operation of the Project.	9.3
54	The Proponent shall ensure that road safety barriers, or berms, or waterline coverings associated with Project infrastructure, all-weather access road and associated roads/trails and the waterlines are constructed to allow for the safe passage of caribou and other terrestrial wildlife while achieving the objective of separating public road use with Project-related mine traffic or transport of saline effluent.	9.0, 12.4

Table 1: Concordance Table with Nunavut Impact Review Board Project Certificate No. 006 (Amendment 002) Terms and Conditions

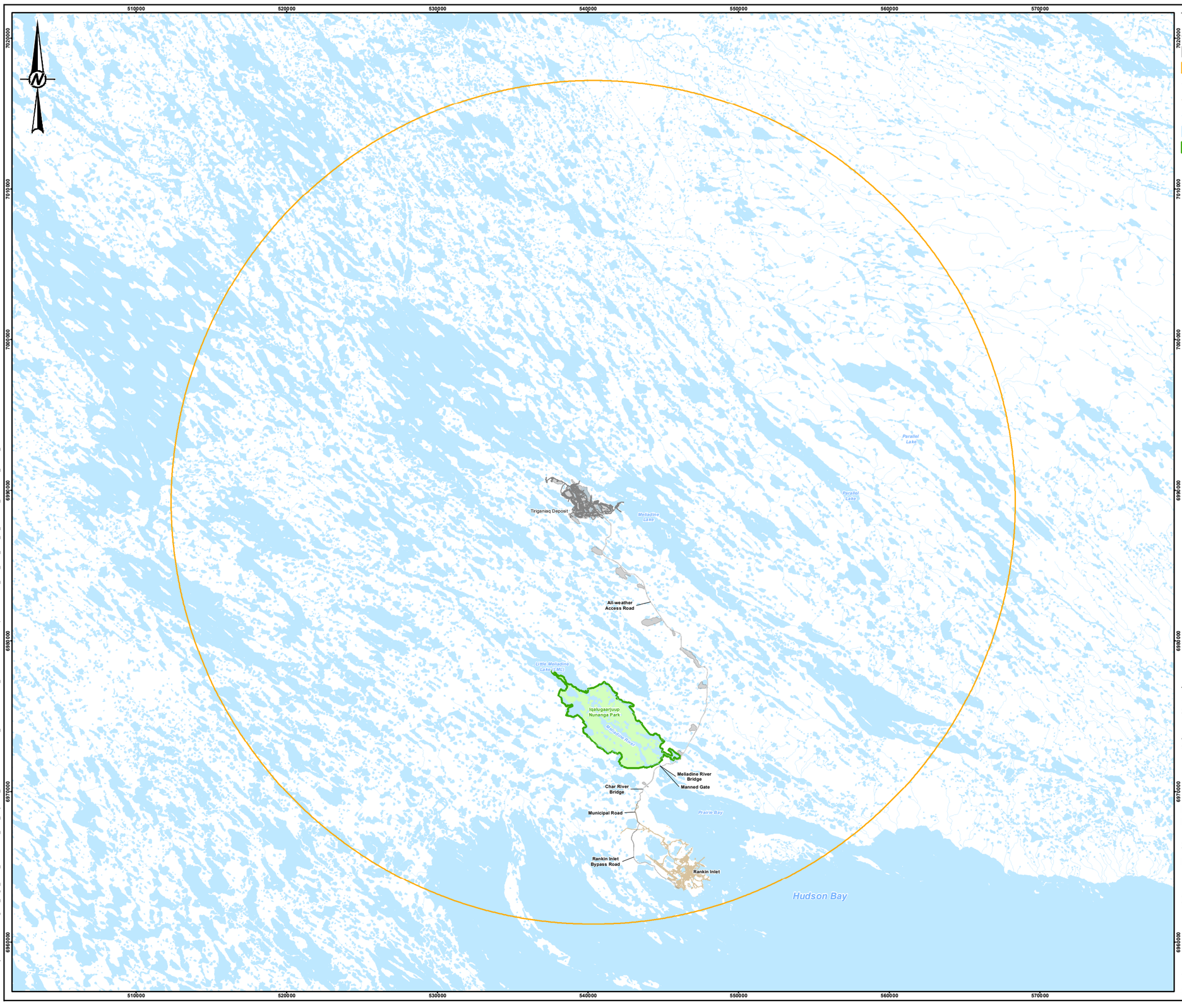
Term	Condition	Annual Report Section
55	In consultation with the Government of Nunavut (GN) and other affected parties, the Proponent shall set thresholds for direct mortality of wolf, grizzly bear, polar bear, wolverine, and fox to ensure monitoring and mitigation for the Project is responsive to undesirable rates of mortality. The Proponent shall reach an agreement with the appropriate Designated Inuit Organization regarding compensation or any direct mortality of wildlife resulting from the Project.	9.5
56	The Proponent shall report annually to the NIRB regarding its terrestrial environment monitoring efforts, with inclusion of the following information: a. Description of all updates to terrestrial ecosystem baseline data; b. A description of the involvement of Inuit in its monitoring programs; c. A detailed presentation and analysis of the distribution relative to Project infrastructure and activities for caribou and other terrestrial mammals observed during surveys and incidental sightings; d. Results of the annual monitoring program, including field methodologies and statistical approaches used to support conclusions drawn; and, e. An assessment and presentation of annual environmental conditions including timing of snowmelt, green-up, as well as standard weather summaries.	1.2.1, 3.0, and 4.0, 9.0, and 12.0
57	Within its annual report to the NIRB, the Proponent shall incorporate a review section which includes: a. An examination for trends in the measured natural variability of Valued Ecosystem Components in the region relative to the baseline reporting; b. A detailed analysis of wildlife responses to operations with emphasis on wildlife behaviour, mortalities and displacements (if any), responses to operations of the all-weather access road and associated access roads/trails, and the waterlines; c. A demonstration and description of how the monitoring results, including the all-weather access road and associated access roads/trails, and waterlines contribute to cumulative effects of the project; and, d. Any proposed changes to the monitoring survey methodologies, statistical approaches or proposed adaptive management stemming from the results of the monitoring program.	8.1, 8.2, 9.1, and 12.1
59	If Species at Risk or their nests and eggs are encountered during Project activities or monitoring programs, the primary mitigation measure must be avoidance. The Proponent shall establish clear zones of avoidance based on the species-specific nest setback distances outlined in the Terrestrial Environment Management and Monitoring Plan.	9.4
61	Prior to bird breeding season, the Proponent shall either conduct clearing activities or identify and install nesting deterrents (e.g., flagging) to discourage birds from nesting in areas likely to be disturbed by construction/clearing activities. If clearing is to take place during the nesting season, a nest survey should take place to identify nests and any identified nests must remain undisturbed until the young have fledged or left the nest. Any nests identified shall be included as part of the annual reporting for the Terrestrial Environmental Management and Monitoring Plan (TEMMP).	8.4, 10.0
62	The Proponent shall protect any nests found (or indicated nests) with a buffer zone determined by the setback distances outlined in its Terrestrial Environment Management and Monitoring Plan (TEMMP), until the young have fledged. If it is determined that observance of these setbacks is not feasible, the Proponent will develop nest-specific guidelines and procedures to ensure bird's nests and their young are protected.	9.4,10.0
71	The Proponent shall develop detailed and robust mitigation and monitoring plans for migratory birds, reflecting input from relevant agencies, the Kivalliq Inuit Association and communities.	8.0
72	The Proponent shall continue to develop and update relevant monitoring and management plans for migratory birds under the Proponent's Environmental Protection Plan and Terrestrial Environment Management and Monitoring Plan (TEMMP) prior to construction. The key indicators for follow up monitoring under this plan will include upland birds (including migratory birds), waterbirds, raptors, and seabirds including migration and wintering.	8.0
73	The Proponent's monitoring program shall assess and report, on annual basis, the extent of terrestrial habitat loss due to the Project to verify impact predictions and provide updated estimates of the total Project footprint.	5.1
74	The Proponent's Terrestrial Management and Monitoring Plan (TEMMP) shall include mitigation measures implemented to prevent the use of water attenuation ponds by waterfowl and waterbirds and monitoring that assesses whether the mitigation measures are working or revised, or further deterrent measures are required.	8.0, 10.0
75	The Proponent shall implement mitigation measures and monitoring programs to limit the attraction of predators and scavengers to Project facilities in the TEMMP and other plans such as the Landfill and Waste Management Plan as appropriate.	9.1, 9.2, 9.5,10.0
105	The Proponent is strongly encouraged to consider incorporating information obtained from local outfitting and guiding businesses into its Hunter Harvest Survey where possible, and to include these organizations as potential respondents to surveys undertaken.	13.0

Table 1: Concordance Table with Nunavut Impact Review Board Project Certificate No. 006 (Amendment 002) Terms and Conditions

Term	Condition	Annual Report Section
118	The Proponent shall include in an updated Terrestrial Wildlife Management and Monitoring Plan (TEMMP), plans for increased caribou monitoring efforts including weekly winter track surveying and summer and fall surveys undertaken on foot twice per month. These results shall be reported to the NIRB with the Proponent's annual reporting requirements. The Proponent shall, in consultation with the Terrestrial Advisory Group or appropriate parties, develop a decision tree outlining mitigation and monitoring steps to be implemented when caribou in specified group sizes are observed within specified distances of the Project's AWAR and waterlines.	TEMMP (Agnico Eagle 2022b, Section 3.1.8, 4.2, 4.3, 4.4, 5.0 and Appendix II) 9.1, 12.5
119	The Proponent shall include within its updated Terrestrial Wildlife Management and Monitoring Plan (TEMMP), a commitment to establishing deterrents along the all-weather access road (AWAR) at any areas where it is observed that caribou are attracted to the AWAR and their presence may present a risk of collisions with traffic along the AWAR (such as areas where caribou are utilizing the AWAR to facilitate movement, areas where caribou may be licking minerals/road salt from the road, areas where caribou are gathering to avoid insects, etc.). Prior to the waterlines becoming operational, the Proponent shall specify within the TEMMP and/or Spill Contingency Plan measures that will be implemented to prevent caribou from accessing or being exposed to water spilled, or otherwise released from the waterlines.	TEMMP (Agnico Eagle 2022b, Appendix II and Appendix III)
132	The Proponent shall, in consultation with the groups listed as Responsible Parties above, and any other parties considered by the Group to be necessary, establish a Terrestrial Advisory Group (TAG). The TAG shall hold its first meeting prior to any construction/installation of the waterlines. The central mandate of the TAG will be to continually review and refine impact management, mitigation, and monitoring details within the Terrestrial Environment Management and Monitoring Plan (TEMMP). The TAG Members will collaborate to share and consider methods, results, and analysis from caribou and terrestrial environment studies and monitoring Inuit Qaujimaningit, Inuit Qaujimajatuqangit, Traditional and Community Knowledge shared by knowledge holders, and other terrestrial environment monitoring data as it becomes available. The Proponent will consider the information shared by the TAG Members for incorporation into the Project's impact management, mitigation, and monitoring measures related to the protection of terrestrial wildlife and wildlife habitat as appropriate. Agnico Eagle shall be responsible for demonstrating how the information shared and considered by the TAG has been incorporated into the Project's impact management, mitigation, and monitoring measures related to the protection of terrestrial wildlife and wildlife habitat as appropriate.	3.0

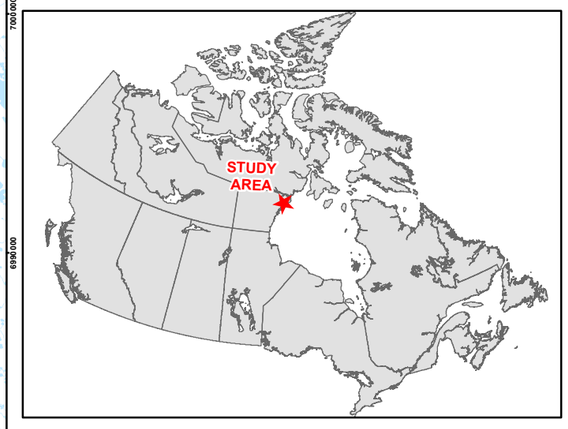
1.3 Study Area Boundaries

The Local Study Area (LSA) includes a 500-m buffer around the Project footprint and includes a 1,000-m buffer around the AWAR and the Rankin Inlet Bypass Road. The total area of the LSA is 10,598 hectares (ha) (Figure 1). The Regional Study Area (RSA) encompasses an area that includes a 28-km radius centered around the Project, including Rankin Inlet, for a total area of 246,300 ha (Figure 2). Further details on the justification for study area sizes can be found in the FEIS (Golder 2014) and the TEMMP (Agnico Eagle 2022b).



LEGEND

- MINE INFRASTRUCTURE (2023)
- MINE FOOTPRINT (2023)
- REGIONAL STUDY AREA (RSA)
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK



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REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE LIMITED.
2. DATUM: NAD83 PROJECTION: UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PROJECT REGIONAL STUDY AREA

CONSULTANT

wsp

YYYY-MM-DD	2024-03-20
DESIGNED	JW
PREPARED	CDB
REVIEWED	MB
APPROVED	CDLM

PROJECT NO.	CONTROL	REV.	FIGURE
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1.4 Monitoring Approach

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 is adapted to meet the objectives of the management strategy and methods set out in the TEMMP (Agnico Eagle 2022b), as required. Monitoring programs evaluate the effectiveness of mitigation measures and assess Project-related effects 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. Outcomes of adaptive management may include increasing, decreasing, or no change to mitigation and/or monitoring, or implementing special studies to further understand Mine-related effects.

To evaluate the accuracy of effects predictions, a series of quantitative monitoring indicators have been developed within the broad categories of habitat distribution, wildlife distribution, wildlife richness, wildlife diversity, wildlife abundance, and environmental health. Previous monitoring was conducted during the construction phase and continued into the operations phase. Some of the objectives below may not be answered at this time or will be addressed qualitatively until more data under operations is obtained.

1.5 Objectives

The primary objectives of this 2023 TEMMP Annual Report include:

- Collecting information that will assist Agnico Eagle to determine if there are effects on the terrestrial environment and if these effects were accurately predicted in the FEIS.
- Reporting the results of the 2023 monitoring programs.
- Summarizing the monitoring strategy implemented over the course of the year.
- Evaluating the function and validity of implemented monitoring strategies.
- Summarizing adaptive management strategies.
- Providing management recommendations for 2024.
- Allowing regulators to contribute advice for improving monitoring and management.

1.6 Report Organization

Within each section of this report, data is presented that will be tracked over the life of the Project. Recommendations for enhancement to the TEMMP are presented at the end of each section for consideration and may be incorporated into the TEMMP for subsequent years. The TEMMP is an evolving program that will reflect recommendations during previous years, as well as advances in Project development. Changes will be captured in future revisions of the TEMMP, as needed.

2.0 REVIEW OF IMPACT PREDICTIONS

A summary of the impact predictions proposed in the updated TEMMP (Agnico Eagle 2022b) is provided in Table 2. If Project impacts exceed the thresholds, an internal review of mitigation is triggered and adaptive management is implemented where applicable. The corresponding sections of this TEMMP Annual Report, where monitoring indicators are discussed, are listed.

Table 2: Summary of Predicted Effects, and Accuracy of Impact Predictions

Monitoring Indicator	Proposed Thresholds	Surveyed in 2023?	Exceeded in 2023?	Monitoring Methods	Frequency of Data Collection	Annual Report Section Reference
Vegetation (Wildlife Habitat)						
Habitat Loss	No greater than: Terrestrial – 2,951 ha Aquatic – 515 ha	No	N/A	Aerial photographs, satellite imagery, ground surveys, GIS analysis	Every 3 Years	5.0
Habitat Degradation by Contamination	No effects to plant health from dust deposition SLRA – TBD	No	N/A	Vegetation and Soil Samples	Every 3 Years	6.0
Habitat Reclamation following Mine Closure	N/A	No	N/A	Ground Surveys, Vegetation Plots, Mapping	Once pre-construction baseline (2017) and 3 times Post-Closure	N/A
Habitat Degradation by Contamination	No non-native plant species established	No	No	Invasive Plant Survey of AWAR	Annually	7.0
Ungulates						
Habitat Loss and Degradation	No greater than 2,951 ha of terrestrial habitat loss	No	N/A	Aerial photographs, satellite imagery, ground surveys, GIS analysis	Every 3 Years	5.0
Sensory Disturbance	<10% caribou deflections from AWAR	No	N/A	Caribou satellite collar data	Daily / Weekly	N/A
Vehicle Collisions	No more than 1 ungulate/year	Yes	No	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	Daily	9.5
Hunting by Rankin Inlet Residents	TBD after 3 years of data collection, in collaboration with the GN[(a)]	Yes	TBD	Hunter Harvest Study	Collected throughout the year and reported annually	13.0
Other Project-related Mortality	No more than 1 ungulate/year	Yes	No	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	Daily	9.5
Exposure to Contaminated Water or Vegetation	SLRA – TBD	No	N/A	Vegetation and Soil Samples	Every 3 Years	6.0

Table 2: Summary of Predicted Effects, and Accuracy of Impact Predictions

Monitoring Indicator	Proposed Thresholds	Surveyed in 2023?	Exceeded in 2023?	Monitoring Methods	Frequency of Data Collection	Annual Report Section Reference
Predatory Mammals						
Project-related Mortality	20 Arctic fox/year	Yes	No	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance.	Daily	9.5
Raptors						
Disturbance of Nesting Raptors	To be determined in consultation with GN and Alastair Franke, related to occupancy and productivity.	Yes	No	Active Nest Monitoring	Nests within 200 m – Daily Nests from 200 to 1,000 m – Weekly	8.2
Project-related Mortality	No more than 1 raptor/year	Yes	No	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	Mine Site-Daily AWAR – 2x/Week	9.5
Waterbirds						
Habitat Loss and Degradation	No more than 515 ha of aquatic habitat	No	N/A	Aerial photographs, satellite imagery, ground surveys, GIS analysis	Every 3 Years	5.0
Disturbance of Nesting Waterfowl	TBD once NRV is established through consultation with ECCC and GN	No	N/A	Shoreline Surveys	Annually	9.4
Exposure to Contaminated Water or Vegetation	SLRA – TBD	No	N/A	Vegetation and Soil Samples	Every 3 Years	6.0
Project-related Mortality	No more than 1 waterbird/year	Yes	No	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	Mine Site-Daily AWAR – 2x/Week	9.5

Table 2: Summary of Predicted Effects, and Accuracy of Impact Predictions

Monitoring Indicator	Proposed Thresholds	Surveyed in 2023?	Exceeded in 2023?	Monitoring Methods	Frequency of Data Collection	Annual Report Section Reference
Other Breeding Birds						
Habitat Loss and Degradation	No greater than 2,951 ha of terrestrial habitat loss	No	N/A	Aerial photographs, satellite imagery, ground surveys, GIS analysis	Every 3 Years	5.0
Exposure to Contaminated Water or Vegetation	SLRA – TBD	No	N/A	Vegetation and Soil Samples	Every 3 Years	6.0
Changes in Breeding Bird Populations	TBD once NRV is established through consultation with ECCC	No	N/A	Breeding Bird Plots and Transects, PRISM	Breeding Bird – Every 3 Years PRISM – Plots surveyed over 2 years every 5 Years	8.0

Notes: AWAR = All-Weather Access Road; ECCC = Environment and Climate Change Canada; GN = Government of Nunavut Department of Environment; NRV = Natural Range of Variability; PRISM – Program for Regional and International Shorebird Monitoring; SLRA = Screening Level Risk Assessment; TEMMP = Terrestrial Environment Management and Monitoring Plan (Agnico Eagle 2022b); ha = hectares; m = metres; N/A = not applicable; TBD = to be determined.

(a) Proposed thresholds will be established in collaboration with the GN and other relevant parties, such as TAG members.

3.0 INCORPORATION OF INUIT QUAJIMAJATUQANGIT

In 2021, Agnico Eagle established the Kivalliq Inuit Elders Advisory Committee (KEAC), which is a group that provides invaluable guidance to Nunavummiut and Nunavut operations teams. Comprised of 21 Elders from the communities of Baker Lake, Chesterfield Inlet, Rankin Inlet, Whale Cove, and Arviat, the KEAC keeps local communities informed about Agnico Eagle's mining activities and future plans, and also provides Inuit Qaujimajatuqangit (IQ), a body of Inuit traditional knowledge, Inuit Societal Values (ISV), and a set of guiding community principles. Agnico Eagle acknowledges that IQ is continually learnt and continues to glean IQ from the KEAC through various conversations related to the Meliadine Mine. A Terrestrial Advisory Group (TAG) was formed in 2022 and formalized via creation of the Terms of Reference in 2023 as a collaborative forum to discuss the application of IQ, Traditional Knowledge (TK), and western science to mitigation and monitoring programs for caribou movement in the Project area.

In 2023, IQ was collected during ten meetings, two site visits, and two cultural activities with the KEAC, between March and November (Table 3). Field programs were guided by IQ, including from local field assistants whenever possible. Four local field assistants worked on site in 2023.

Table 3: Inuit Qaujimajatuqangit captured for Meliadine in 2023

Month	Topic	Participants	Venue	Inuit Qaujimajatuqangit
February	Mental health and cultural counselling at Meadowbank Complex and Meliadine Mine sites (cultural activity)	▪ Elders ▪ Agnico Eagle employees	Meadowbank Complex and Meliadine mine sites	▪ Through discussions with the Committee, Agnico Eagle came to recognize the need for more mental health and cultural counselling tailored to Inuit employees. At the end of February, Agnico Eagle hosted Elders from Baker Lake and Rankin Inlet, who visited the Meadowbank Complex and Meliadine mine sites to provide mental health and cultural counselling to employees through appointment and walk-in sessions.
March	International Women's Day Conference (cultural activity)	▪ Mrs. Rosie Oolooyuk ▪ Agnico Eagle employees	Meliadine Mine	▪ On March 8, to celebrate International Women's Day, Agnico Eagle hosted a conference featuring Mrs. Rosie Oolooyuk, an Elder from Rankin Inlet, who shared some of her knowledge and life experience with Meliadine Mine employees.
March	General update for members	▪ Annual Executive Members	Rankin Inlet	▪ The KEAC gained a better understanding of employment and recruitment initiatives done through the Sanajiksanut program. ▪ During discussion on the importance of green energies, Elders mentioned interest to join the Raglan Mine Windfarm site visit.
May	Overview of Water Management at the Meliadine Mine site	▪ Meliadine Environment Staff ▪ KEAC Members	Rankin Inlet	▪ Agnico Eagle provided an overview of Water Management at the Meliadine Mine site. The meeting included a site visit of water management infrastructure, as well as tea tasting. ▪ The KEAC recommended that Agnico Eagle investigate why the tea colour changes from time to time.

Table 3: Inuit Qaujimajatuqangit captured for Meliadine in 2023

Month	Topic	Participants	Venue	Inuit Qaujimajatuqangit
June	Annual General Meeting	▪ KEAC Members	Rankin Inlet	▪ Validated that snow bridges could be installed. ▪ Presentation of Cyanide transportation and shipping ▪ Review of IQ collection.
June	Raglan Mine Windfarm Visit	▪ KEAC Members ▪ Agnico Eagle staff from various departments ▪	Raglan Mine Windfarm (site visit)	▪ The purpose was to visit a windfarm in similar conditions to Meliadine Mine, which would provide valuable knowledge for all parties involved in the Meliadine Extension regulatory process (now withdrawn). ▪ Questions from participants were answered during the site visit.
August	Tea Color Activity	▪ KEAC Members ▪ Agnico Eagle Permitting and Environment staff	Rankin Inlet	▪ Following the May recommendation from the Committee, Agnico Eagle hosted a water and tea colour activity to discuss water chemistry through interaction with tea leaves. ▪ An experiment was designed along with a botanical expert to better understand the chemical interaction between different water sources (tap water, bottled water, and lake water) and tea leaves. Participants enjoyed the activity and reported a better understanding of how tea infusion colour may differ from time to time.
October (three meetings)	Winter Travel Routes	▪ KEAC Members	Baker Lake	▪ The Elders have identified that important winter travel routes were in the vicinity of the Meadowbank Complex. They suggested that the routes should be marked between Baker Lake, Garry Lake, Back River, and Gjoa Haven and mark historic camp sites and graves around camping locations. ▪ The Baker Lake Kivalliq Advisory Group members started discussing the routes and concluded that a subsequent meeting should be organized with a blank map to mark traditional winter travel information.
November	Agnico's Reconciliation Action Plan	▪ KEAC Members	Rankin Inlet	▪ The purpose was to discuss Agnico's Reconciliation Action Plan. ▪ A focus was placed on encouraging the younger generation to work with Agnico Eagle.
November (three meetings)	Winter Trail Mapping from Baker Lake to Gjoa Haven	▪ KEAC Members	Baker Lake	▪ Elders have identified that the winter travel routes between Baker Lake, Garry Lake, Back River, and Gjoa Haven are of high cultural value and wanted to mark historic camp sites and graves around camping locations on a blank map. ▪ Elders marked on a map culturally important area related to winter travel routes.

Notes: IQ= Inuit Qaujimajatuqangit; KEAC = Kivalliq Elders Advisory Committee.

4.0 ENVIRONMENTAL VARIABLES

A summary of climate conditions collected on site in 2023 are presented in Table 4. Data was collected from 1 January to 31 December 2023 through the on-site meteorological station and rain gauges.

Table 4: Climate Conditions Recorded in the Project Area (2023)

Environmental Variable	Value[(a)]
Temperature (°C)	
Mean Annual Temperature	-7.8
Maximum Annual Temperature	27.0
Minimum Annual Temperature	-39.8
Precipitation (mm)	
Total Annual Precipitation	188.8[(b)]

Notes: °C = Celsius; mm = millimetre.

(a) Values reported from 1 January to 31 December, collected by Agnico Eagle staff from the on-site weather station. Weather data is missing for some dates due to issues encountered with the weather station (e.g., weather station damaged from lightning strike).

(b) Measured using Geonor Precipitation Gauge.

The maximum annual temperature of 27.0°C was recorded on 5 August 2023 and the minimum annual temperature of -39.8°C was recorded for 4 days in January (27, 28, 29, and 30 January) and for 12 days in February (1, 2, 3, 5, 6, 17, 18, 19, 20, 21, 22, and 23 February) 2023. The mean annual temperature was -7.8°C (Table 4). Total recorded annual precipitation was 188.8 mm and snowmelt began 8 May 2023 when the average daily air temperature exceeded 0°C. Total precipitation includes both rain and snowfall. The green-up date for the RSA was estimated between 26 June and 12 July 2023, based on normalized difference vegetation (NDVI) values averaged across the RSA (obtained from MODIS VI satellite). Environmental variables will continue to be monitored on an on-going basis.

5.0 HABITAT LOSS

5.1 Direct Habitat Loss

The vegetation component of the TEMMP (Agnico Eagle 2022b) outlines how Agnico Eagle plans to reduce Project-related effects to vegetation populations and communities and, consequently, wildlife habitat. The monitoring plan includes both environmental and follow-up monitoring. The objective of this component of the TEMMP Annual Report is to determine if direct vegetation/habitat loss due to the Project footprint stays within impact prediction of 2,951 ha (Golder 2014).

Direct habitat loss was reported in the 2021 TEMMP Annual Report (Agnico Eagle 2022a). As of January 2022, a total area of 633 ha has been altered due to Project construction, representing 38% of the 2012 Project Approved footprint (1,682 ha) and 21% of the predicted Project Footprint (2,951 ha; Golder 2014). The footprint that was analyzed included all developments being completed as part of the construction phase. Follow-up monitoring occurs at three-year intervals, with the next scheduled for 2024. The follow-up monitoring is used to provide feedback to Mine operations to determine if the goals and objectives are being met. Depending on the results, actions may be considered such as modifying and/or implementing additional mitigation.

5.2 Indirect Habitat Loss

Indirect effects to wildlife are associated with changes in habitat that can alter the movement and behaviour of individuals in the vicinity of the Project as a result of sensory disturbance. Indirect effects are addressed through several of the monitoring programs per the TEMMP.

Caribou behaviour monitoring is presented in Section 12.1 of this report. Across all years studied (i.e., 2020, 2021, 2022, and 2023), caribou groups tended to show greater response behaviours (i.e., running, alert) when in smaller groups or within 300 m of a road (ERM 2024a).

For nesting birds, site-specific nest management plans may be required if birds are within the Project footprint.

Indirect Project effects are assessed through soils and vegetation monitoring every three years, to align sampling years with the first year of construction in 2017. Soil and vegetation monitoring were last completed in 2019 and in 2022; the next full assessment is scheduled for 2025.

6.0 SOIL AND VEGETATION MONITORING

The scope of the landscape component of the TEMMP Annual Report is to report on levels of metals in berry producing plants, sedges, lichen, and soil chemistry potentially affected by the Mine. To evaluate the potential for adverse health effects to terrestrial life associated with changes in environmental quality due to chemical releases from the Project, the existing (or baseline) conditions of the environment must first be understood. Soil and vegetation monitoring was first conducted in 2017 to inform the baseline conditions. Monitoring is completed on a three-year interval, first initiated in 2019 (first year of operations). The last soil and vegetation assessment was completed in 2022 (Agnico Eagle 2023); the next complete soil and vegetation assessment is expected in 2025.

Local vegetation cover is predominantly characterized by heath tundra, and lichen-heath communities. Low-lying areas between the drumlins and eskers are dominated by sedge wetlands, shallow ponds, and various shallow and deep-water lakes. The main change from the Mine on the landscape is direct disturbance, which will be a long-term effect as the recovery of vegetation is slow in Arctic environments (Burt 1997).

7.0 NON-NATIVE PLANT SURVEYS

The spread of non-native species across the landscape is a concern for the Inuit. Construction equipment and operation activities can result in the introduction of, or spread of, non-native vegetation species. Thus, Project Certificate No. 006 includes T&C 36 and 37 to prevent and minimize the introduction of non-native plants during pre-construction, construction, operations, temporary closure and maintenance, closure and post-closure. Pre-construction surveys were completed during the baseline studies completed during 1998, 2008, and 2009 surveys (Volume 6, SD 6-5; Golder 2014).

This section includes the methods, results, and mitigation measures to minimize the spread of non-native invasive plant species resulting from Mine activities. The GN and ECCC define a non-native species as ‘an organism that is not normally found in a region’ (CESCC 2010). Additionally, according to Section 91 of *The Wildlife Act*, Statues of Nunavut (SNU) 2003, c 26, invasive species shall not be released into a habitat in which that species does not belong or never naturally occurred. Any introductions of non-native plant species must be promptly reported to the GN DoE. Non-native plant monitoring surveys occurred in 2018 prior to Mine operations initiation and in 2019, when Mine operations commenced.

7.1 Methods

Non-native plant surveys were completed along the length of the AWAR from 21 to 28 August 2023 (Figure 3; ERM 2024c). The AWAR was divided into 91 segments, which were surveyed from vehicles travelling at approximately 3 km/hr. A 10-m buffer was assessed during road surveys. Every third segment was surveyed on foot to ensure there were no discrepancies in detection rates between foot and vehicle survey types. Data collection was completed using ArcGIS Field Maps and Survey123. Survey123 forms were informed by Invasives BC (formally Invasive Alien Plant Program [IAPP]) standard data fields and included the following fields:

- Species and location
- Abundance (i.e., percent cover) in grid cell
- Distribution in grid cell
- Density per patch
- Life stage/phenology

7.2 Results

There were no non-native invasive species detected along the AWAR in 2023 (ERM 2024c).

7.3 Mitigation

The 2023 survey was the fifth consecutive year of non-native species monitoring for Meliadine since operations commenced.

The early detection of non-native invasive plant species is important, as preventing these species from becoming established is the most effective mitigation that can be employed. Invasive plants identified as a concern by the GN DoE will be reported to the GN, including location of the species (i.e., global positioning system [GPS] coordinates and map), species identification and photographs of the species in question.

In addition, due to the early detection of non-native invasive species, the following mitigation measures have been implemented by Agnico Eagle during Project operation, per the TEMMP (Agnico Eagle 2022b):

- Where possible, utilize existing access trails and roads.
- Limit the width of access roads and the size of workspaces.

  Inspect and clean new equipment arriving to site from the ship loading area prior to entering the Project area. Shipping inspection sheets from 2023 are provided in Appendix A.
- Complete non-native invasive plant monitoring surveys every year during operations to identify problem areas. Surveys should be targeted for areas with a high potential of occurrence such as along the AWAR, Project footprint, and ship loading areas.

7.4 Accuracy of Impact Predictions

No non-native invasive plant species occurrences were observed in the Project Area. A summary of the effects predictions proposed in the TEMMP (Agnico Eagle 2022b) is provided in Table 5. Specific thresholds for vegetation and wildlife habitat monitoring are outlined in Table 5.

Table 5: Accuracy of Effects Predictions – Vegetation

Monitoring Indicators	Threshold	Exceeded in 2022?	Adaptive Management	Monitoring Method	TEMMP* Section
Habitat Degradation by Contamination	No non-native invasive plant species established	No	See Section 7.3	Non-native invasive Plant Survey of AWAR, and Project site	7.0
Habitat Reclamation following Project Closure	N/A	N/A	Not Currently Identified	Ground Surveys, Vegetation Plots, Mapping	5.0

TEMMP = Terrestrial Environment Management and Monitoring Plan (Agnico Eagle 2022b), AWAR = All-weather Access Road.

7.5 Recommendations

The CESCC (2010; Appendix B) has developed posters that show non-native species and invasive species in Nunavut. These can continue to be easily displayed at the Mine site and incorporated into on-boarding materials. If any non-native and invasive species are incidentally observed on site, they should be eradicated through mechanical control such as hand pulling, as practical for the terrain on site. If hand pulling with a shovel, the plant material should be collected in bags and disposed of at an offsite location. A vegetation ecologist should be consulted prior to removal. Chemical herbicide treatments are not recommended to be used at this point as the native vegetation/habits in the tundra are very sensitive to impacts.

LEGEND

- KM MARKER
- MINE INFRASTRUCTURE (2023)
- MINE FOOTPRINT (2023)
- APPROVED PROPOSED TERRESTRIAL LOCAL STUDY AREA (LSA)
- COMPLETED NON-NATIVE PLANT SURVEY
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK

0 2,500 5,000

1:125,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE LIMITED.
2. DATUM: NAD83 PROJECTION: UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

NON-NATIVE PLANT SURVEYS CONDUCTED ALONG ALL-WEATHER ACCESS ROAD IN 2023

CONSULTANT

wsp

YYYY-MM-DD	2024-03-21
DESIGNED	MB
PREPARED	CDB
REVIEWED	MB
APPROVED	CDLM

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8.0 BIRDS

Three survey methods were employed in 2023 for monitoring waterfowl, waterbirds, and upland birds: shoreline surveys, PRISM surveys, and pre-clearance surveys. Due to road closures during post-calving caribou migration between 15 and 30 June 2023, point count surveys could not be completed. Further, only one PRISM plot could be completed. As caribou moved out of the Mine area by the end of June, it was possible to complete most of the waterbird shoreline surveys. The following sections are a summary of the 2023 Bird Surveys and PRISM Plots Summary Report (Appendix C; Agnico Eagle 2024a). The Arctic Raptors Research Program is described in Section 8.3.

8.1 Shoreline Surveys

8.1.1 Methods

The shorelines of all waterbodies within 200 m of the Project were surveyed by two observers, on foot, to locate and identify nesting waterbirds. Observers walked along the edge of each waterbody. Specifically, one observer walked 5 m from the water's edge while the second observer walked 15 m from the water's edge. If a nest was found, nest stage (e.g., egg laying, incubating, nestlings etc.) and nest productivity (i.e., the number of offspring) were recorded. If a nesting bird showed signs of distress, the nest was not approached to avoid nest abandonment. Shoreline survey methods are described in greater detail in the TEMMP (Agnico Eagle 2022b).

8.1.2 Results

Due to a significant number of road closures during post-calving caribou migration, not all shoreline surveys could be completed in 2023. Appendix C presents additional information on survey timing and weather conditions, as well as survey results by location.

A total of 36 nests of 13 bird species were observed within 200 m of the Mine and AWAR while conducting shoreline surveys in 2023. Of these 36 nests, 31 nests were from the ten most encountered species, summarized in Table 6. Of these 31 nests, the number of young (e.g., eggs or juveniles) could be determined for 9 nests, totalling 37 young (Table 6). An additional five nests were detected for three other species: one common raven (*Corvus corax*) nest, two red-throated loon (*Gavia stellata*) nests, and one semipalmated sandpiper (*Calidris pusilla*) nest. The number of young could not be determined for these additional five nests.

A total of 32 bird species, of which 18 species were waterbirds, were recorded during 2023 waterbird shoreline surveys (Appendix C). The top three most encountered bird species were horned lark (*Larus argentatus*), sandhill crane (*Antigone canadensis*), and American pipit (*Anthus rubescens*). The three most encountered waterbird species were herring gull (*Larus argentatus*), Canada goose (*Branta canadensis)*, and least sandpiper (*Calidris minutilla*). All birds observations of birds and nests made during shoreline surveys are presented in Appendix C.

Table 6: Summary of Nests and Young (Eggs or Juveniles) Observed during Shoreline Surveys, 2018 to 2021 and 2023

Common Name	Scientific Name	2018		2019		2020		2021		2023	
		Young[a]	Nests	Young[a]	Nests	Young[a]	Nests	Young[a]	Nests	Young[a]	Nests
American Pipit	*Anthus rubescens*	0	0	0	0	0	0	13	2	5	2
Cackling Goose	*Branta hutchinsii*	4	3	18	4	6	2	48	16	0	0
Canada Goose	*Branta canadensis*	18	16	39	14	14	6	25	6	11	4
Cackling/Canada Goose[b]	*Branta* spp.	0	0	0	0	0	0	Unk.[b]	2	0	0
Greater White-fronted Goose	*Anser albifrons*	0	0	3	1	0	0	0	0	0	0
Herring Gull	*Larus argentatus*	0	0	0	1	0	0	0	0	Unk.[b]	4
Horned Lark	*Eremophilia alpestris*	4	1	0	0	3	1	0	0	0	0
Lapland Longspur	*Calcarius lapponicus*	2	4	5	1	4	1	9	3	Unk.[b]	1
Least Sandpiper	*Calidris minutilla*	0	2	0	0	4	2	16	4	2	8
Long-tailed Duck	*Clangula hyemalis*	0	0	0	0	0	0	Unk.[b]	1	8	1
Northern Pintail	*Anas acuta*	0	0	0	0	0	0	8	1	0	0
Pacific Loon	*Gavia pacifica*	0	0	0	0	0	0	2	1	0	0
Peregrine Falcon	*Falco peregrinus*	0	2	0	1	0	0	0	0	0	0
Sandhill Crane	*Grus canadensis*	0	0	2	2	0	0	Unk.[b]	1	1	2
Savannah Sparrow	*Passerculus sandwichensis*	0	0	0	0	11	2	0	0	Unk.[b]	2
Semipalmated Plover	*Charadrius semipalmatus*	0	0	4	1	0	1	32	8	4	5
Tundra Swan	*Cygnus columbianus*	2	1	0	0	0	0	0	0	6	3
Willow Ptarmigan	*Lagopus lagopus*	0	5	1	1	0	0	0	0	0	0
Total		**30**	**34 (20)[c]**	**72**	**26 (20)[c]**	**35**	**15 (13)[c]**	**121**	**45 (40)[c]**	**37**	**31 (9)[c]**

(a) Eggs, nestlings, or fledglings were counted to observers' best ability while minimizing disturbance to nests.

(b) Used when nest inaccessible (i.e., on island in waterbody) and identification could not be confirmed; Unk. = Unknown.

(c) Number in parentheses refers to the number of nests for which an egg count could be determined.

8.2 PRISM

The PRISM is a standardized method for monitoring shorebirds in the Canadian Arctic (Bart et al. 2015). PRISM surveys are designed to document population numbers of Arctic breeding shorebirds, describe the distribution and habitat associations of shorebirds, and monitor trends in population size (Bart et al. 2005). The PRISM surveys conducted as part of monitoring for the Project will contribute to regional knowledge in an effort to set population targets and assist with management and conservation of these species (EC 2012). All PRISM data will be submitted to ECCC for inclusion in their regional database.

As per recommendations from ECCC, Agnico Eagle has committed to completing PRISM surveys over 2 years, every 5 years (Agnico Eagle 2022b). A total of 16 plots were chosen by ECCC at the Meliadine Mine. Ten plots were surveyed by Golder (now WSP) in June 2018 and 16 plots were surveyed in June 2019. Due to significant road closures during post-calving caribou migration between 15 and 30 June 2023, one PRISM plot was completed in 2023 (Appendix C). PRISM plot surveys will continue in 2024.

8.2.1 Methods

One pre-determined 300-m x 400-m plots PRISM plot (i.e., MELI-IND11) was surveyed by two qualified field personnel. Field personnel walked transects spaced 25 m apart and used GPS geolocation to orient along transect lines. Field personnel documented all birds (i.e., absolute abundance) occurring within the plot, as well as breeding status and habitat conditions.

8.2.2 Results

The MELI-IND11 PRISM plot was surveyed on 22 June 2023 between 16:00 and 17:20 (Appendix C). Two bird species (common raven and herring gull) were observed within the plot and two bird species (Canada goose and horned lark) were observed incidentally, outside the plot. Species numbers, behaviours, nests, and other details have been recorded in the PRISM plot data spreadsheets and will be provided to ECCC.

8.3 Arctic Raptors Research Program

The following is a summary of the 2023 Arctic Raptors Research Program, completed by Artic Raptors (Appendix D; Arctic Raptors 2024). The Arctic Raptors Research Program is designed to address the following monitoring indicators for nesting raptors are outlined in the TEMMP (Agnico Eagle 2022b):

- Monitoring Indicator 1; Disturbance of nesting raptors — To be determined in consultation with GN and Alastair Franke, related to occupancy and productivity.
- Monitoring Indicator 2; Projected-related mortality — To be determined in consultation with GN and Alastair Franke.

The TEMMP requires the protection of species at risk during the breeding season (T&C 59 and 60) and requires that disturbance to birds is minimized through consistent monitoring (T&C 59, 71, and 72), including nest-specific mitigation where necessary (T&C 61 and 62). Peregrine falcons (*Falco peregrinus*) were assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in November of 2017, and were ranked “Not at Risk”. The responsible Minister rendered a decision on the recommendation made by COSEWIC, and peregrine falcons are no longer considered to be threatened. This report meets the T&Cs outlined by NIRB by documenting and mapping raptor nesting sites within 1.5 km of the Project infrastructure, including minimum “no disturbance” buffers.

8.3.1 Methods

Two structured surveys were conducted in 2023. The focus of these surveys was to search known nesting sites for the presence of cliff-nesting raptors. In addition to the structured surveys, favourable habitat was searched opportunistically when ferrying between known sites, camps, or other Mine infrastructure and when raptors or signs of site use (e.g., whitewash, orange-colored lichen, and unused nests) were observed. Sites were considered occupied if one or more adults displayed territorial or reproductive behaviour (e.g., vocalization and/or flight behaviour associated with defense of breeding territory or presence of nest building, nest, or eggs). Locations with partially built or unused nests without detection of breeding aged adults were noted as such (e.g., old stick nest; no birds detected). Raptor monitoring in 2023 involved two helicopter surveys (i.e., 25 – 29 May, 15 – 18 August), and ground monitoring of potential nesting habitat (e.g., natural cliffs, quarries, and borrow pits) in coastal areas using snowmobile in May and boat in August.

In any given year, the status of a nesting site is limited to one of only two outcomes: occupied or not occupied. Although estimation of nesting site occupancy can serve as a metric of population status, detection of nesting pairs is imperfect, and estimating the proportion of occupied sites without accounting for detection error can lead to underestimation of true occupancy. Occupancy modelling estimates parameters that influence occupancy and simultaneously accounts for imperfect detection (Appendix D).

In addition, environmental covariates can be added to an occupancy model to test whether they influence the above parameters using a logit link function. Multi-year occupancy was calculated in *R* (R Core Team 2019) using the *unmarked* package (Kellner et al. 2023). When appropriate, data were standardized.

Occupancy was analyzed separately for peregrine falcons and rough-legged hawks (*Buteo lagopus*). No gyrfalcons (*Falco rusticolus*) were detected. To analyze occupancy, the total number of nesting sites was filtered to include only those nesting sites that were occupied at least once between 2022 and 2023 for both species. Two candidate models were selected *a priori* to estimate the effect of distance to anthropogenic disturbance on detection probability (p) and occupancy (ψ). Candidate models were fit and selected using Akaike Information Criterion (AIC).

8.3.2 Results

Monitoring for breeding raptors has occurred consistently in the area associated with the Meliadine Project infrastructure for decades. Surveys have focused on searching for, documenting, and mapping nesting sites for three raptor species (i.e., peregrine falcons, rough-legged hawks, and gyrfalcons). The study design included two surveys: one to assess the location of occupied territories during the pre-incubation and incubation periods, and one to assess site productivity during the late brood rearing period.

Throughout the Rankin Inlet region surveyed by Arctic Raptors, nesting raptors have been detected at 247 nesting sites. Of these nesting sites, 119 have been occupied by only rough-legged hawks and 84 by only peregrine falcons. An additional 24 nesting sites have been occupied by either peregrine falcons or rough-legged hawks, resulting in a total of 143 known rough-legged hawk nesting sites and 108 known peregrine falcon nesting sites. Six nesting sites have been occupied by common raven, two by snowy owl (*Bubo scandiacus*), and one each by gyrfalcon and short-eared owl (*Asio flammeus*).

Within the RSA, nesting raptors have been detected at 203 nesting sites. Of these nesting sites, 105 have been occupied by only rough-legged hawks and 60 by only peregrine falcons. An additional 20 nesting sites have been occupied by either peregrine falcons or rough-legged hawks, resulting in a total of 125 known rough-legged hawk nesting sites and 80 known peregrine falcon nesting sites. Five nesting sites have been occupied by common raven, and one each by gyrfalcon, snowy owl, and short-eared owl.

Fourteen peregrine falcon nesting sites were deemed alternates (i.e., nest within a nesting territory that is not used in the current year), resulting in a total of 66 known peregrine falcon nesting territories. Of the 66 nesting territories surveyed, evidence of breeding was detected at 34 nesting territories (observed proportion = 0.52). Twenty-five rough-legged hawk nesting sites were deemed alternates, resulting in a total of 100 known rough-legged hawk nesting territories. Ninety-four rough-legged hawk territories were fully surveyed, of which, evidence of breeding was detected at 21 nesting territories (observed proportion = 0.22).

The null occupancy model (i.e., model that did not test the influence of distance to anthropogenic disturbance on occupancy or detection) best explained probability of occupancy among peregrine falcons ($\psi = 0.58 \pm 0.07$ [predicted occupancy ± standard error]) and rough-legged hawks ($\psi = 0.31 \pm 0.88$).

8.4 Pre-Clearance Surveys

The following is a summary of the 2023 pre-clearance surveys, completed by Agnico Eagle Environmental staff and consultants (Appendix C; Agnico Eagle 2024a). Pre-clearance surveys are conducted during the active bird breeding window to determine in any active nests will be disturbed by proposed activities. Observers survey the entire proposed clearance area and document all bird activity, including nesting activity.

8.4.1 Methods

Surveys were conducted during the breeding season, between 15 May and 15 August 2023. Proposed construction areas were surveyed at least four days before any disturbance (e.g., construction or borrow pit activity). Surveys were conducted during fair weather (i.e., not raining, low winds, and temperatures below 5°C). A minimum of two people walked straight-line transects through each proposed construction area, spaced by a maximum of 10 m. An additional 30 m on all sides of the proposed construction area was also surveyed. In areas with ponds and lakes, circular transects spaced by a maximum of 25 m were completed. Locations and photos were taken when a nest was found.

8.4.2 Results

Nests from seven different bird species (i.e., Lapland longspur [*Calcarius lapponicus*], least sandpiper, white-crowned sparrow [*Zonotrichia leucophrys*], northern pintail [*Anas acuta*], semipalmated plover [*Charadrius semipalmatus*], horned lark, and savannah sparrow [*Passerculus sandwichensis*]) were observed during pre-clearance surveys (Table 7). An additional nine and six bird species were observed on 29 June 2023 and 30 June 2023, respectively, but not identified to the species level (Appendix C). When applicable, a setback perimeter was applied to the nest in accordance with the TEMMP (Agnico Eagle 2022b).

Table 7: Bird Nesting Activity and Nests Identified during Pre-Clearance Surveys in 2023

Date	Bird Species (Number Observed)	Details and Mitigation Actions Taken
5 June 2023	Lapland longspur (1)	Nest with no eggs found; no action taken.
6 June 2023	Lapland longspur (1)	Nest being built; nest removed at very early stage.
8 June 2023	Least sandpiper (1)	Least sandpiper adult incubating 4 eggs; construction not permitted on designated road section.
29 June 2023	White-crowned sparrow (2)	White-crowned sparrow pair displaying nesting behaviour; 50 m buffer zone established.
30 June 2023	Northern pintail (1); semipalmated plover (1)	Northern pintail female on 7 eggs; semipalmated plover adult showing nesting behaviour; 50 m buffer zone established
8 July 2023	Semipalmated plover (1)	Semipalmated plover nest with 2 eggs and 2 hatchlings; 50 m buffer zone established
10 July 2023	Horned lark (1); savannah sparrow (2)	Savannah sparrow adult with fledgling; no action taken.
12 July 2023	Semipalmated plover (1)	Semipalmated plover nestling; 100 m buffer zone established
13 July 2023	Horned lark (1)	Horned lark nestling; 100 m buffer zone established
14 July 2024	Semipalmated plover (1); savannah sparrow (3)	Semipalmated plover adult showing nesting behaviour; at least 1 young horned lark; 100 m buffer zone established.

Notes: m = metres.

8.5 Recommendations

In 2024, PRISM plots surveys, bird transect and point counts, waterbird shoreline surveys, and pre-clearance bird nest surveys will continue during the summer, subject to environmental constraints including severe weather and caribou movements. In the future, a subset of shorelines could be surveyed twice, potentially as part of nest re-checks, to identify potential observer effects on nest detection. Alternatively, pre-determined transects in areas where nests have previously been located could be established, to allow accurate comparison of effort across years, nest-finding ability, and changes in nest density related to different locations.

The analyses completed for the Arctic Raptors Research Program indicated no effect of distance to disturbance on occupancy, which is consistent with studies elsewhere in the Arctic (Coulton et al. 2013). The potential of detecting mine-related anthropogenic disturbance will be challenging in light of the presence of roads, trails, cabins, travel routes, and activities on the sea/sea-ice and lake ice associated with the community of Rankin Inlet. Multi-year surveys conducted at the scale of the RSA were recommended in 2022, and the 2023 program satisfies this recommendation. Further survey effort was also undertaken in the northern portion of the RSA to fill a previous gap; several unknown nesting sites in the northern portion of the RSA were observed and will be surveyed on an on-going basis (Appendix D).

Population trends between 2022 and 2023 for both focal raptor species suggest a decline in occupancy; however, this finding should be interpreted with caution until additional years can be considered. Given that no evidence of an effect of distance to disturbance on occupancy was found, and assuming that the apparent decline is real, other causes for raptor decline should be considered. A potential mechanism is Highly Pathogenic Avian Influenza, which spiked in 2022; therefore it is recommended that any found-dead raptors be submitted for disease testing.

9.0 WILDLIFE OBSERVATIONS

Agnico Eagle's Environment Technicians conduct site surveillance monitoring and road surveillance monitoring regularly of the AWAR and within the Project footprint. In addition to planned surveys, all supervisors ask their employees to report wildlife sightings. In November 2021, a new way to report wildlife sightings on site via text message was introduced to all employees. The text messaging was replaced by a QR Code in April 2023.

In previous TEMMP annual reports, observations from wildlife surveys and wildlife incidental observations were pooled and compared with previous years. Combined survey observations and incidentals from 2023 were slightly higher than other years (2018: 7,198 individuals; 2019: 880 individuals; 2020: 2,650 individuals; 2021: 4,182 individuals; 2022: 5,255 individuals; and 2023: 9,458 individuals; Nuqsana Golder 2023). Table 8 summarizes wildlife observations between 2018 and 2023 from both incidental observations and wildlife surveys. Results are presented separately in the sections following to distinguish between results from formal wildlife surveys and results from incidental observations.

Table 8: Wildlife Observations from Wildlife Surveys and Incidental Observations, 2018 to 2023

Wildlife Species	Scientific Names	Number of Individuals Observed						
		2018	2019	2020	2021	2022	2023	Total
American Pine Marten	*Martes americana*	0	0	20	2	0	0	22
Arctic Fox	*Vulpes lagopus*	105	67	62	160	256	115	765
Arctic Ground Squirrel	*Urocitellus parryii*	1	10	14	14	45	67	151
Arctic Hare	*Lepus arcticus*	31	34	50	84	146	130	475
Baird's Sandpiper	*Calidris bairdii*	0	0	0	2	70	0	72
Bald Eagle	*Haliaeetus leucocephalus*	1	0	0	1	4	2	8
Bird Spp.[(A)]	N/A	0	0	0	99	0	363	462
Brant	*Branta bernicla*	0	0	181	25	0	1	207
Canada Goose	*Branta canadensis*	67	145	470	1,027	889	981	3,579
Caribou	*Rangifer tarandus groenlandicus*	6,839	86	106	30	1,066	5,197	13,324
Common Raven	*Corvus corax*	2	5	43	29	93	115	287
Duck Spp.	N/A	20	17	95	164	105	179	580
Grey Wolf	*Canis lupus*	0	2	2	2	2	10	18
Greater White-Fronted Goose	*Anser albifrons*	0	44	0	6	0	0	50
Gull Spp.	N/A	0	18	76	74	232	173	573
Gyrfalcon	*Falco rusticolus*	-	-	-	-	-	1	1
Hawk Spp.	N/A	0	0	0	2	0	0	2
Long-Tailed Duck	*Clangula hyemalis*	0	0	3	5	0	2	10
Loon Spp.	N/A	-	-	-	-	-	14	14
Mammal Spp.	N/A	0	0	0	3	0	0	3
Muskox	*Ovibos moschatus*	0	0	22	0	8	0	30
Northern Pintail	*Anas acuta*	-	-	-	-	-	13	13
Peregrine Falcon	*Falco peregrinus*	0	4	5	2	0	3	14
Polar Bear	*Ursus maritimus*	2	2	4	0	1	5	14
Ptarmigan Spp.	N/A	19	8	59	142	87	50	365
Rough-Legged Hawk	*Buteo lagopus*	0	9	74	5	10	2	100
Sandhill Crane	*Grus canadensis*	4	68	152	202	175	213	814
Scaup Spp.	N/A	-	-	-	-	-	73	73

Table 8: Wildlife Observations from Wildlife Surveys and Incidental Observations, 2018 to 2023

Wildlife Species	Scientific Names	Number of Individuals Observed						
		2018	2019	2020	2021	2022	2023	Total
Snow Goose	*Anser caerulescens*	100	340	1,190	2,083	1,968	1,610	7,291
Snowy Owl	*Bubo scandiacus*	2	0	1	1	1	1	6
Tundra Swan	*Cygnus columbianus*	4	21	21	18	97	138	299
Wolverine	*Gulo gulo*	1	0	0	0	0	0	1
Total		**7,198**	**880**	**2,650**	**4,182**	**5,255**	**9,458**	**20,165**

Notes:

(a) Includes small passerines and individuals that could not be identified to species level (e.g., American robin, snow bunting, sparrow species); - indicates that this species or species group was not recorded in this annual reporting table before 2023; spp. = species.

9.1 Wildlife Surveys

Agnico Eagle conducted a combined total of 141 wildlife surveys along the AWAR and at Mine infrastructure in 2023. Wildlife surveys were completed along the AWAR an average of every 3.8 days from 7 January to 30 December 2023. Wildlife surveys were completed at Mine infrastructure (e.g., land farms, tank farms, camps, construction areas, exploration areas, the incinerator, water collection ponds) an average of every 7.3 days from 2 January to 18 December 2023 (Table 9).

Table 9: Details of Wildlife Surveys in 2023

Month	Number of All-Weather Access Road Surveys	Number of Mine Site Surveys
January	8	5
February	8	4
March	10	3
April	8	3
May	10	4
June[(a)]	4	4
July[(a)]	8	4
August	9	4
September	7	3
October	9	4
November	7	4
December	6	5
Total	**94**	**47**

Notes:

(a) Additional caribou surveys completed regularly throughout June and July, described in Section 12.0.

A total of 8,303 individuals from 16 identified wildlife species and 5 unidentified wildlife species groups (e.g., duck, gull, loon, merganser, and ptarmigan spp.) were recorded during surveys along the AWAR. Snow goose (*Chen caerulescens*) was the most commonly recorded bird species with a total of 1,540 individuals observed along the AWAR. Observations of snow geese flocks may include the Ross's goose (*Anser rossii*), which are difficult to distinguish from the snow goose from a distance. Canada goose, sandhill crane (*Grus canadensis*), and tundra swan (*Cygnus columbianus*) were also frequently observed along the AWAR with a total of 775, 162, and 107 individuals recorded in 2023, respectively. There were also 304 individuals grouped under bird spp., which

include small passerines and individuals that could not be identified to the species level. Mammal species recorded along the AWAR included Arctic fox (*Vulpes lagopus*; 9 individuals), Arctic ground squirrel (*Urocitellus parryii*; 53 individuals) and Arctic hare (*Lepus arcticus*; 4 individuals), as well as 7 observations of caribou groups, which totaled 5,013 individual caribou observed.

A total of 985 individuals from 12 identified wildlife species and 6 unidentified wildlife species groups (e.g., bird, duck, gull, loon, ptarmigan, and scaup spp.) were recorded during surveys at Mine infrastructure other than the AWAR in 2023. Canada goose, duck spp., and gull spp. were the most frequently observed species with 201, 138, and 89 individuals recorded, respectively. Mammal species recorded at Mine infrastructure included Arctic fox (8 individuals), Arctic ground squirrel (13 individuals), and Arctic hare (84 individuals), as well as 10 observations of caribou groups, which totaled 162 individual caribou observed.

These totals do not include caribou documented as part of the caribou behaviour monitoring (Section 12.1), caribou remote camera study (Section 0), or caribou advisory programs (Section 12.4). Barren-ground caribou are listed as 'Threatened' by COSEWIC but are not currently listed under the *Species at Risk Act* (SARA; Government of Canada 2023). No species listed under Schedule 1 of *SARA* were observed during wildlife surveys.

Wildlife tracks were also recorded during surveys. Arctic fox and Arctic hare tracks were recorded during wildlife surveys at Mine infrastructure. No tracks were recorded along the AWAR.

9.2 Wildlife Incidentals

There were 142 incidental wildlife observations recorded, representing 242 individuals of 14 species and one species group (i.e., duck spp.), around the Mine site (including the camp area) and the AWAR in 2023 (Table 10). Incidental wildlife observations were recorded between 13 January and 31 December 2023 through Wildlife Logs and Reports (e.g., via radio call, e-mail, or QR code), and do not include mortalities or observations of large herds of migrating caribou. Information on caribou migration through the Mine site and AWAR is presented in Section 12.0.

The most frequently observed species were Arctic fox (98 individuals), Arctic hare (42 individuals), and caribou (22 individuals; Table 10). Species observed only incidentally and not during wildlife surveys were grey wolf (*Canis lupus*), muskox (*Ovibos moschatus*), polar bear (*Ursus maritimus*), rough-legged hawk, and snowy owl.

Table 10: Incidental Wildlife Observations (2023)

Common Name	Scientific Name	2023	
		Number of Observations	Number of Individuals
Arctic Fox	*Vulpes lagopus*	85	98
Arctic Ground Squirrel	*Urocitellus parryii*	1	1
Arctic Hare	*Lepus arcticus*	21	42
Canada Goose	*Branta canadensis*	3	5
Caribou	*Rangifer tarandus*	8	22
Common Raven	*Corvus corax*	4	5
Duck Spp.	N/A	3	17
Grey Wolf	*Canis lupus*	4	10
Muskox	*Ovibos moschatus*	1	3
Peregrine Falcon	*Falco peregrinus*	1	1
Polar Bear	*Ursus maritimus*	5	5
Rough-Legged Hawk	*Buteo lagopus*	1	1
Sandhill Crane	*Grus canadensis*	3	11
Snow Goose	*Anser caerulescens*	1	20
Snowy Owl	*Bubo scandiacus*	1	1
Total		**142**	**242**

Notes: Specific GPS locations were not recorded for incidental wildlife observations in 2023. Wildlife mortalities and counts of large herds of migrating caribou are not included. N/A = not applicable; spp. = species.

9.3 Den Sites

Prior to construction of Project infrastructure, surveys are required to locate dens of carnivores in accordance with NIRB Project Certificate No. 006 (Amendment No. 002) T&C 53. Surveys were completed between May and August 2023 to locate dens of Arctic fox, grey wolf, polar bear, grizzly bear (*Ursus arctos*), and wolverine (*Gulo gulo*). The focus was on Arctic fox as surveys were conducted during their denning period. Most surveys occurred opportunistically while conducting other tasks in the vicinity or prior to the construction of Project infrastructure. Den surveys consisted of visual observations of den openings and signs of wildlife. An unmanned aircraft system (UAS), or drone, was used to survey for dens when required. Surveys were performed by qualified Environment Department personnel . A total of 141.6 ha was surveyed for dens at the Mine and along the access roads and waterline construction in 2023.

During the 2023 den survey, seven historical dens were revisited; no sign of activity was observed. Four new fox den locations were found in 2023 at the Mine site (one den), Discovery Road (one den), and Apache Bypass (two dens). Three of these dens were confirmed to be active with Arctic fox and one den was confirmed to be active with an Arctic ground squirrel (sik sik). Additional details on den surveys completed in 2023 can be found in Appendix E (Agnico Eagle 2024b).

The recommended construction setback for Arctic fox dens is 150 m. In the situation that construction was closer than the setback distance, mitigation measures identified in Appendix E were implemented. Fox den habitat was protected even when inactive.

9.4 Bird Nests

In 2023, six incidental bird nests were observed on the Mine site or along the AWAR (Table 11).

Table 11: Incidental Bird Nests and Approximate Location, 2023

Date Nest First Observed	Bird Species	Location	Approximate Coordinates (NAD 83; Zone 15)		Notes
			Easting	Northing	
8 March 2023	American Robin	Power Plant	539163	6990056	Old abandoned nest. Removed on 4 August 2023.
19 April 2023	Common Raven	Batch plant silo ladder	539588	6989051	Raven nest was being constructed on the Batch Plant silo ladder. Raven not observed.
20 April 2023	Common Raven	Batch plant silo ladder	539588	6989051	Confirmed that no eggs were in the nest and nest was removed as per GN DoE authorization.
27 April 2023	Common Raven	Tiri-02	540320	6988437	Ravens were reported flying over SP4. Raven nest was then spotted in Tiri-02
18 June 2023	Canada Goose	KM 22.75	543962	6982929	Nest observed on the side of the AWAR at the end of KM 22 in a small pond on the west side.
1 July 2023	Unknown Spp.	H8	-	-	OP2 Extension by the piezometer.

Notes: MBCA = Migratory Bird Convention Act; - = exact location was not recorded; m = metres.

9.5 Incidents and Mortalities

Mortalities can occur as wildlife interact with the Project site or become habituated to mining activities resulting from efforts to locate food or shelter (DDMI 1998). Diligent waste management, employee and environmental awareness, and immediate reporting of wildlife sightings in and around Project infrastructure can limit the mortality of wildlife.

9.5.1 Methods

Project-related incidents and mortalities are reported to the Mine's Environment Department for documentation in a detailed incident investigation for immediate follow-up. All incidental wildlife mortalities are reported immediately to the GN DoE, and the GN DoE is consulted for follow-up mitigation and disposal procedures. In addition, the KivIA is also immediately notified of wildlife mortalities and the events and circumstances around that mortality. If wildlife had to be deterred to reduce the risk of a wildlife-human incident, then all efforts are made by the environmental technicians to start with the least intrusive method available. All deterrent actions are recorded.

9.5.2 Results

A total of eight mortalities across six different species were reported at the Project from 9 June to 19 September 2023; all mortalities were suspected or confirmed to be caused as a direct result of Project activities (Table 12). There were no other reports of incidental mortalities (i.e., mortalities unrelated to Project activities) in 2023.

Table 12: Wildlife Mortalities and Incidents Reported in 2023

Date	Species	Number	Location	Project Related	Comments
9 June 2023	Arctic Fox	1	Tiriganiaq Open Pit 2	Yes	A deceased fox was found in Tiriganiaq Open Pit 2. The cause of death is unknown; it is likely the fox drowned. The Environment department was notified, and the animal was recovered. The carcass was disposed of according to the GN Conservation Officer's instructions.
27 July 2023	Common Raven	1	TIRI-02	Yes	The Environment department was notified that a deceased bird was found in TIRI-02; upon inspection, a raven was observed. The carcass was disposed of according to the GN Conservation Officer's instructions.
27 July 2023	Arctic Ground Squirrel	1	Bypass Road	Yes	A dead Arctic ground squirrel (sik sik) was observed on the Bypass Road, near KM 2.5. The cause of death is unknown; it is likely the animal was struck by a vehicle.
4 August 2023	Arctic Ground Squirrel	2	AWAR	Yes	Two dead Arctic ground squirrels (sik sik) were observed on the AWAR, near KM 5. The cause of death is unknown; it is likely the animals were struck by a vehicle.
9 August 2023	Avian Spp.	1	Gymnasium	Unknown	A deceased avian specimen was discovered outdoors, on the western side of the gymnasium building. Due to the advanced stage of decomposition and the absence of clear indicators of causality, definitive identification of the specimen could not be determined, and the exact cause of death also remains unknown. Agnico Eagle retrieved the carcass, which was disposed of according to the GN Conservation Officer's instructions.
28 August 2023	Arctic Hare	1	Waste Rock Storage Facility 1	Yes	A deceased Arctic hare was reported outdoors on the Waste Rock Storage Facility 1 ramp. Examining the carcass, it's likely that the Arctic hare came in contact with a haul truck. Agnico Eagle retrieved the carcass, which was disposed of according to the GN Conservation Officer's instructions.
19 September 2023	Black-and-White Warbler	1	Geology coreshack	Yes	At approximately 4:00 PM, a black-and-white warbler (*Mniotilta varia*) was reported inside the geology coreshack. The bird seemed lethargic when it was initially seen in the building. The Environment staff ensured that the bird had an easy way to fly out on its own. When the bird was checked on at around 5:20 PM, it was found dead. The exact cause of death remains unknown. The Environment Department notified the GN Conservation Officers and the Environmental Assessment Coordinator at ECCC, on 6 October 2023. The carcass was disposed of according to the GN Conservation Officer's instructions.

Notes: AWAR = All-Weather Access Road, ECCC = Environment and Climate Change Canada; GN = Government of Nunavut; spp. = species.

Three Project-related bird mortalities were recorded in 2023: a common raven, a black-and-white warbler (*Mniotilta varia*), and an unknown avian spp. that could not be identified due to the state of decomposition. These avian species were disposed of according to instructions from the GN DoE (i.e., GN Conservation Officer). Three Arctic ground squirrels were reported dead in two incidents on the Bypass Road and AWAR near KM 2.5 and KM 5. One Arctic hare was found dead on the Waste Rock Storage Facility 1 ramp. One Arctic fox was found in Tiriganiaq Open Pit 2.

Following initial guidance from the GN DoE in response to incidents and observations of Arctic foxes in and around the Mine in 2017, the GN DoE directs Agnico Eagle to deploy traps to remove animals as necessary. Traps were deployed in January 2023; however, no animals were caught, and traps were not subsequently deployed. The Environment Department employs many mitigation measures to minimize the presence of foxes on site. Toolbox talks for every crew of the department emphasize the importance of waste segregation to avoid attracting wildlife. Inspections are completed regularly in every location outside to prevent food waste availability to wildlife. These mitigations were reinforced by BEARWISE in a bear safety site audit report for the Meliadine Mine Site completed in April 2023 (BearWise 2023). Several action items following the safety site audit were undertaken to reduce wildlife attractants and ensure the safety of site personnel and local wildlife. Items were assigned to responsible parties to oversee the implementation of each action and set realistic timelines for completion. The Environment Department further encouraged regular progress updates to ensure accountability and monitor the effectiveness of the implemented measures.

9.6 Accuracy of Impact Predictions

A summary of the impact predictions proposed in the TEMMP (Agnico Eagle 2022b) is provided in Table 13. Through systematically recording the presence of all wildlife within and around the Project footprint, Environmental staff will remain appraised of current and emerging issues and will be able to manage issues as they arise. To use a common example, surveillance monitoring may detect that wildlife has gained access and is taking shelter beneath a building.

The thresholds presented in Table 13 have been employed for the Mine to date for consideration of any adaptive management for the TEMMP (Agnico Eagle 2022b). Refinement of these thresholds may be considered, in collaboration with the GN, as appropriate, as more data is collected and analyzed over time.

Table 13: Accuracy of Impact Predictions – Wildlife Incidents 2023

Monitoring Indicator	Preliminary Threshold	Exceeded in 2023?	Adaptive Management	Monitoring Method	TEMMP Section
Vehicle Collisions	No more than 1 ungulate/year	No	No action required	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	9.5.2
Project Related Mortality[(a)]	No more than 1 ungulate/year	No	No action required	Wildlife Sightings Log, Site Surveillance Monitoring	9.5.2
Project Related Mortality[(a)]	No more than 20 Arctic fox/year	No	On-going waste management and, regular toolbox meetings reiterating that any disrespect of wildlife or of Meliadine's wildlife policy is unacceptable and against company rules	Wildlife Sightings Log, Site Surveillance Monitoring, with particular emphasis around waste management areas	9.5.2
Project Related Mortality[(a)]	No more than 1 raptor/year	No	Not currently identified	Wildlife Sightings Log, Site Surveillance Monitoring	9.5.2
Project Related Mortality[(a)]	No more than 1 waterbird/year	No	On-going and regular toolbox meetings on awareness of blind-spots, particularly for large vehicles and equipment	Wildlife Sightings Log, Site Surveillance Monitoring	9.5.2

Notes: TEMMP = Terrestrial Environment Management and Monitoring Plan.

(a) Project Related Mortality = A death that can be directly linked to the Mine or mining activity.

9.7 Recommendations

Mortalities recorded in 2023 are within predicted thresholds. Agnico Eagle was proactive in managing wildlife conflict. Diligent waste management practices, employee and environmental awareness (e.g., toolbox meetings), and immediate reporting of wildlife sightings in and around Project infrastructure to limit mortality of wildlife should be continued. Specific recommendations from GN and wildlife audits in 2023 were to avoid mixing food waste with other types of waste, to educate personnel to not feed wildlife, to ensure that all waste containers are sealed, and to ensure that doors of buildings that contain waste remain closed (BearWise 2023). Agnico Eagle will continue to implement these recommendations.

10.0 WILDLIFE DETERRENTS

Wildlife deterrents were implemented at five locations in 2023 to deter birds from nesting. Propane cannons were used near lake J8, near the northeast corner of the TSF, near Pond 5a, and TSF Cell 2 North in 2023. Bird deterrent balloons were used at TSF Cell 2 North in 2023. Environmental technicians also actively deterred incidental observations of wildlife (e.g., Arctic fox, Canada goose) around Mine infrastructure; all activities were successful.

11.0 MUSKOXEN

Agnico Eagle has provided the GN DoE with in-kind contributions and support for previous muskoxen surveys and will continue to do so when requested. No surveys were completed by the GN DoE in 2023 and in-kind contributions were not requested.

12.0 BARREN-GROUND CARIBOU

Barren-ground caribou (including the Lorillard and Qamanirjuaq herds) are listed as 'Threatened' under COSEWIC but are not currently listed under the *Species at Risk Act* (Government of Canada 2023). Barren-ground caribou are ranked S3S4 and are considered 'Vulnerable' in Nunavut (CESCC 2022). Annual home ranges mapped by GN DoE show that the Project is within the annual home range of the Qamanirjuaq (pronounced "Kaminuriak") caribou herd (Campbell et al. 2012, 2014). The Lorillard caribou are migratory (Campbell et al. 2014) and generally distributed north of Chesterfield Inlet, based on telemetry data collected by the GN DoE and the location of their historical calving grounds (Campbell et al. 2012). The likelihood of animals from the Lorillard herd occurring in the RSA for the Mine, as defined in the FEIS (Golder 2014), is very low. Based on GPS telemetry data, now available from the GN DoE through a data sharing agreement with Agnico Eagle, Lorillard caribou most recently came within 90 km of the edge of the Project RSA in 2022.

Baseline survey data documenting the distribution of barren-ground caribou during early winter, spring migration and calving, and post-calving through fall migration and rut periods suggest that the RSA is within the seasonal range of the Qamanirjuaq barren-ground caribou herd (Jalkotzy 1999, 2000, 2001). The annual range of the Qamanirjuaq herd occupies an area from northern Manitoba and Saskatchewan in the south, to southwestern Nunavut and southeastern Northwest Territories (BQCMB 1999; Campbell et al. 2012). Barren-ground caribou are migratory, and movements and range use vary annually (Wakelyn 1999). The annual distribution and life history of this population has been previously documented (Banfield 1954; Kelsall 1968; Thomas 1969; Parker 1972; Heard 1986). The Qamanirjuaq herd calves approximately 57 km to the west-northwest of the Mine and after calving the herd aggregates into a post-calving movement, generally moving east towards the coast and then back to the west and southwest of the Mine where their summer movement and distribution patterns commence. During the post-calving movements to the coast, thousands of caribou can come through the Mine site and reside within and around the Project area from early June to late July (Golder 2020). For additional discussion on the Qamanirjuaq herd please refer to the FEIS (Golder 2014).

12.1 Caribou Behaviour Monitoring

The TEMMP indicates that once 50 caribou are observed within 5 km of the Project footprint boundary (visual detection or based on collar data provided by the GN DoE), a work suspension protocol commences at the Mine. Monitoring caribou behaviour in proximity to the mine is integral to understanding how caribou interact with the Project infrastructure including roads (i.e., crossing, deflection, walking parallel) and other Project infrastructure. Documenting behaviour through activity budgets may better inform appropriate adaptive management and distance triggers and thresholds in the future. Over time, a long-term dataset will be used to evaluate obvious response or lack of obvious response of caribou to mining based on behaviour.

The overall objectives of the caribou behaviour monitoring program are to determine if caribou activity budgets change with distance from the mine, and to document caribou response to stressors. Activity budgets (i.e., time spent feeding, resting, walking, running) of caribou exposed to disturbances from the Mine and AWAR will be used to provide inputs for assessing the impact to the energy balance of caribou (see Section 4.5.2 of the TEMMP, Agnico Eagle 2022b, for additional discussion). The immediate effect of specific stressors (e.g., aircraft, vehicles, other wildlife) on caribou behaviour will also provide general insight into the relative effect of natural, Project-related, and community-related (i.e., ATV traffic and harvesting) road stressors on caribou behaviour. Consequently, opportunistic surveys should be completed when appropriate to do so during the caribou post-calving migration, without causing additional stress to caribou.

An external caribou behaviour expert (from ERM Consultants Canada Ltd.) was brought on site in 2020, 2021, 2022, and 2023 to conduct the behaviour monitoring program, and to provide training for the Meliadine Mine Environmental Technicians. The overall objective of the caribou behaviour monitoring program as stated in the TEMMP is:

- To determine if caribou activity budgets change with distance from the mine, and to document caribou response to stressors.
- To determine if caribou distribution changes with proximity to the mine (i.e., do caribou avoid the mine).

Per the Project Certificate (T&C 57), a detailed analysis of caribou responses to operations of the AWAR is required at Meliadine. The detailed objectives of the 2023 study were:

1) To conduct a study using behaviour survey methodology at the Project site to estimate how the AWAR and site infrastructure may contribute to the effects of the Project on caribou.
2) To use information from the surveys (combined across four years of data collection) to determine factors that predict caribou behaviour near the mine site, specifically looking at distance; group size; and vehicle disturbances.

The primary hypothesis of this study was that caribou closer to the road would demonstrate a stronger response to vehicle disturbances.

12.1.1 Methods

Ground-based behavioural observations, or scan sampling, are conducted to provide data on changes in caribou behaviour as a function of distance from the Project. Two different, but complementary approaches have been used to record the activity budget of caribou around the Project and AWAR. See the TEMMP (Agnico Eagle 2022b) for additional details on the behaviour scan method.

Prior to arrival of caribou in June, a wildlife biologist from ERM conducted a classroom and practical training program for Agnico Eagle environmental technicians from Meliadine Mine. The ERM wildlife biologist with an assistant was tasked with conducting behaviour observations as a primary role during July, while Meliadine technicians conducted behaviour observations opportunistically during other fieldwork in alignment with the TEMMP (Agnico 2022b).

The objective of the data analysis was to quantify trends in the survey data, and determine whether factors such as distance to infrastructure, group size, or disturbances could be used to explain caribou behaviour. The primary hypothesis was that caribou closer to the road would demonstrate a stronger response to disturbances. An initial exploratory analysis was conducted to visualize the data and determine the appropriate method for analyzing the data. Behaviour categories were grouped for analysis into “response” behaviours (alert and running) and non-response (feeding, lying down and standing) to increase statistical power.

Following the 2021 analysis there was a suggestion from the TAG to explore whether the proportion of walking caribou changed as a response to disturbance. This was done to see if walking would be better categorized as a response behaviour or non-response behaviour. To test this, a model that included walking, running, and alert behaviours was conducted in addition to the original model with just running and alert behaviours.

Generalized linear mixed-effects models (GLMMs) were developed to statistically test for differences in the proportion of response behaviours in surveyed animals as a function of various controlling variables, including the occurrence of disturbances. Proportions were modelled using a binomial distribution. Because small groups naturally have greater variability in values (i.e., more likely that “all” or “none” of caribou were alarmed when there are only two caribou) an offset was included for the total number of caribou with tallied behaviour. This regression framework provides a means to control for environmental variables, repeated measures, and spatial correlation. Random effects were included for survey ID and year to control for spatial and temporal autocorrelation.

Statistical analyses were conducted using R (R Core Team 2023). Two dependent variables were tested:

- Proportion of response behaviours (alert and running) in each 3-minute interval in each survey.
- Proportion of walking plus response behaviours in each 3-minute interval in each survey.

The two dependent variables were each modelled against a suite of potentially important variables to determine if there was any statistical relationship with response behaviour. Based on an initial assessment of which variables were most statistically relevant, the variables included in this analysis were group size, distance to road, wind speed, and a binary variable identifying whether a disturbance occurred during each 3-minute interval. For each dependent variable, GLMMs were constructed and tested for model fit, as evidenced by the Akaike Information Criterion (AIC; Appendix F).

12.1.2 Results

The following provides a summary of caribou behaviour monitoring completed in 2020–2023. Further explanation of statistical analyses and results are contained in Appendix F.

From 17 June to 9 July 2023, groups of caribou were surveyed passing through or near the study aera, with numbers peaking around 25 June 2023. This was slightly earlier than the peak in 2022 and 2021, and at least one week earlier than the peak in 2020. Caribou mostly exhibited non-response behaviours: standing, laying, and foraging. Across all survey years, groups tended to show greater response behaviours (running, alert) when in smaller groups (less than 25 caribou) or within 300 m of a road (ERM 2024a).

A total of 213 surveys were completed between 2020 and 2023 (Table 14). In 2023, 29% of surveys recorded a disturbance. Caribou mostly exhibited the non-response behaviours of standing, laying, and feeding. Small groups (i.e., < 25 caribou) tended to have higher proportion of response behaviours (i.e., running, alert) than larger groups, irrespective of disturbances. Groups within 300 m of the road tended to have higher proportions of response behaviours than those further away. Distance to the road was also linked to walking behaviour when grouped with alert and trotting behaviours, suggesting potential for walking as a response to disturbance. Walking behaviour has previously been considered a non-response behaviour, and as such models presented in this report include versions with walking designated as a potential response behaviour, as well as models with walking designated as a non-response behaviour for comparison. These results support that within 300 m of the road, caribou are more alert and active.

Following a disturbance event, the proportion of response behaviours in a group of caribou increased, but typically returned to baseline behaviours within two sampling periods (i.e., six minutes). Caribou were statistically more likely to be walking, alert, or running in sampling periods where a disturbance occurred (i.e., a passing vehicle). Therefore, the use of convoys as a method to consolidate multiple essential vehicles into a single disturbance event may be an effective mitigation to reduce the period caribou exhibit response behaviours following disturbance.

Table 14: Meliadine Caribou Behaviour Surveys Data Summary

Caribou Group Size	2020			2021			2022			2023		
	Number of Surveys	Surveys with Disturbance	Surveys with Road Crossing	Number of Surveys	Surveys with Disturbance	Surveys with Road Crossing	Number of Surveys	Surveys with Disturbance	Surveys with Road Crossing	Number of Surveys	Surveys with Disturbance	Surveys with Road Crossing
1-2	5	4	2	8	5	0	11	9	3	3	2	0
3-25	11	2	2	11	7	3	9	7	4	11	1	1
26-50	9	3	0	2	0	0	3	1	0	4	1	4
51-500	14	11	1	16	8	6	18	15	6	8	3	1
501-1,000	6	3	1	0	0	0	8	4	0	2	0	0
>1,000	11	6	0	9	7	3	20	17	2	14	5	6
Total	**56**	**29**	**6**	**46**	**27**	**12**	**69**	**53**	**15**	**42**	**12**	**12**

Source: ERM 2024a.

Environmental variables (e.g., temperature and wind speed) were not related to proportion of response behaviours in caribou groups.

12.2 Caribou Remote Camera Study

The following section is a summary of the Caribou Trail Camera Study Compilation Report, 2020 to 2023, completed by ERM (Appendix G; ERM 2024b).

Between 2020 and 2023, a study was conducted using motion-triggered cameras to study caribou interactions with the Project infrastructure during their annual migration, focusing on the AWAR. The initial study was designed to identify features of the AWAR (i.e., slope, substrate, height, and surrounding habitat) that may facilitate higher rates of caribou passage during annual migratory movements. Cameras were also placed at locations identified by community members and Inuit Elders from IQ where caribou more frequently crossed the road. The survey protocol in 2023 followed that used in the previous two years, with some modifications to improve data quality, and with some cameras moved to the Mine site and proposed Discovery Road.

The objectives of the 2023 study were:

- To conduct a study using motion-trigger cameras at the Project site to estimate how the Mine infrastructure including the AWAR may affect caribou movement during seasonal migration.
- To evaluate if there were specific locations with high numbers of caribou observations along the AWAR in 2023 and compare these locations with camera data from 2020 to 2022, and with those identified by IQ and GPS collar data.
- To collect information to determine road characteristics that might preferentially be used by caribou for crossing, specifically:
  - Material of road construction (esker versus quarry)
  - Side slope
  - Road height
  - Surrounding vegetation type
- To evaluate what relationship (if any) there is between vehicles recorded on the road and location/timing of caribou observations.
- To provide data on caribou occurrence in the Discovery area and in proximity to the Mine site.

Full details on the study are provided in Appendix G.

12.2.1 Methods

Camera locations were selected to maximize coverage and representation of habitat and road types, and to best detect caribou and vehicles along the AWAR. The same approximate locations were used in 2020, 2021, and 2022, with five additional locations added in 2022 to extend camera coverage south along the AWAR. In 2023, fewer cameras were deployed along the AWAR, with cameras distributed around the Mine site and along the proposed Discovery Road. There were 19 cameras deployed along the AWAR, 10 cameras deployed around the Mine site, and 15 cameras deployed along the proposed Discovery Road. All AWAR cameras were installed on the west side of the road facing north and were placed no more than 5 m from the side of the road to better capture vehicle traffic. All cameras took five pictures whenever motion was detected within approximately 40 m of the motion detector, including wildlife, vehicles, and occasionally objects moving in the wind. In addition, all cameras were programmed to take one photo every 30 minutes, day or night, to help capture activity happening beyond the range of the motion detector and to ensure the cameras were operational to measure effort.

Road survey data from 2020 was used in the 2020 to 2023 analyses and included: width, height above tundra, side-slope, surfacing material (esker versus quarry rock, and size), and surrounding vegetation type. All photos from 2022 and 2023 were pre-processed by an artificial intelligence (AI) algorithm to automatically sort photos into four categories: animals, vehicles, humans, and blank images (Beery et al. 2019; Fennell et al. 2022). ERM personnel then reviewed all photos as classified by the AI algorithm and confirmed all detections of wildlife or vehicles. In 2020 and 2021, ERM personnel reviewed all photos from the cameras and recorded every detection of wildlife and vehicles. In 2023, four cameras were spaced along the AWAR and analyzed for detailed vehicle traffic in addition to wildlife.

Analyses were designed to quantify trends both among and within years, and to determine whether factors such as road structure, vehicle traffic on the road, or placement of the cameras could be used to explain caribou occurrence and identify “hotspots” where caribou may be likely to cross the AWAR. Additionally, cameras around the Mine site and along the proposed Discovery Road provided information on caribou movement through the Meliadine area during the study period.

An initial exploratory analysis was conducted to visualize the data and determine the appropriate method for analyzing the data. Where data were complete, generalized linear models (GLMs) were used to assess the differences in the number of caribou detection events as a function of various controlling variables, including road structure. This regression framework provides a means to control for habitat, environmental variables, repeated measurements, and spatial correlation. For some comparisons in which statistical models were not useful due to a small sample size, summary statistics and correlations were calculated. All analyses were carried out using R (R Core Team 2023).

12.2.2 Results

Overall, the key findings across four years (2020 to 2023) of the camera study included:

- The cameras were successful at capturing many caribou crossing the AWAR, with peak caribou passage occurring three weeks earlier in 2023 (June 18 – 26) versus 2022 (July 10 – 15), consistent with patterns of inter-annual variability observed in caribou GPS collar data.
- Caribou crossing timing and locations in 2023 were consistent with locations identified in 2020 to 2022, and with locations identified by IQ from Inuit Elders and community members. The hotspots identified by the camera data in all four years aligned more closely with the IQ identified hotspots than the collar data from 2012 to 2019.
- Road height and road-side slope at each camera location was not related to the number of caribou observed at each camera location, suggesting that differences in the structure of the AWAR do not significantly influence the locations where caribou cross. The AWAR was constructed with strict design criteria including having a side slope and material that promoted caribou crossing the road – and thus there may not be enough variability in the road construction to influence caribou crossing.
- More caribou were observed on cameras on the northern half of the road in most years. Esker material is more common as a substrate on the northern half of the road which may suggest caribou prefer crossing on esker material. However, it is more likely that this is due to broad scale caribou movement patterns.
- Median time lag from a vehicle passing to a caribou crossing when the AWAR was open was 1.7 hours, when the AWAR was open with restriction was 3.7 hours, and when the AWAR was closed was 4.3 hours. The increasing time lag between vehicle detection and caribou crossing does not necessarily suggest avoidance of traffic on the AWAR, but may instead reflect the largely reduced volume of traffic due to pre-emptive restriction on the AWAR when caribou are in the area. Vehicle results should be treated with caution, as caribou may pass behind a camera or out of range of the camera motion detector, and therefore not all caribou crossings will be captured by all cameras, despite best efforts to do so.
- Caribou were detected in the Mine and Discovery areas throughout the study period, with small groups around the mine and larger migratory groups along the proposed Discovery Road.

Overall, the results suggest that caribou are not affected by the structure of the Meliadine AWAR, but spatial differences in road crossing locations may be explained by traffic, migration timing, migratory route fidelity, or some combination of these factors. Convoys are currently used to mitigate effects of essential Mine traffic when caribou are in the Mine area. These results highlight the power of using motion-trigger cameras to draw connections between the many interacting variables that may explain caribou passage through the Mine area, which may be integrated with additional sources of data such as collar analysis and behaviour monitoring to inform potential cumulative effects of the Meliadine Mine. Additional camera data will help confirm any potential effects, as well as provide further insight on areas of high caribou passage across the AWAR. Further, pooling data collected across multiple study years will allow for minimum sample sizes necessary to incorporate further quantitative analyses of patterns of caribou movement across the Project.

Further explanation of analyses and results of the caribou trail camera study are contained in Appendix G.

12.3 Collared Caribou Inventory

The following section provides a summary of collared caribou presence in the RSA and LSA from 1993 to 2023. The goal of the collared caribou inventory is to understand the potential for indirect effects from the Project on caribou, both immediately adjacent to the Project (i.e., in the LSA) and in the surrounding region (i.e., in the RSA). A data sharing agreement between Agnico Eagle and the GN DoE was reached in 2023; GPS telemetry data (i.e., collar data) for Kivalliq caribou were received from the GN DoE and were used in this collared caribou inventory. Findings from previous analyses using these collar data, including analyses undertaken for the Meliadine Extension or Waterlines proposal (i.e., Commitment 38 analyses; WSP 2023a, WSP 2023b), are also integrated into the collared caribou inventory presented.

12.3.1 Methods

For each caribou and year, the collar data were intersected with the LSA and RSA footprints to determine when collared caribou entered and exited the LSA and RSA. Caribou interactions with the LSA and RSA footprints were separated into “bursts”, or unique interaction events that ended when the caribou stepped outside either the LSA or RSA. Thus, a single caribou could have multiple RSA interactions or LSA interactions (bursts) in one year. The mean number of times that each caribou interacted with the LSA and RSA per year (i.e., mean number of bursts) was calculated. Further, the entry date and exit date for each burst was determined, then averaged across all bursts to determine a mean entry and exit date, per RSA and LSA, per year. The duration of time spent in the RSA and LSA was also calculated per burst; if a caribou entered and exited on the same day, the duration was automatically rounded up to 1 day. Then, the mean duration of time spent in the RSA and LSA was averaged per year.

12.3.2 Results

Individuals from the Qamanirjuaq herd have been present in the RSA for 16 of the 31 years where collar data are available (Table 15). Caribou began entering the RSA in 2006 and have continued to enter the RSA since then (except in 2009 and 2010). Alternating periods of presence and absence of caribou in the RSA has been noted by IQ (Golder 2014). The number of collared individuals that annually enter the RSA has increased since 2006, with the most Qamanirjuaq caribou entering the RSA between 2017 and 2019. Since 2011, collared Qamanirjuaq caribou have typically entered the RSA in late June to mid-July and have remained in the RSA for 1 to 5 days.

Individuals from the Qamanirjuaq herd have been present in the LSA for 15 of the 31 years where collar data are available (Table 15). In almost all years when caribou have entered the RSA, some individuals have also entered the LSA (except in 2008). Qamanirjuaq caribou began entering the LSA in 2006 and 2007, did not enter the LSA between 2008 and 2010, then have consistently been present in the LSA since 2011. Collared caribou typically enter the LSA in early to mid-July and leave the LSA on the same day; some individuals enter the LSA several times over the course of one summer but remain in the LSA for a day or less during each interaction, which suggests that caribou are not avoiding the Project. The length of time Qamanirjuaq caribou are spending in the LSA has not varied since collared caribou began interacting with the LSA in 2006.

These results align with WSP’s (2023a) previous findings that fewer than 30% of Qamanirjuaq caribou come within 5 km of the Project and that 99% of caribou that came within 5 km of the AWAR or Mine for a specific year remained for less than 24 hours. The collar data also support that caribou are spending very little time in the areas immediately adjacent to the Project. In consideration of these results, impacts to the Qamanirjuaq herd due to the Project have the potential for limited transboundary effects. Past analysis of collar data interactions with the Mine infrastructure and AWAR in indicate no strong local scale deflection effects although more regional effects have not been assessed (Appendix D in Golder 2021).

Table 15: Annual Timing of Qamanirjuaq Collared Caribou Presence and Duration in the Regional Study Area and Local Study Area, 1993–2023

Year	Total Caribou Collared	RSA					LSA				
		Caribou in RSA	Mean Entries per Caribou	Mean Entry Date	Mean Exit Date	Mean Duration (days)	Caribou in LSA	Mean Entries per Caribou	Mean Entry Date	Mean Exit Date	Mean Duration (days)
1993	5	-	-	-	-	-	-	-	-	-	-
1994	8	-	-	-	-	-	-	-	-	-	-
1995	8	-	-	-	-	-	-	-	-	-	-
1996	13	-	-	-	-	-	-	-	-	-	-
1997	14	-	-	-	-	-	-	-	-	-	-
1998	15	-	-	-	-	-	-	-	-	-	-
1999	18	-	-	-	-	-	-	-	-	-	-
2000	15	-	-	-	-	-	-	-	-	-	-
2001	13	-	-	-	-	-	-	-	-	-	-
2002	16	-	-	-	-	-	-	-	-	-	-
2003	14	-	-	-	-	-	-	-	-	-	-
2004	23	-	-	-	-	-	-	-	-	-	-
2005	22	-	-	-	-	-	-	-	-	-	-
2006	44	2	1.00	17-Sep	06-Oct	19.00	2	1.00	05-Oct	06-Oct	1.00
2007	42	1	1.00	04-Jan	14-Feb	41.00	1	1.00	14-Feb	14-Feb	1.00
2008	48	1	1.00	13-Jul	14-Jul	1.00	-	-	-	-	-
2009	52	-	-	-	-	-	-	-	-	-	-
2010	21	-	-	-	-	-	-	-	-	-	-
2011	40	2	1.00	01-Aug	02-Aug	1.00	2	1.00	01-Aug	01-Aug	1.00
2012	35	5	1.20	15-Jul	18-Jul	3.50	3	1.67	17-Jul	17-Jul	1.00
2013	53	12	1.42	10-Jul	13-Jul	2.47	5	1.20	14-Jul	14-Jul	1.00
2014	55	7	1.86	21-Jul	23-Jul	2.62	3	1.33	09-Jul	09-Jul	1.25
2015	57	36	2.06	28-Jul	01-Aug	3.43	27	1.59	15-Jul	15-Jul	1.12
2016	75	39	2.26	08-Jul	11-Jul	3.11	28	1.54	11-Jul	11-Jul	1.00
2017	121	69	1.36	07-Jul	09-Jul	2.49	48	1.52	09-Jul	09-Jul	1.00
2018	108	50	2.34	08-Jul	11-Jul	3.38	40	1.75	13-Jul	13-Jul	1.01
2019	128	69	1.35	23-Jun	28-Jun	4.82	24	1.54	29-Jun	29-Jun	1.03
2020	112	29	2.07	05-Jul	08-Jul	2.70	14	2.14	10-Jul	10-Jul	1.03
2021	69	21	2.76	14-Jun	17-Jun	2.93	10	1.60	06-Jul	06-Jul	1.00
2022	62	28	2.39	28-Jun	02-Jul	3.90	20	1.75	08-Jul	08-Jul	1.00
2023	66	28	5.18	09-Jun	13-Jun	4.16	24	2.88	27-Jun	28-Jun	1.03

LSA = Local Study Area; RSA = Regional Study Area.

12.4 Caribou Advisory

The objective of the Caribou Advisory Monitoring program is ensuring workers are aware of the approximate numbers of caribou on and in close proximity to the Project, which is related to the potential for interactions between caribou and mining activities. The Caribou Advisory raises general awareness so that employees are alert to the likelihood that mitigation could be triggered, and what mitigation entails. The number of animals near the Project and in specific areas dictates the type of mitigation practices that will be undertaken (e.g., road closure, closing specific areas at the Mine site, speed reduction).

12.4.1 Methods

Mine staff, in collaboration with the GN and KivIA and including participation of the KHTO, undertake the implementation of a caribou monitoring and work suspension protocol during caribou migration to minimize sensory disturbance at the Project site and along the AWAR. KHTO and KivIA members typically assist Mine staff conducting surveys during caribou migration. In 2023, a KivIA representative was lodged on site for the majority of the migration period, allowing for instant communication with the Environment department and its consultants. The KHTO led the convoys when travel was required on the AWAR (equipment transportation or employee buses) during the caribou migration. Communication protocols built into the work suspensions are designed to be broadcast swiftly and broadly among all departments in real time. The Environmental Department monitored caribou presence as per the caribou migration protocol (TEMMP Appendix III; Agnico Eagle 2022b) including the use of collar data and regular surveys and issuing caribou advisories. Regular surveys for caribou, were completed by on site Environmental Technicians, and consisted of ground surveys at multiple locations, at regular intervals throughout the day (i.e., 06:00, 12:00, 18:00) during caribou migration. The results of the surveys were communicated to all Project Departments, including the KivIA and KHTO, indicating if any work stoppages or restrictions are required and the affected work areas.

A decision tree is used to guide adaptive monitoring and mitigation based on results of surveys. Three action levels are outlined in the decision tree:

- Level 1: triggered when 50 or more caribou are observed within 10 km of the Mine based on ground surveys or review of satellite collar data. Ground surveys are completed every two days, and satellite collar data is reviewed twice per week. Site-wide warnings are issued daily. Level 1 is ongoing for 5 days, or until Level 2 is triggered.
- Level 2: triggered when less than 50 caribou are observed within 5 km of the Mine. Ground surveys are completed every two days, and satellite collar data is reviewed twice per week. Additional mitigation (e.g., work suspension), may be implemented by the Environmental supervisor. Site-wide warnings are issued daily. Level 2 is ongoing for 10 days; or until caribou exit the 5 km mark or Level 3 is triggered.
- Level 3: triggered when 50 or more caribou are observed within 5 km of the Mine. Ground surveys are completed three times per day, and satellite collar data is reviewed at least twice per week. A work suspension protocol is implemented. Site-wide warnings are issued three times per day. Closure occurs on the AWAR when 50 or more caribou are within 100 m of the road. Level 3 is ongoing until caribou exit the 5 km mark.

12.4.2 Results

Surveys to monitor migration of the Qamanirjuaq herd through the Project were performed from 16 to 23 January 2023 and 30 May to 25 July 2023. Mine site and AWAR surveys were completed two to three times daily throughout this period by Mine personnel. An additional fourth survey was occasionally done to provide an update on herds. A record of caribou surveys, including date, time, estimated number of caribou and approximate location are presented in Appendix H. Additional fourth surveys are included in Appendix H, but were purposefully omitted in Figure 4 to avoid inflating caribou counts and to allow direct comparison across days (assuming a maximum of three surveys per day).

Caribou were detected during surveys from 16 to 23 January 2023, and closure of the Mine site and/or AWAR was triggered between 20 and 21 January 2023 (Table 16). Caribou were detected during surveys from 30 May to 25 July 2023, and closure of the Mine site and/or AWAR was triggered between 11 June and 11 July 2023 (Table 16). The highest caribou numbers were observed on 6 July 2023 (Figure 4).

Shutdowns affecting different components of the Mine were implemented to facilitate the safe migration of caribou through the Project. Shutdowns are summarized in Table 16. AWAR closures in 2023 totaled 386 hours over 26 days. Vehicle traffic on site and open pit operations were restricted for 281 hours over 20 days. Activities at the Exploration Camp were restricted for 81 hours over 5 days. Activities at the Main Camp were restricted or shutdown for 264 hours over 18 days. Waterline work was cancelled for 296 hours over 28 days. Eleven flights were cancelled to mitigate disturbance to caribou on 19, 20, 21, 26 and 27 June 2023 as well as 6 and 7 July 2023.

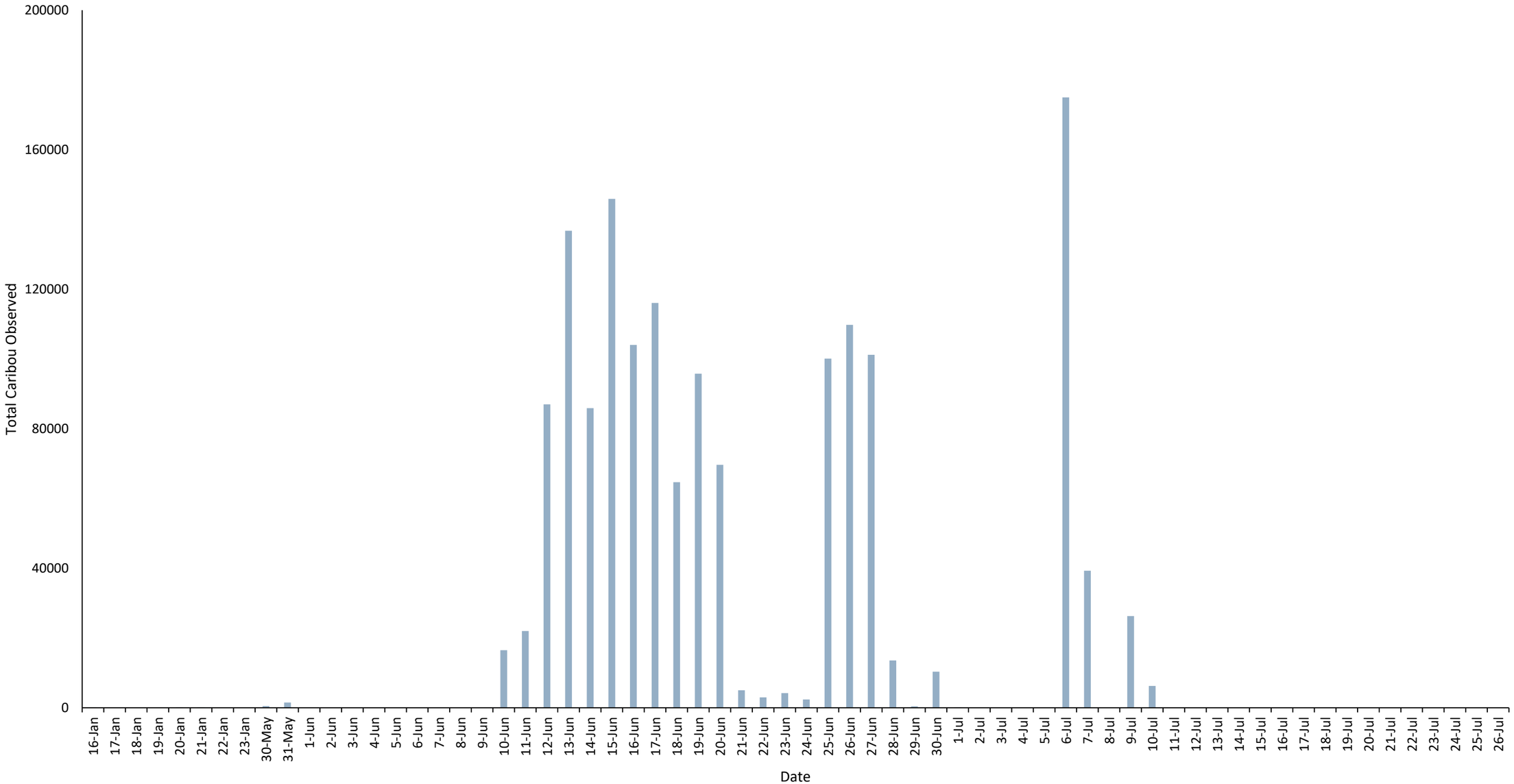

Figure 4: Total caribou observed by date in 2023. Note that caribou observed in January 2023 are included on the same axes as May, June, and July 2023 caribou observations.

Table 16: Recorded Down Time in 2023

Date	Hours Closed					Operation Comments	AWAR Comments	Waterline Comments
	AWAR	OP Operations	Exploration Camp Area	Main Camp	Waterline Construction			
2023-01-20	8.0	8.0	0.0	8.0	0.0	Level 3 - Operations shutdown at 16:00	-	-
2023-01-21	11.5	11.5	0.0	11.5	0.0	Level 3 - Operations resumed at 11:30	-	-
2023-06-11	0.0	11.0	0.0	11.0	6.0	Level 3 - Operations shutdown at 13:00	AWAR open with restriction	Waterline work cancelled (18:00-00:00)
2023-06-12	0.0	24.0	0.0	24.0	12.0	Level 3 - Operations shutdown since 2023-06-11	AWAR open with restriction	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-13	0.0	24.0	0.0	24.0	6.0	Level 3 - Operations shutdown since 2023-06-11	AWAR open with restriction	Waterline cancelled (00:00-06:00); Work conducted along waterline (18:00-00:00)
2023-06-14	6.0	24.0	0.0	24.0	6.0	Level 3 - Operations shutdown since 2023-06-11	AWAR close at 18:00	Work conducted along waterline (00:00-06:00); Waterline work cancelled (18:00-00:00)
2023-06-15	12.0	24.0	0.0	24.0	12.0	Level 3 - Operations shutdown since 2023-06-11	AWAR open 6:00 to 18:00, close at 18:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-16	12.0	18.0	0.0	18.0	12.0	Level 2 - Industrial site and Portal 1 at 18:00 Level 3 - Exploration Camp since 2023-06-11	AWAR open 6:00 to 18:00, close at 18:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-17	24.0	6.0	0.0	6.0	12.0	Level 2 - Entire site from 6:00 to 18:00 Level 3 - Operations shutdown at 18:00	AWAR closed	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-18	24.0	21.0	0.0	21.0	12.0	Level 3 - Operations shutdown since 2023-06-17 18:00 Level 2 - Industrial Site and Portal 1 at 21:00	AWAR closed	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-19	24.0	6.0	0.0	6.0	12.0	Level 2 - Entire site from 6:00 to 12:00 Level 3 - Operations shutdown at 12:00	AWAR closed	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-20	24.0	17.0	0.0	17.0	12.0	Level 3 - Operations shutdown from 2023-06-19 12:00 to 2023-06-20 17:00 Level 2- Entire site at 17:00	AWAR closed	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-21	24.0	6.0	0.0	0.0	12.0	Level 2 -Entire site 0:00 to 12:00 Level 3 - Portal 1 at 12:00 Level 2 - Entire site at 18:00	AWAR closed	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-22	15.5	6.0	0.0	0.0	12.0	Level 2 - Entire site 0:00 to 18:00 Level 3 - Exploration Camp and Portal 1 at 18:00	AWAR closed 00:00 to 9:30, reopened at 9:30 and closed at 18:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-23	18.0	24.0	24.0	24.0	12.0	Level 3 - Operations shutdown entire site at 6:00	AWAR reopened at 9:00 and closed at 18:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-24	6.0	17.0	17.0	17.0	12.0	Level 3 - Operation shutdown 00:00 to 17:00 Level 2 - Entire site at 17:00	AWAR reopened with restriction at 6:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-25	18.0	0.0	0.0	0.0	12.0	Level 2 - Entire site	AWAR open 00:00 to 6:00, closed at 6:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-26	24.0	0.0	0.0	0.0	12.0	Level 2 - Entire site	AWAR closed	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-27	24.0	0.0	0.0	0.0	12.0	Level 2 - Entire site	AWAR closed	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-28	6.0	0.0	0.0	0.0	12.0	Level 2 - Entire site	AWAR reopened at 6:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-29	6.3	6.3	6.3	6.3	12.0	Level 2 - Entire site 00:00 to 17:45 Level 3 - Operations shutdown 17:45	AWAR open from 00:00 to 17:45, closed 17:45 to 24:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-06-30	15.8	9.8	9.5	9.8	12.0	Level 3 - Operations shutdown 00:00 to 9:45 Level 2 - Entire site at 9:45	AWAR closed 00:00 to 9:45, reopened 9:45 to 18:00 and close at 18:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-07-01	6.0	0.0	0.0	0.0	12.0	Level 2 - Entire site since 9:45 2023-06-30	AWAR reopened with restriction at 6:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00). Between June 22 and July 2. smaller groups of caribou have always been seen within 5 km of working area during the evening surveys.
2023-07-02	0.0	0.0	0.0	0.0	6.0	Level 2 - Entire site	AWAR open with restriction	No caribou within 5km radius of the working area on AWAR (KM19-20) - work to start at 18:00 (6 hours total of work for July 2nd)

Table 16: Recorded Down Time in 2023

Date	Hours Closed					Operation Comments	AWAR Comments	Waterline Comments
	AWAR	OP Operations	Exploration Camp Area	Main Camp	Waterline Construction			
2023-07-03	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open with restriction	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-04	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open with restriction	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-05	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open with restriction	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-06	13.2	0.0	0.0	0.0	6.0	Level 2 - Entire site	AWAR closed at 10:50	Work conducted along waterline (00:00-06:00); Waterline work cancelled (18:00-00:00)
2023-07-07	20.5	0.0	0.0	0.0	12.0	Level 2 - Entire site	AWAR reopened from 6:00 to 9:30, closed at 9:30	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-07-08	7.5	0.0	0.0	0.0	7.5	Level 2 - Entire site	AWAR closed from 00:00 to 6:00, (open 06:00 to 22:30, closed 22:30-00:00)	Waterline work cancelled (00:00-06:00). Work conducted along waterline (18:00-22:30) and cancelled from (22:30-00:00) due to presence of caribou by the wildlife monitor
2023-07-09	18.0	0.0	0.0	0.0	12.0	Level 2 - Entire site	AWAR closed at 6:00 and open at 6:00 on 2023-07-10	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-07-10	12.0	11.4	24.0	6.0	12.0	Level 3 - Exploration Camp start 6:40 Level 3 Portal 1- start 6: 40; Level 2 at 12:00; Level 3 at 18:00 Level 3 - Operations shutdown entire site at 18:00	AWAR reopened at 6:00 and close at 18:00	Waterline work cancelled (00:00-06:00) and (18:00-00:00)
2023-07-11	6.0	6.0	0.0	6.0	6.0	Level 3- all site 0:00 to 6:00 Level 2 -all site from 6:00	AWAR open with restriction from 6:00	Work cancelled along waterline (00:00-06:00) and Work conducted along the AWAR (18:00-00:00)
2023-07-12	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open with restriction	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-13	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open with restriction	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-14	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open with restriction	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-15	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open with restriction	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-16	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open with restriction	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-17	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open, no convoy	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-18	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open, no convoy	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-19	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open, no convoy	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-20	0.0	0.0	0.0	0.0	0.0	Level 2 - Entire site	AWAR open, no convoy	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-21	0.0	0.0	0.0	0.0	0.0	Level 1 - Entire site	AWAR open, no convoy	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-22	0.0	0.0	0.0	0.0	0.0	Level 1 - Entire site	AWAR open, no convoy	Work conducted along waterline (00:00-06:00) and (18:00-00:00)
2023-07-23	0.0	0.0	0.0	0.0	0.0	Level 1 - Entire site	AWAR open, no convoy	-
2023-07-24	0.0	0.0	0.0	0.0	0.0	Level 1 - Entire site	AWAR open, no convoy	-
2023-07-25	0.0	0.0	0.0	0.0	0.0	Level 1 - Entire site	AWAR open, no convoy	-
Total Hours Lost (rounded to nearest hour)	**386**	**281**	**81**	**264**	**296**			

12.4.3 Traffic Data

A total of 24,254 one-way trips along the AWAR were recorded in 2023, with an average of 2,021 trips per month (Table 17). Traffic rates were lowest in February, and highest in July. Pickup trucks and tractor-trailers were large contributors to traffic rates, followed by fuel tankers, and buses. The number of one-way trips in 2023 was higher than the 18,381 trips in 2022 and 20,323 trips in 2021 (Nuqsana Golder 2023). In addition to one-way trips, there were 52 records of convoy trips between June and July 2023. Trips included crew changes, food or fuel transport, maintenance (i.e., electrical issue at gatehouse), and medical trips.

Table 17: AWAR Traffic by Month (2023).

Vehicle Type	Number of One-way Trips by Month												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Ambulance	2	4	6	2	0	2	2	0	6	26	0	5	**55**
ATV	1	0	0	9	84	139	480	104	171	75	27	0	**1,089**
Backhoe	0	0	0	0	1	0	1	2	0	1	0	1	**6**
Boom Truck	1	0	3	4	10	2	5	3	5	2	0	0	**36**
Bus	210	215	224	213	294	217	201	296	245	263	210	183	**2,770**
Crane	0	0	0	0	0	2	0	0	0	0	0	0	**2**
Dump truck	0	0	0	0	53	22	154	58	44	29	2	0	**362**
Flatbed Tractor	2	0	0	2	6	0	0	3	10	3	0	1	**27**
Fuel Tanker (40 000 L)	323	186	274	223	273	84	218	298	194	223	155	220	**2,670**
Fuel Truck (15 000 L)	12	30	47	16	19	5	47	35	38	37	14	10	**308**
Grader	48	37	40	19	20	14	18	19	31	27	27	30	**329**
Haul Truck	48	0	4	16	71	167	113	69	153	80	39	0	**760**
Hino-luggage	10	12	10	12	18	21	12	21	25	22	22	15	**200**
Hyster (Reach Stacker)	1	0	1	0	2	1	1	5	0	1	0	2	**14**
Loader	13	3	2	15	16	20	47	55	43	37	3	4	**259**
Oversized load	0	2	1	3	2	0	1	4	1	0	0	1	**16**
Pickup	469	532	559	557	836	557	1,337	1,182	993	959	431	373	**8,785**
Roll Off truck	6	12	0	11	9	0	2	6	12	13	6	4	**81**
Service truck	8	5	4	6	18	12	26	37	60	44	16	4	**240**
Sewage Truck	15	14	17	13	23	12	24	19	14	28	15	9	**202**
Snowblower	31	28	27	8	0	0	0	0	0	0	8	17	**120**
Telehandler	0	0	0	0	0	0	30	27	41	17	2	0	**117**
Tractor-trailer	273	77	167	497	545	136	564	796	850	910	588	278	**5,681**
Water tanker (40 000L)	2	1	11	12	13	13	20	25	5	6	11	6	**127**
Total	**1,474**	**1,158**	**1,398**	**1,639**	**2,313**	**1,427**	**3,303**	**3,062**	**2,940**	**2,802**	**1,575**	**1,162**	**24,254**

Notes: Trips less than the entire length of the road were rounded up to whole numbers (e.g., 0.5 rounded to 1), therefore total trip numbers provided in table will be larger actual trips performed.

12.5 Accuracy of Impact Predictions

A summary of the impact predictions proposed in the TEMMP (Agnico Eagle 2022b) is provided in Table 18. Though not fully developed, the following thresholds are suggested as a starting point for adaptive management and TEMMP (Agnico Eagle 2022b) refinement and is tested against the results of the 2023 observational data (Table 18).

Table 18: Accuracy of Impact Predictions – Caribou

Monitoring Indicator	Preliminary Threshold	Exceeded in 2023?	Adaptive Management	Monitoring Method	TEMMP Section
Habitat Loss and Degradation	No greater than 2,950 ha of terrestrial habitat loss	Not assessed in 2023	Not Currently Identified	Aerial photographs, satellite imagery, ground surveys, GIS analysis	5.0
Sensory Disturbance	<10% caribou deflections from AWAR	Not assessed in 2023	Not Currently Identified	Caribou satellite collar data	N/A
Vehicle Collisions	No more than 1 ungulate/year	No	No action required	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	9.5
Hunting by Rankin Inlet Residents	After 3 years of data collection in collaboration with the GN[(a)], establish a threshold level	Not assessed in 2023	Not Currently Identified	Hunter Harvest Survey, data collected throughout the year and reported annually	13.0
Other Project Related Mortality	No more than 1 ungulate/year	No	No action required	Wildlife Sightings Log, Site Surveillance Monitoring	9.5
Exposure to Contaminated Water or Vegetation	SLRA – TBD	N/A	Not Currently Identified	Vegetation and soil samples	N/A

Notes: AWAR = All-Weather Access Road; GN = Government of Nunavut; SLRA = Screening Level Risk Assessment; TEMMP = Terrestrial Environment Management and Monitoring Plan; N/A = not applicable; <= less than; TBD = to be determined.

(a) Proposed thresholds will be established in collaboration with the GN and other relevant parties, such as TAG members.

13.0 HUNTER HARVEST STUDY

Agnico Eagle signed a Memorandum of Understanding (MOU), in principle, with the KHTO in March 2019 for the development and execution of a Hunter Harvest Study (HHS). The HHS supports Project Certificate No.006 Term and Condition 46 and 48. The HHS was implemented in 2020 and continued through 2023. In 2021 and 2022, an external consultant, Nunavut Environmental Consulting, was contracted to work alongside the KHTO to conduct the study (Agnico Eagle 2024c). The full HHS report is provided in Appendix I.

13.1 Methods

The wildlife species that are the focus of the HHS are caribou, muskox, grizzly bear, polar bear, wolf, wolverine, Arctic fox, goose, ptarmigan, and seal. However, harvest data on other species, such as beluga (*Delphinapterus leucas*), common eider (*Somateria mollissima*), and sandhill crane are also collected. The species in the study were deliberately chosen to make data entry and collection as simple as possible. To support creel surveys, data on fish harvest (Priority species = Arctic char, lake trout, lake whitefish, and Arctic grayling) were also collected.

Inuit and non-Inuit residents, at least 16 years of age, are eligible to participate in the harvest survey. Harvest calendars are provided on a household basis, rather than an individual basis, to simplify data entry and collection, and reflect household hunting patterns. The harvest calendar is attractive and consists of local photographs of wildlife and Nunavut residents. Space is provided for each calendar day where harvest details can be documented.

A map is provided at the end of the calendar that delineates a 5 km^2 UTM grid around the Rankin Inlet and Meliadine mine areas, and regions indicated as important for hunting during discussions with HTO members. Each grid has a unique code to facilitate recording of information. When calendars are issued, participants or participating households are encouraged to write harvest details (e.g., number of animals, sex, age, and location (i.e., grid code) for the appropriate date on the calendar.

Participants were interviewed in person three times during the year (i.e., June 2023, October 2023, and January 2024) by the harvest study coordinator. During the January 2024 interviews, remaining data from 2023 were collected, a new 2024 HHS calendar was provided, and prizes were distributed. The purpose of the interviews is to ensure all harvest data are recorded on the calendars and to collect incidental information to compliment calendar data, including notable Caribou movements, aggregations, and unique observations. Between interview periods, participants were often contacted by phone or social media to encourage recording of harvest data.

Features of the 2023 Hunter Harvest Study included:

1) Adding new participants

2) Building long-term relationships between participants and researchers

3) Increasing engagement with participants on social media platforms such as Facebook and Instagram

4) Increasing incentives for participating in the study (e.g., gas vouchers and prizes)

13.2 Results

The 2023 HHS included 56 participants, which was a marked increase compared to 2022 (44 participants) and 2021 (40 participants). Of the 56 participants in 2023, caribou harvest data were collected from 37 participants, which was higher than the 31 participants reporting caribou harvest in 2022. An estimated 300 to 350 active hunters live within the Rankin Inlet community. Based on these numbers, the 37 hunters reporting caribou harvest in 2023 conservatively represents 11 to 12% of total hunters in the community.

In 2023, a total of 483 caribou were harvested by 37 participants in the Rankin Inlet HHS. Given that the 37 hunters may represent an estimated 11 to 12% of the Rankin Inlet hunting community, the total estimated number of caribou harvested in 2023 was between 4,025 to 4,390 animals, which is considerably lower than estimates in 2022 (i.e., 5,470 to 6,077 animals) and 2021 (i.e., 6,700 to 7,444). This estimate appears to be conservative since participants likely represented a higher proportion of successful hunters in the community.

The 2023 HHS data indicated that 5.0% of reported harvest occurred within 5 km of the AWAR (4.8% in 2022), and 26.9% occurred within the RSA (29.4% in 2022; see Table 19). During the NWMB study from 1996 to 2001, 24.8% of reported harvest was within the RSA.

Table 19: Caribou Harvest Distribution along the AWAR and within the Rankin Inlet LSA and RSA (1996 to 2001 [NWMB], and 2021 to 2023 [Rankin Inlet HHS])

Study	Participation Rate within 5 km of AWAR (% of total hunters)	Average Caribou Harvest within 5 km of AWAR per Participant	% of Annual Harvest within 5 km of AWAR	% of Annual Harvest within Meliadine LSA	% of Annual Harvest within Meliadine RSA
NWMB 1996 to 2001 (Rankin Inlet)	NA	4.1	4.5	0.3	24.8
Rankin Inlet HHS 2021	16.7	5.0	3.7	3.3	19.7
Rankin Inlet HHS 2022	25.8	3.3	4.8	4.0	29.4
Rankin Inlet HHS 2023	16.2	4.0	5.0	2.9	26.9
Average (2021 to 2023)	19.6	4.1	4.5	3.4	25.3

AWAR = All-weather Access Road; HHS = Hunter Harvest Study; LSA = Local Study Area; NWMB = Nunavut Wildlife Management Board; RSA = Regional Study Area.

A total of 14 muskox, 3 wolverine, and 4 wolves were harvested in 2023. Other reported harvested terrestrial mammals included 1 Arctic hare and 4 polar bears. In the marine environment, beluga (*Delphinapterus leucas*; 45 individuals) was the most common species harvested followed by ringed seal (*Pusa hispida*; 29 individuals), bearded seal (*Erignathus barbatus*; 5 individuals), narwal (*Monodon monoceros*; 2 individuals), and walrus (*Odobenus rosmarus*; 2 individuals).

More birds were harvested by Rankin Inlet participants in 2023 (202 birds) than in 2022 (136 birds), but fewer than in 2021 (394 birds). In 2023, Canada goose and snow goose were harvested at the highest levels and made up 45% of all harvest bird species. Common eider, gull spp., ptarmigan (*Lagopus* sp.), sandhill crane, northern pintail, and tundra swan were also harvested.

Arctic char (*Salvelinus alpinus*; 2,525 fish), lake trout (*Salvelinus namaycush*; 122 fish), and Arctic cod (*Arctogadus glacialis*; 54 fish) were the most common species caught by fisherman. Relatively small numbers of Arctic grayling (*Thymallus arcticus*; 3 fish), lake whitefish (*Coregonus clupeaformis*; 6 fish), and burbot (*Lota lota*; 1 fish) were caught in 2023.

13.3 Recommendations

The Rankin Inlet Hunter Harvest Study and Creel Survey should be continued on an annual basis to monitor the hunting and fishing patterns of Rankin Inlet residents, and the potential effects of the mine and AWAR. Meetings with participants at certain intervals throughout the year will be particularly important in maintaining contact, building relationships, expanding the study, and collecting good harvest data.

Participation rates can be maintained by continuing to use social media platforms, expanding connections on these platforms, ensuring that all participants are visited during the three scheduled field visits, and continuing with distribution of the well-received year-end prizes while in the community.

Threshold levels for monitoring the effects of Mine development on the distribution of caribou harvest will not be set until three years of hunter harvest data have been collected (i.e., after the 2023 HHS). Harvest data in this report will be discussed with relevant parties (i.e., TAG members) to determine need for mitigation measures and harvest thresholds.

14.0 CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Your Truly,

WSP Canada Inc.

ORIGINAL SIGNED

Meghan Beale, MSc, RPBio
Senior, Wildlife Biologist

ORIGINAL SIGNED

Daniel Coulton, PhD, RPBio
Principal, Wildlife Biologist

MB/DC

https://wsponlinecan.sharepoint.com/sites/ca-ca00177499514/shared documents/06. deliverables/01_2023_temmp_annual_report/03_final/rev1/ca0017749.9514-mel2024_017-r-agnicoeagle_2023_temmp_annual_report_rev1_20240326.docx

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APPENDIX A

Shipping Inspection Forms, 2023

QSL

204003
2023-06-15 08:00 - N/A
V230534

Port	Section
Bécancour	Becancour

Pro Forma MANIFEST

MIENA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES RANKIN INLET

Product	Packaging	Identifier	Dimensions	Qty	Volume	Weight	HAZ MAT
Vehicles - self-propelled (machinery) HEAVY VEHICULES-NO ASSISTANCE	Unit	Bc: 92787, Desc: CAT MINI EXCAVATOR PO:365, Scope: oversized, PO: 23-00824-1	600 cm x 210 cm x 290 cm	1	36.54 m³	5.305 MT	Class 9/3166/P.G. III

SUBTOTAL QTY: 1 | SUBTOTAL VOLUME: 36.54 m³ (1290 cu.ft.) | 5.305 MT (11696 lb)

TOTAL QTY: 1 | TOTAL VOLUME: 36.54 m³ (1290 cu.ft.) | 5.305 MT (11696 lb)

Quantity: 759 | Volume: 18713.3246 m³ (660855 cu.ft.) | 8137.216 MT (17939490 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

205980
2023-06-21 00:00 - N/A
V230545

Port	Section
Bécancour	Becancour

Pro Forma MANIFEST

ATLANTIC ELM

Port of Discharge	Shipper	C/O	Consignee	Notify
BAKER LAKE, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES BAKER LAKE

Product	Packaging	Identifier	Dimensions	Qty	Volume	Weight	HAZ MAT
Equipment BUCKET	Pallet	Bc: 92690, Scope: loose, PO: 23-00763-1	115 cm x 140 cm x 170 cm	1	2.737 m³	1 MT	-
Equipment BUCKET	Pallet	Bc: 92689, Scope: loose, PO: 23-00763-1	200 cm x 170 cm x 100 cm	1	3.4 m³	1.2 MT	-
Vehicles - self-propelled (machinery) HEAVY VEHICULES-NO ASSISTANCE	Unit	Bc: 92691, Desc: CAT EXCAVATOR 320-070 2021 CODE 0920 POUR LA DEMARRER, Scope: oversized, PO: 23-00763-1	960 cm x 320 cm x 320 cm	1	98.304 m³	22.499 MT	Class 9/3166/P.G. III

SUBTOTAL QTY: 3 | SUBTOTAL VOLUME: 104.441 m³ (3688 cu.ft.) | 24.699 MT (54452 lb)

TOTAL QTY: 3 | TOTAL VOLUME: 104.441 m³ (3688 cu.ft.) | 24.699 MT (54452 lb)

Quantity: 98 | **Volume: 4252.9509 m³ (150192 cu.ft.)** | **1420.397 MT (3131439 lb)**

Captain, First Officer / Mate or vessel authorized personnel: Kovalevskyy Oleksandr

QSL Canada inc. without prejudice:

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

205976
2023-06-26 08:00 - N/A
V230536

DESGAGNES BAKER LAKE

Product	Packaging	Identifier	Dimensions	Qty	Volume	Weight	HAZ MAT
FULL		KEVIN, Scope: loose, PO: 23-01053-1, Seal # 032073					
20' containers FULL	Unit	Bc: NONU 686867-1, Desc: CONTENEUR 20' PO KEVIN, Scope: loose, PO: 23-01053-1, Seal # 032059	610 cm x 244 cm x 259 cm	1	38.5496 m³	11.3 MT	-
20' containers FULL	Unit	Bc: NONU 225266-6, Desc: CONTENEUR 20' PO KEVIN, Scope: loose, PO: 23-01053-1, Seal # 032060	610 cm x 244 cm x 259 cm	1	38.5496 m³	12 MT	-
20' containers FULL	Unit	Bc: NONU 220155-5, Desc: CONTENEUR 20' PO KEVIN, Scope: loose, PO: 23-01053-1, Seal # 032066	610 cm x 244 cm x 259 cm	1	38.5496 m³	12.5 MT	-
20' containers FULL	Unit	Bc: AXIU 294017-1, Desc: CONTENEUR 20' A3195 CONSULTANT DE L ARCTIQUE, Scope: loose, PO: 23-00857-1, Seal # 6702844	610 cm x 244 cm x 259 cm	1	38.5496 m³	14.8 MT	-
20' containers FULL	Unit	Bc: WEDU 142895-3, Desc: CTN 20' A3195, Scope: loose, PO: 23-00857-1, Seal # 6702833	610 cm x 244 cm x 259 cm	1	38.5496 m³	13.9 MT	-
20' containers FULL	Unit	Bc: 328310-7, Desc: 20' CTN SANAVIK COOP RETAIL, Scope: loose, PO: 23-00671-1, Seal # 6702950	610 cm x 244 cm x 259 cm	1	38.5496 m³	9.9 MT	-
20' containers FULL	Unit	Bc: BBUU 202343-4, Desc: 20' CTNR, Scope: loose, PO: 23-00671-1, Seal # 6702986	610 cm x 244 cm x 259 cm	1	38.5496 m³	12 MT	-
20' containers FULL	Unit	Bc: ACOL 003903-0, Desc: 20' CTNR, Scope: loose, PO: 23-00671-1, Seal # 6702975	610 cm x 244 cm x 259 cm	1	38.5496 m³	6 MT	-

SUBTOTAL QTY: 16 | SUBTOTAL VOLUME: 616.7936 m³ (21782 cu.ft.) | 187.2 MT (412705 lb)

TOTAL QTY: 16 | TOTAL VOLUME: 616.7936 m³ (21782 cu.ft.) | 187.2 MT (412705 lb)

Quantity: 127 | **Volume: 4593.095 m³ (162204 cu.ft.)** | **2346.524 MT (5173200 lb)**

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

205605
2023-06-20 16:00 - N/A
V230780

DESGAGNES RANKIN INLET

SUBTOTAL QTY: 44	SUBTOTAL VOLUME: 3419.0201 m³ (120742 cu.ft.)	258.67 MT (570270 lb)

TOTAL QTY: 44	TOTAL VOLUME: 3419.0201 m³ (120742 cu.ft.)	258.67 MT (570270 lb)

Quantity: 1131	Volume: 26829.4573 m³ (947473 cu.ft.)	9769.848 MT (21538828 lb)

Captain, First Officer / Mate or vessel authorized personnel:

QSL Canada inc. without prejudice:

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

207507
2023-07-05 08:00 - N/A
V230535

DESGAGNES BAKER LAKE

Product	Packaging	Identifier	Dimensions	Qty	Volume	Weight	HAZ MAT
PICK UP-NO ASSISTANCE							
Vehicles - self-propelled (passenger) PICK UP-NO ASSISTANCE	Unit	Bc: 92710, Desc: FORD RANGER LARIAT 2023, Scope: loose, PO: 23-01737-1	550 cm x 220 cm x 200 cm	1	24.2 m³	2.744 MT	Class 9/3166/P.G. III

SUBTOTAL QTY: 75 SUBTOTAL VOLUME: 723.1558 m³ (25538 cu.ft.) 174.175 MT (383990 lb)

TOTAL QTY: 75 TOTAL VOLUME: 723.1558 m³ (25538 cu.ft.) 174.175 MT (383990 lb)

Quantity: 1305 Volume: 27356.1052 m³ (966072 cu.ft.) 10104.47 MT (22276543 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

208978
2023-07-11 18:00 - N/A
V231142

Port	Section
Bécancour	Becancour

Pro Forma MANIFEST

ANDESBORG

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES RANKIN INLET

Product	Packaging	Identifier	Dimensions	Qty	Volume	Weight	HAZ MAT
Northern cargo PIECE	Loose	Bc: 92921, Desc: TOILETTE FUZIO, Scope: loose, PO: 23-02168-1	210 cm x 180 cm x 262 cm	1	9.9036 m³	2.3 MT	-

SUBTOTAL QTY: 1 SUBTOTAL VOLUME: 9.9036 m³ (350 cu.ft.) 2.3 MT (5071 lb)

TOTAL QTY: 1 TOTAL VOLUME: 9.9036 m³ (350 cu.ft.) 2.3 MT (5071 lb)

Quantity: 1327 Volume: 24020.8163 m³ (848287 cu.ft.) 11192.528 MT (24675300 lb)

Captain, First Officer / Mate or vessel authorized personnel:_____

Master
M.V. "ANDESBORG"

QSL Canada inc. without prejudice:_____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

210251
2023-07-18 08:00 - N/A
V230546

DESGAGNES BAKER LAKE

Product	Packaging	Identifier	Dimensions	Qty	Volume	Weight	HAZ MAT
Northern cargo GENERAL	Crate	Bc: 92542, Desc: CRATE 250522, Scope: containerized, PO: 23-00508-2	250 cm x 114 cm x 230 cm	1	6.555 m³	1.75 MT	-
Northern cargo GENERAL	Crate	Bc: 92541, Desc: CRATE 246176, Scope: containerized, PO: 23-00361-2	125 cm x 125 cm x 132 cm	1	2.0625 m³	0.85 MT	Class 2.1/1075
Northern cargo GENERAL	Crate	Bc: 92540, Desc: CRATE 250439, Scope: containerized, PO: 23-01896-2	262 cm x 92 cm x 113 cm	1	2.7238 m³	0.202 MT	-
Northern cargo GENERAL	Crate	Bc: 92539, Desc: CRATE 246005, Scope: containerized, PO: 23-00382-2	92 cm x 92 cm x 65 cm	1	0.5502 m³	0.18 MT	Class 3/1263/P.G. III
Vehicles - self-propelled (machinery) HEAVY VEHICULES-NO ASSISTANCE	Unit	Bc: 92589, Desc: DOZER D6-20VP MT318950, Scope: oversized, PO: 23-01883-2	570 cm x 420 cm x 330 cm	1	79.002 m³	23.62 MT	Class 9/3166/P.G. III

SUBTOTAL QTY: 13 | SUBTOTAL VOLUME: 443.4354 m³ (15660 cu.ft.) | 84.182 MT (185590 lb)

TOTAL QTY: 13 | TOTAL VOLUME: 443.4354 m³ (15660 cu.ft.) | 84.182 MT (185590 lb)

Quantity: 796 | Volume: 22793.3079 m³ (804938 cu.ft.) | 9374.016 MT (20666168 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

DESGAGNES BAKER LAKE

Product	Packaging	Identifier	Dimensions	Qty	Volume	Weight	HAZ MAT
		BAK					
Northern cargo GENERAL	Pallet	Bc: 92322, Desc: UNIT 42383, Scope: containerized, PO: 23-02499-2-BAK	122 cm x 101 cm x 39 cm	1	0.4806 m³	0.07 MT	-
Northern cargo GENERAL	Pallet	Bc: 92320, Desc: UNIT 42385, Scope: containerized, PO: 23-02499-2-BAK	255 cm x 140 cm x 132 cm	1	4.7124 m³	0.39 MT	-
Northern cargo WOOD	Crate	Bc: 92528, Desc: OPEN CRATE - TREATED LUMBER - 230088, Scope: loose, PO: 23-02499-2	306 cm x 115 cm x 96 cm	1	3.3782 m³	1.46 MT	-
Northern cargo WOOD	Crate	Bc: 92536, Desc: OPEN CRATE - TREATED LUMBER - 230086, Scope: loose, PO: 23-02499-2	305 cm x 128 cm x 120 cm	1	4.6848 m³	1.424 MT	-
Vehicles - self-propelled (passenger) PICK UP-NO ASSISTANCE	Unit	Bc: 92323, Desc: DODGE RAM 1500 2023 WHITE, Scope: loose, PO: 23-00693-2	590 cm x 220 cm x 215 cm	1	27.907 m³	2.226 MT	Class 9/3166/P.G. III
Vehicles - self-propelled (passenger) PICK UP-NO ASSISTANCE	Unit	Bc: 92317, Desc: GMC SIERRA 2023 WHITE UNIT 45284, Scope: loose, PO: 23-02499-2-BAK	650 cm x 295 cm x 208 cm	1	39.884 m³	2.461 MT	Class 9/3166/P.G. III

SUBTOTAL QTY: 16 SUBTOTAL VOLUME: 118.2842 m³ (4177 cu.ft.) 18.443 MT (40660 lb)

TOTAL QTY: 16 TOTAL VOLUME: 118.2842 m³ (4177 cu.ft.) 18.443 MT (40660 lb)

Quantity: 901 Volume: 19280.127 m³ (680871 cu.ft.) 8959.812 MT (19753004 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

2023-08-01 14:27

QSL

214359
2023-08-09 08:00 - N/A
V231301

Port	Section
Bécancour	Becancour

Pro Forma HATCH LIST SUMMARY

MARCELLIN ADESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	AGNICO EAGLE MINES LIMITED 355 Alphonse-Deshaies Blvd BÉCANCOUR QC G9H 2Y7 CANADA	N/A	AGNICO EAGLE MINES LIMITED (DIVISION MELIADINE) PO Box 879 RANKIN INLET NU X0C 0G0 CANADA	N/A

MELIADINE-AEM-STOCK

Location in vessel	Qty	Weight	Volume
Deck 3	28	132.075 MT (291176 lb)	1124.6112 m³ (39715 cu.ft.)
Deck 1	2	21.2 MT (46738 lb)	156.5928 m³ (5530 cu.ft.)
Deck 2	28	89.943 MT (198290 lb)	724.281 m³ (25578 cu.ft.)

SUBTOTAL QTY: 58 | SUBTOTAL VOLUME: 2005.485 m³ (70823 cu.ft.) | 243.218 MT (536204 lb)

TOTAL QTY: 58 | TOTAL VOLUME: 2005.485 m³ (70823 cu.ft.) | 243.218 MT (536204 lb)

Quantity: 883 | Volume: 22755.4835 m³ (803602 cu.ft.) | 10560.552 MT (23282032 lb)

Captain, First Officer / Mate or vessel authorized personnel:

QSL Canada inc. without prejudice:

MASTER
CFA 4098
MARCELLIN A. DESGAGNES

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

2023-08-13 17:25

QSL

214359
2023-08-09 08:00 - N/A
V231301

DESGAGNES BAKER LAKE - CLASS 9

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
propelled (passenger) PICK UP-NO ASSISTANCE	BLACK CLIENT ARCT81 CONSIGNEE 07949, Scope: loose, PO: 23-01436-3						

SUBTOTAL QTY: 8 | SUBTOTAL VOLUME: 248.3864 m³ (8772 cu.ft.) | 37.411 MT (82477 lb)

TOTAL QTY: 59 | TOTAL VOLUME: 322.4046 m³ (11386 cu.ft.) | 74.724 MT (164738 lb)

Quantity: 126 | Volume: 2896.3512 m³ (102284 cu.ft.) | 1424.133 MT (3139676 lb)

Captain, First Officer / Mate or vessel authorized personnel:

QSL Canada inc. without prejudice:

MARCELLIN A.DESGAGNES

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

217378
2023-08-22 11:30 - N/A
V231389

Port	Section
Bécancour	Becancour

Pro Forma DANGEROUS GOODS MANIFEST

MIENA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES RANKIN INLET - CLASS 2.1

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
Northern cargo GENERAL	Bc: 92920, Desc: GAZ PETROLE LIQU. UN 1075 A2732 CRATE 246286, Scope: containerized, PO: 23-02619-2-RAN	142 cm x 142 cm x 173 cm	1	3.4884 m³	1.04 MT	Deck3	Class 2.1/1075
Northern cargo GENERAL	Bc: 92919, Desc: GAZ PETROLE LIQU. UN 1075 A2732 CRATE 246287, Scope: containerized, PO: 23-02619-2-RAN	142 cm x 142 cm x 173 cm	1	3.4884 m³	1.04 MT	Deck3	Class 2.1/1075

Deck #2 AFT PORT x2

SUBTOTAL QTY: 2 SUBTOTAL VOLUME: 6.9768 m³ (246 cu.ft.) 2.08 MT (4586 lb)

TOTAL QTY: 2 TOTAL VOLUME: 6.9768 m³ (246 cu.ft.) 2.08 MT (4586 lb)

Quantity: 40 Volume: 1667.0272 m³ (58871 cu.ft.) 333.155 MT (734481 lb)

Captain, First Officer / Mate or vessel authorized personnel:

QSL Canada inc. without prejudice:

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

2023-08-30 11:34

217378
2023-08-22 11:30 - N/A
V231389

Port	Section
Bécancour	Becancour

Pro Forma HATCH LIST SUMMARY

MIENA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES RANKIN INLET

Location in vessel	Qty	Weight	Volume
Deck 3	2	2.08 MT (4586 lb)	6.9768 m³ (246 cu.ft.)

SUBTOTAL QTY: 2 | SUBTOTAL VOLUME: 6.9768 m³ (246 cu.ft.) | 2.08 MT (4586 lb)

TOTAL QTY: 2 | TOTAL VOLUME: 6.9768 m³ (246 cu.ft.) | 2.08 MT (4586 lb)

Quantity: 794 | Volume: 22798.5062 m³ (805122 cu.ft.) | 9375.807 MT (20670116 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

219452
2023-08-31 13:00 - N/A
V231551

Port	Section
Bécancour	Becancour

Pro Forma HATCH LIST SUMMARY

NORDIKA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
BAKER LAKE, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES BAKER LAKE

Location in vessel	Qty	Weight	Volume
HatchTwinDeck 3	79	69.31 MT (152802 lb)	377.0295 m³ (13315 cu.ft.)
LowerHold 3	19	19.354 MT (42668 lb)	39.7542 m³ (1404 cu.ft.)
Deck 3	11	92.9 MT (204809 lb)	424.0456 m³ (14975 cu.ft.)
Deck 2	3	16.7 MT (36817 lb)	115.6488 m³ (4084 cu.ft.)

SUBTOTAL QTY: 112 | SUBTOTAL VOLUME: 956.4781 m³ (33778 cu.ft.) | 198.264 MT (437097 lb)

TOTAL QTY: 112 | TOTAL VOLUME: 956.4781 m³ (33778 cu.ft.) | 198.264 MT (437097 lb)

Quantity: 926 | Volume: 21843.3843 m³ (771392 cu.ft.) | 10085.375 MT (22234446 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

219452
2023-08-31 13:00 - N/A
V231551

DESGAGNES BAKER LAKE - CLASS 8

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
Northern cargo GENERAL	Bc: 93290, Desc: BATTERIE UN2794 IK1376BAK1 CRATE 246345, Scope: containerized, PO: 23-02386-3-BAK	91 cm x 61 cm x 74 cm	1	0.4108 m³	0.22 MT	HatchTwinDeck3	Class 8/2794

SUBTOTAL QTY: 2 SUBTOTAL VOLUME: 1.0236 m³ (36 cu.ft.) 0.65 MT (1433 lb)

TOTAL QTY: 4 TOTAL VOLUME: 5.8056 m³ (205 cu.ft.) 1.736 MT (3827 lb)

Quantity: 199 Volume: 7730.6854 m³ (273007 cu.ft.) 4242.359 MT (9352801 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

2023-09-06 08:45

QSL

219452
2023-08-31 13:00 - N/A
V231551

Port	Section
Bécancour	Becancour

Pro Forma HATCH LIST SUMMARY

NORDIKA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
BAKER LAKE, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES BAKER LAKE

Location in vessel	Qty	Weight	Volume
HatchTwinDeck 3	79	69.31 MT (152802 lb)	377.0295 m³ (13315 cu.ft.)
LowerHold 3	19	19.354 MT (42668 lb)	39.7542 m³ (1404 cu.ft.)
Deck 3	11	92.9 MT (204809 lb)	424.0456 m³ (14975 cu.ft.)
Deck 2	3	16.7 MT (36817 lb)	115.6488 m³ (4084 cu.ft.)

SUBTOTAL QTY: 112 | SUBTOTAL VOLUME: 956.4781 m³ (33778 cu.ft.) | 198.264 MT (437097 lb)

TOTAL QTY: 112 | TOTAL VOLUME: 956.4781 m³ (33778 cu.ft.) | 198.264 MT (437097 lb)

Quantity: 926 | Volume: 21843.3843 m³ (771392 cu.ft.) | 10085.375 MT (22234446 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

219452
2023-08-31 13:00 - N/A
V231551

DESGAGNES BAKER LAKE - CLASS 8

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
Northern cargo GENERAL	Bc: 93290, Desc: BATTERIE UN2794 IK1376BAK1 CRATE 246345, Scope: containerized, PO: 23-02386-3-BAK	91 cm x 61 cm x 74 cm	1	0.4108 m³	0.22 MT	HatchTwinDeck3	Class 8/2794

SUBTOTAL QTY: 2 SUBTOTAL VOLUME: 1.0236 m³ (36 cu.ft.) 0.65 MT (1433 lb)

TOTAL QTY: 4 TOTAL VOLUME: 5.8056 m³ (205 cu.ft.) 1.736 MT (3827 lb)

Quantity: 199 Volume: 7730.6854 m³ (273007 cu.ft.) 4242.359 MT (9352801 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

2023-09-06 08:45

220360
2023-09-08 08:00 - N/A
V231526

Port	Section
Bécancour	Becancour

Pro Forma HATCH LIST SUMMARY

MARCELLIN ADESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	AGNICO EAGLE MINES LIMITED 355 Alphonse-Deshaies Blvd BÉCANCOUR QC G9H 2Y7 CANADA	N/A	AGNICO EAGLE MINES LIMITED (DIVISION MELIADINE) PO Box 879 RANKIN INLET NU X0C 0G0 CANADA	N/A

MELIADINE-AEM-STOCK

Location in vessel	Qty	Weight	Volume
Deck 1	16	106.85 MT (235564 lb)	674.0632 m³ (23804 cu.ft.)
Deck 3	14	198.126 MT (436793 lb)	586.2809 m³ (20704 cu.ft.)
Deck 2	32	343.87 MT (758104 lb)	1436.9822 m³ (50747 cu.ft.)

SUBTOTAL QTY: 62 | SUBTOTAL VOLUME: 2697.3263 m³ (95255 cu.ft.) | 648.846 MT (1430461 lb)

TOTAL QTY: 62 | TOTAL VOLUME: 2697.3263 m³ (95255 cu.ft.) | 648.846 MT (1430461 lb)

Quantity: 780 | Volume: 23253.5273 m³ (821191 cu.ft.) | 10893.5029 MT (24016063 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____ 13-09-2023

MARCELLIN A.DESGAGNES
IMO # 9571387
MASTER

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from hosting soils that could contain plant seeds of invasive breeds.

QSL

220360
2023-09-08 08:00 - N/A
V231526

MEADOWBANK-AEM-STOCK - CLASS 9

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
ASSISTANCE							
Vehicles - self-propelled (passenger) OTHER-WITH ASSISTANCE	Bc: 476181, Desc: CHARGEUR TAKEUCHI F GILBERT UNIT 923-0202, Scope: loose	624 cm x 195 cm x 290 cm	1	35.2872 m³	6.23 MT	HatchTwinDeck3	Class 9/3166/P.G. III
Vehicles - self-propelled (passenger) SMALL TRAILER-WITH ASSISTANCE	Bc: 476182, Desc: FROSTFIGHTER F GILBERT UNIT 23-5902, Scope: loose	445 cm x 237 cm x 215 cm	1	22.675 m³	3.175 MT	HatchTwinDeck3	Class 9/3166/P.G. III

18

SUBTOTAL QTY: 5 | SUBTOTAL VOLUME: 265.6428 m³ (9381 cu.ft.) | 35.909 MT (79166 lb)

TOTAL QTY: 226 | TOTAL VOLUME: 8785.1032 m³ (310243 cu.ft.) | 4999.1089 MT (11021149 lb)

Quantity: 226 | Volume: 8785.1032 m³ (310243 cu.ft.) | 4999.1089 MT (11021149 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____ 13.09.2023

MARCELLIN A. DESGAGNÉS
IMO # 9571387
MASTER

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

223689
2023-09-20 11:30 - N/A
V231530

Port	Section
Bécancour	Becancour

Pro Forma HATCH LIST SUMMARY

MIENA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES RANKIN INLET

Location in vessel	Qty	Weight	Volume
HatchTwinDeck 3	1	27.272 MT (60124.4681 lb)	154.0619 m³ (5440.6447 cu.ft.)

SUBTOTAL QTY: 1 | SUBTOTAL VOLUME: 154.0619 m³ (5440.6447 cu.ft.) | 27.272 MT (60124.4681 lb)

TOTAL QTY: 1 | TOTAL VOLUME: 154.0619 m³ (5440.6447 cu.ft.) | 27.272 MT (60124.4681 lb)

Quantity: 1015 | Volume: 21497.1 m³ (759162.9229 cu.ft.) | 9041.897 MT (19933970.6706 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

223689
2023-09-20 11:30 - N/A
V231530

Port	Section
Bécancour	Becancour

Pro Forma DANGEROUS GOODS MANIFEST

MIENA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES RANKIN INLET - CLASS 9

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
Vehicles - self-propelled (machinery) HEAVY VEHICULES-NO ASSISTANCE	Bc: 93088, Desc: 2014 FREIGHTLINER 30 TONS BOOM TRUCK, Scope: oversized, PO: 23-02878-3-RAN	1330 cm x 294 cm x 394 cm	1	154.0619 m³	27.272 MT	HatchTwinDeck3	Class 9/3166/P.G. III

(23) TWD #2 AFT

SUBTOTAL QTY: 1 | SUBTOTAL VOLUME: 154.0619 m³ (5440.6447 cu.ft.) | 27.272 MT (60124.4681 lb)

TOTAL QTY: 1 | TOTAL VOLUME: 154.0619 m³ (5440.6447 cu.ft.) | 27.272 MT (60124.4681 lb)

Quantity: 74 | Volume: 3666.6309 m³ (129485.8477 cu.ft.) | 983.762 MT (2168823.9597 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

2023-09-27 15:13

QSL

225913
2023-10-01 08:00 - N/A
V231483

Port	Section
Bécancour	Becancour

Pro Forma DANGEROUS GOODS MANIFEST

NORDIKA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES RANKIN INLET - CLASS 2.2

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
Northern cargo CYLINDER	Bc: 93039, Desc: ARGON, Scope: containerized, PO: 23-02652-3-RAN	218 cm x 127 cm x 204 cm	1	5.6479 m³	0.661 MT	Deck1	Class 2.2/1006

(17) Deck #1 FWD STB

SUBTOTAL QTY: 1 | SUBTOTAL VOLUME: 5.6479 m³ (199.4537 cu.ft.) | 0.661 MT (1457.2556 lb)

DESGAGNES RANKIN INLET - CLASS 9

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
Vehicles - self-propelled (passenger) CAR-WITH ASSISTANCE	Bc: 92946, Desc: VOLKSWAGON BEETLE WHITE 1973 LORNE KUSUGAK, Scope: loose, PO: 23-02925-3-RAN	410 cm x 170 cm x 180 cm	1	12.546 m³	0.76 MT	Deck2	Class 9/3166/P.G. III

(18) Deck #2 FWD

SUBTOTAL QTY: 1 | SUBTOTAL VOLUME: 12.546 m³ (443.0578 cu.ft.) | 0.76 MT (1675.5132 lb)

TOTAL QTY: 2 | TOTAL VOLUME: 18.1939 m³ (642.5115 cu.ft.) | 1.421 MT (3132.7687 lb)

Quantity: 242 | **Volume: 9585.6027 m³ (338512.3647 cu.ft.)** | **4948.8144 MT (10910268.1776 lb)**

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

2023-10-06 11:19

QSL

225913
2023-10-01 08:00 - N/A
V231483

Port	Section
Bécancour	Becancour

Pro Forma HATCH LIST SUMMARY

NORDIKA DESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	DESGAGNÉS TRANSARCTIK INC. N/A	N/A	DESGAGNÉS TRANSARCTIK INC. N/A	N/A

DESGAGNES RANKIN INLET

Location in vessel	Qty	Weight	Volume
HatchTwinDeck 3	3	1.2 MT (2645.5471 lb)	16.808 m³ (593.5689 cu.ft.)
Deck 1	1	0.661 MT (1457.2556 lb)	5.6479 m³ (199.4537 cu.ft.)
Deck 2	1	0.76 MT (1675.5132 lb)	12.546 m³ (443.0578 cu.ft.)

SUBTOTAL QTY: 5 | SUBTOTAL VOLUME: 35.0019 m³ (1236.0804 cu.ft.) | 2.621 MT (5778.3159 lb)

TOTAL QTY: 5 | TOTAL VOLUME: 35.0019 m³ (1236.0804 cu.ft.) | 2.621 MT (5778.3159 lb)

Quantity: 1153 | Volume: 21706.1742 m³ (766546.3077 cu.ft.) | 9908.8924 MT (21845368.3425 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

228062
2023-10-07 13:00 - N/A
V231547

Port	Section
Bécancour	Becancour

Pro Forma HATCH LIST SUMMARY

MARCELLIN ADESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	AGNICO EAGLE MINES LIMITED (DIVISION MEADOWBANK) N/A	N/A	AGNICO EAGLE MINES LIMITED (DIVISION MELIADINE) PO Box 879 RANKIN INLET NU X0C 0G0 CANADA	N/A

MEADOWBANK-AEM-STOCK

Location in vessel	Qty	Weight	Volume
Deck 1	1	6.688 MT (14744.5161 lb)	38.5496 m³ (1361.3663 cu.ft.)
Deck 3	5	67.178 MT (148102.1385 lb)	231.2974 m³ (8168.1899 cu.ft.)
SUBTOTAL QTY: 6	SUBTOTAL VOLUME: 269.847 m³ (9529.5562 cu.ft.)	73.866 MT (162846.6546 lb)	

TOTAL QTY: 6	TOTAL VOLUME: 269.847 m³ (9529.5562 cu.ft.)	73.866 MT (162846.6546 lb)

Quantity: 842	Volume: 21465.0263 m³ (758030.2507 cu.ft.)	9885.7173 MT (21794275.9928 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

MASTER
CFA 4098
MARCELLIN A.DESGAGNÉS

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

QSL

228062
2023-10-07 13:00 - N/A
V231547

Port	Section
Bécancour	Becancour

Pro Forma DANGEROUS GOODS MANIFEST

MARCELLIN ADESGAGNES

Port of Discharge	Shipper	C/O	Consignee	Notify
RANKIN INLET, NUNAVUT	AGNICO EAGLE MINES LIMITED (DIVISION MEADOWBANK) N/A	N/A	AGNICO EAGLE MINES LIMITED (DIVISION MELIADINE) PO Box 879 RANKIN INLET NU X0C 0G0 CANADA	N/A

MEADOWBANK-AEM-STOCK - CLASS 2.2 (5.1)

Product	Identifier	Dimensions	Qty	Volume	Weight	Location	HAZ MAT
20' containers STANDARD	Bc: CRSU 126252-6, Desc: , Scope: loose, Seal # 002633	610 cm x 244 cm x 259 cm	1	38.5496 m³	7.805 MT	Deck3	Class 2.2 (5.1)/1072

(14) Deck #2 AFT St 8

SUBTOTAL QTY: 1 SUBTOTAL VOLUME: 38.5496 m³ (1361.3649 cu.ft.) 7.805 MT (17207.0796 lb)

TOTAL QTY: 1 TOTAL VOLUME: 38.5496 m³ (1361.3649 cu.ft.) 7.805 MT (17207.0796 lb)

Quantity: 17 Volume: 693.8924 m³ (24504.5803 cu.ft.) 140.8693 MT (310563.6455 lb)

Captain, First Officer / Mate or vessel authorized personnel: _____

QSL Canada inc. without prejudice: _____

CFA 4098
MARCELLIN A.DESGAGNÉS

QSL Canada visually inspected the parcels before loading them on board to prevent them from holding soils that could contain plant seeds of invasive breeds.

APPENDIX B

CESS Non-Native and Invasive Species in Nunavut

Non-Native & Invasive species

In Nunavut

In 2010 the Canadian Endangered Species Conservation Council (CESCC) identified 17 species not normally found in Nunavut.

These are called "non-native species". Some of these plants and animals can become an "invasive species", which represents a potential major concern for the future health of the Arctic.

What is a *non-native species*?

A non-native species is defined as an organism that is not normally found in a region. They are introduced by human activities, which can be intentional (e.g. species introduced to control a pest species), accidental (e.g. shipping and ballast water exchange), or environmental (e.g. changes in climate leading to wildlife movements). An example of a non-native species in Nunavut is the European Starling *(Sturnus vulgaris)*, which was introduced to North America from Europe intentionally by humans.

What is an *invasive species*?

Not all non-native species are considered invasive. This term is reserved for species that do so well in their new habitat that they end up causing harm to the environment, other species, human health, or economic activity (ISAC, 2006). An example of an invasive species in southern Canada is the Zebra Mussel *(Dreissena polymorpha)*, which was introduced to North America by ships releasing their ballast water. The Zebra mussel reproduces quickly and establishes large colonies on any hard surface. In this way they take over habitat occupied by native species, reducing the availability of food for other species, and also attaching themselves in great numbers to boats and other infrastructure in the water. (Benson and Raikow, 2010).

Why should you be concerned about invasive species?

When invasive species are introduced and survive, their populations can increase rapidly because there are no natural predators. Invasive species may feed on native species, compete for food and space, as well as expose native species to new parasites and disease. Invasive species are now widely recognized as a leading cause of endangerment and/or extinction of native species (Lassuy and Lewis, 2010).

* *There are currently no known species in Nunavut that can be classified as aquatic or terrestrial invasive species.*

Scott 2011

Species: Field Sow Thistle *(Sonchus arvensis)*

Impact: The Field Sow Thistle grows quickly, easily and when there are many of them they can reduce the water resources available to other plants. They have the potential to decrease native plant diversity by competing for space and water.

Introduction pathway: Accidently introduced from Europe into North America in a containment of agricultural crop seed. This plant has been able to spread long distances across Canada because the seeds can travel far in the wind.

Sohl 2005

Species: The European Starling *(Sturnus vulgaris)*

Impact: The European Starling can displace native bird species by taking over nesting sites and competing for food.

Introduction pathway: Introduced intentionally to North America from Europe. These birds then dispersed naturally into Canada through migration.

Non-Native Species in Nunavut

As of 2011, there are 17 species known to be non-native in Nunavut, these are listed below and are all terrestrial species. Please note that it is not currently known what the potential is for any of these species to become invasive and to what extent. Two species, the starling and the sow thistle are described in more detail below.

SCIENTIFIC NAME	COMMON NAME		ORGANISM TYPE
Carum carvi	Wild Caraway	Sloth, 2003	Flowering Plant
Taraxacum officinale	Common Dandelion	Herbs for Life, 2010	Flowering Plant
Sonchus arvensis	Field Sow Thistle	Scott, 2011	Flowering Plant
Leucanthemum vulgare	Oxeye Daisy	Steyermark, 2007	Flowering Plant
Thlaspi arvense	Field Pennycress	Steyermark, 2007	Flowering Plant
Capsella bursa-pastoris	Shepherd's Purse	Living Afield, 2011	Flowering Plant
Barbarea vulgaris	Yellow Rocket	Michels, 2009	Flowering Plant
Amaranthus retroflexus	Green Amaranth	Shou, 2003	Flowering Plant
Hordeum vulgare	Common Barley	Michels, 2009	Flowering Plant
Puccinellia distans	Spreading Alkali Grass	Shou, 2003	Flowering Plant
Vicia cracca	Tufted Vetch	Sloth, 2003	Flowering Plant
Papaver somniferum	Opium Poppy	Andersent, 2003	Flowering Plant
Plantago major	Common Plantain	Shou, 2003	Flowering Plant
Polygonum aviculare	Prostrate Knotweed	Shou, 2003	Flowering Plant
Pieris rapae	Cabbage White	W.A.B., 2010	Butterfly
Sturnus vulgaris	European Starling	Sohl, 2005	Passerine Bird
Passer domesticus	House Sparrow	Manske, 2009	Passerine Bird

*Species photo references available upon request. Images are not to scale.

How might invasive species get into Nunavut?

Species are transported throughout the world by human activities, like shipping, which allows species to move further distances and over barriers that they could not do on their own. Nunavut remains very remote compared to the rest of Canada and so the lack of major road systems, infrequent shipping and cold climate has limited their introduction and survival.

However, as climate change alters Arctic ecosystems, it creates conditions that are more favorable to the survival and reproduction of non-native species. It also enables greater human activity and development, which gives potential invasive species more opportunities to establish themselves. (Lassuy and Lewis, 2010).

Pathways of introduction for invasive species into Nunavut

MacGregor, 2009

Hull fouling occurs when organisms attach themselves to the outside of a ship's hull where they can then be transported around the world.

* Ballast water exchange and hull fouling have the greatest potential for introducing invasive species into the aquatic ecosystems of Nunavut. Ballast water is used to stabilize ships. It is pumped aboard ships from different ports around the world and often exchanged far from the region it was obtained. This water can contain species that are not native, and may establish themselves locally.

* Seeds, insects and even small mammals can be transported around the world through the shipping of grocery produce, lumber, construction supplies, and packing materials, even dirt from someone's footwear can contain plant seeds (IASC, 2010).

* As climate continues to change in the Arctic, many terrestrial and aquatic plants and animals will move further north looking for the food and habitat they desire. These wildlife movements are not a threat when it comes to invasive species, but it is important to note that some species, (especially rare or threatened ones) may not survive the transition. Others may do well, like flying insects, which are already increasing in number in some areas of Nunavut. (IASC, 2010).

Wildlife movements are often referred to as "range extensions" where a species expands the area they can live in when the habitat and climate is favorable for them.

DeeDee 2011

The Migratory Grasshopper *(Melanoplus sanguinipes)* is a winged insect that is widely distributed across Canada and is one example of a species that may expand its range into Nunavut.

Potential Invasive Species in Nunavut

As trade and shipping continues to increase, some aquatic invasive species known to commonly foul ship hulls and ballast waters, like the Chinese Mitten Crab, are more likely to arrive at ports around Nunavut.

A recent report commissioned by Fisheries and Oceans Canada identified a number of potential aquatic invasive species, mainly for the Hudson Bay region. The table below lists only those species considered as "High Risk" to Nunavut and they are found in freshwater & marine environments.

SCIENTIFIC NAME	COMMON NAME		ORGANISM TYPE
Osmerus mordax	Rainbow Smelt	NOAA.GOV	Fish
Gymnocephalus cernuus	Ruffe	Shou, 2003	Fish
Caprella mutica	Skeleton Shrimp	Christensen et. al. 1995	Crustacean
Chelicorophium curvispinum	Data unavailable	home.kpn.nl	Crustacean
Dikerogammarus villosus	Killer Shrimp	Hillewaert, 2011	Crustacean
Gmelinoides fasciatus	Data unavailable	photosight.ru	Crustacean
Pontogammarus robustoides	Data unavailable	boldsystems.org	Crustacean
Eriocheir sinensis	Chinese Mitten Crab	Sloth, 2003	Crustacean
Hemimysis anomala	Data unavailable	Pothoven, 2007	Crustacean
Balanus improvisus	Acorn Barnacle	Shou, 2003	Crustacean
Corbicula fluminea	Asian Clam	Van Arkel, 2005	Mollusc
Dreissena bugensi	Quagga Mussel	CWSD.org	Mollusc
Bythotrephes longimanus	Spiny Water Flea	Meihls, 2007	Zooplankton
Cercopagis pengo	Fishhook Water Flea	Windsor U, N.D	Zooplankton
Eubosmina maritima	Data unavailable	io-warnemuende.de	Zooplankton
Marenzelleria cf. viridis	Data unavailable	Koli, 2006	Worm
Marenzelleria cf. wireni	Data unavailable	seaonscreen.org	Worm
Cordylophora caspia	Freshwater Hydroid	Galea, 2011	Hydrozoa
Coscinodiscus wailesii	Data unavailable	A.W.I., 2006	Phytoplankton
Odontella sinensi	Data unavailable	Uniport, 2002	Phytoplankton
Prorocentrum minimum	Data unavailable	Halffors, 2002	Phytoplankton
Codium fragile ssp. tomentosoides	Oyster Thief	Erickson, N.D.	Algae
Glugea hertwigi	Data unavailable	Kirjastot.fi	Protozoa
Amphilina foliacea	Data unavailable	Michigan U, 1995	Parasite

*Species photo references available upon request. Images are not to scale.

How can you help?

Report

Have you seen a different plant, animal or insect in Nunavut?

You help identifying these species is important. Report the **location** where you observed the species (GPS Coordinates are very helpful) and provide a **detailed description** of the plant, animal, or insect. If possible **take a photo**.

Remember that not all non-native species are considered invasive. If you see an unknown plant or animal, it is very important to report it.

Do not take any extreme actions; the first step is reporting the species so that territorial and federal agencies can respond appropriately. We will report our findings back to you and information about the species you have observed.

Share

Keep yourself informed and educate others about non-native and invasive species. Let them know what to do if they see an unknown or uncommon species.

Report a species to your local Conservation Officer.

For More Information or if your CO is not available please contact:

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Environment Canada Environnement Canada

APPENDIX C

Bird Surveys and PRISM Plots Summary, 2023

MELIADINE GOLD MINE PROJECT

FINAL
2023 BIRD SURVEYS AND PRISM PLOTS SUMMARY REPORT

28 FEBRUARY 2024

Table of Contents

List of Tables

List of Figures

List of Appendices

SECTION 1 • OVERVIEW

The Agnico Eagle Mines Limited (Agnico Eagle) Meliadine Gold Mine (the Mine) received a Project Certificate (No. 006) from the Nunavut Impact Review Board (NIRB) in February 2015, which was amended in February 2019 (Amendment No. 001) and March 2022 (Amendment No. 002). A Terrestrial Environment Management and Monitoring Plan (TEMMP) for the Mine was prepared for submission with the Project Final Environmental Impact Statement (FEIS) and forms a component of the documentation series produced in accordance with the Project. The TEMMP was updated and submitted to the NIRB in April 2022 (TEMMP Version 4; Agnico Eagle 2022).

This report aims to address the requirements of Terms and Conditions 59, 61, 62, 71, 72, and 74 from the NIRB Project Certificate (No. 006). It summarizes results of bird studies, including the Program for Regional and International Shorebird Monitoring (PRISM) plots surveys, waterbird shoreline surveys, and bird plots, as per the TEMMP, Version 4.

In 2023, a significant post-calving caribou migration into the Mine area prevented completion of most of the bird work scheduled for the June 15th to 30th bird window. As such, only one PRISM plot and no bird plots were conducted in 2023. With caribou moving out of the Mine area by the end of June, it was possible to complete most of the waterbird shoreline surveys. Additionally, pre-clearance bird nest monitoring was conducted along the AWAR between May and August 2023.

In 2024, the PRISM plots surveying, bird transect and point counts, and waterbird shoreline surveys will continue during the summer, subject to environmental constraints including severe weather and caribou movements.

SECTION 2 • OBJECTIVES

The primary objectives of this report are to:

1) Provide a brief overview of the Meliadine Gold Mine and the rationale for breeding bird surveys;
2) Describe the methods used to conduct the PRISM plots, waterbird shoreline surveys, bird plots, and pre-clearance bird nest monitoring;
3) Summarize results of the 2023 bird surveys; and
4) Make recommendations for surveys in subsequent years.

SECTION 3 • METHODOLOGY

3.1 PRISM PLOTS

The Program for Regional and International Shorebird Monitoring (PRISM) is a standardized method for monitoring shorebirds in the Canadian Arctic (Bart et al. 2015; **Appendix I**). The PRISM plot surveys followed Environment and Climate Change Canada (ECCC) protocols and are a contribution to ECCC's long-term monitoring program and dataset. A total of 16 plots were chosen by ECCC at the Meliadine Mine (see **Figure 3.1**). Ten plots were surveyed by Golder (now WSP) in June 2018 and 16 plots were surveyed in June 2019. Because of access issues related to caribou post-calving migration from mid-June through July 2023, only one (1) PRISM plot was completed in 2023.

The 300 x 400 m plots are surveyed by a team of two field qualified personnel that transect the plot every 25 m (team members were spaced 25 m apart and used geolocation to orient along transect lines). The purpose of the surveys was to document all birds (i.e., absolute abundance) occurring on the plots, breeding status, and habitat conditions.

PRISM survey raw data will be provided to ECCC Canadian Wildlife Service (CWS) technical experts and the CWS Environmental Assessment Officer every year by March 31st. Raw data will include bird and plot habitat data, which will be entered into the CWS provided spreadsheet, and a digital scan of all field data sheets.

3.2 WATERBIRD SHORELINE SURVEYS

Shoreline surveys are designed to document the nesting distribution of waterbirds on or along waterbodies within 200 m of mine-related infrastructure (e.g., mine buildings, All-Weather Access Road [AWAR] etc.). Only shorelines within 200 m of infrastructure were surveyed even if a wetland or waterbody intersected the survey area.

All shorelines within 200 m of the Mine are to be surveyed on an annual basis (see **Figure 3.2**). Surveys involve two observers walking along the edge of a waterbody. One observer walks 5 m from the water's edge, while the second observer walks approximately 15 m from the water's edge. If a nest is found, the surveyor approaches the nest to determine nest stage (e.g., egg laying, incubating, nestlings etc.) and nest productivity (i.e., the number of offspring). If a nesting bird show signs of distress, the nest is not approached to avoid nest abandonment. Survey methods are described in more detail in the 2022 version of the TEMMP (Agnico Eagle 2022).

Meliadine PRISM Location (SW Corner)

Production Lease

Meliadine Site

All Weather Access Road

C:\Users\jade.robitaille\OneDrive - agnicoeagle.com\ArcGIS\CaribouNoiseMonitoring\NoiseMonitoringCaribouStation.aprx Date Saved: 2/26/2024 12:56 PM

Figure 3.1: PRISM Plot Locations at the Meliadine Gold Mine Site

System: NAD 1983 UTM Zone 15N
Datum: North American 1983

Scale: 1:25,000
Map Units: Meter

AGNICO EAGLE
MELIADINE

Drawing by : Jade Robitaille	Date : 2024-02-14
Revised by : Helene Boulanger	Date : 2024-02-14
Approved by : Helene Boulanger	Date : 2024-02-14

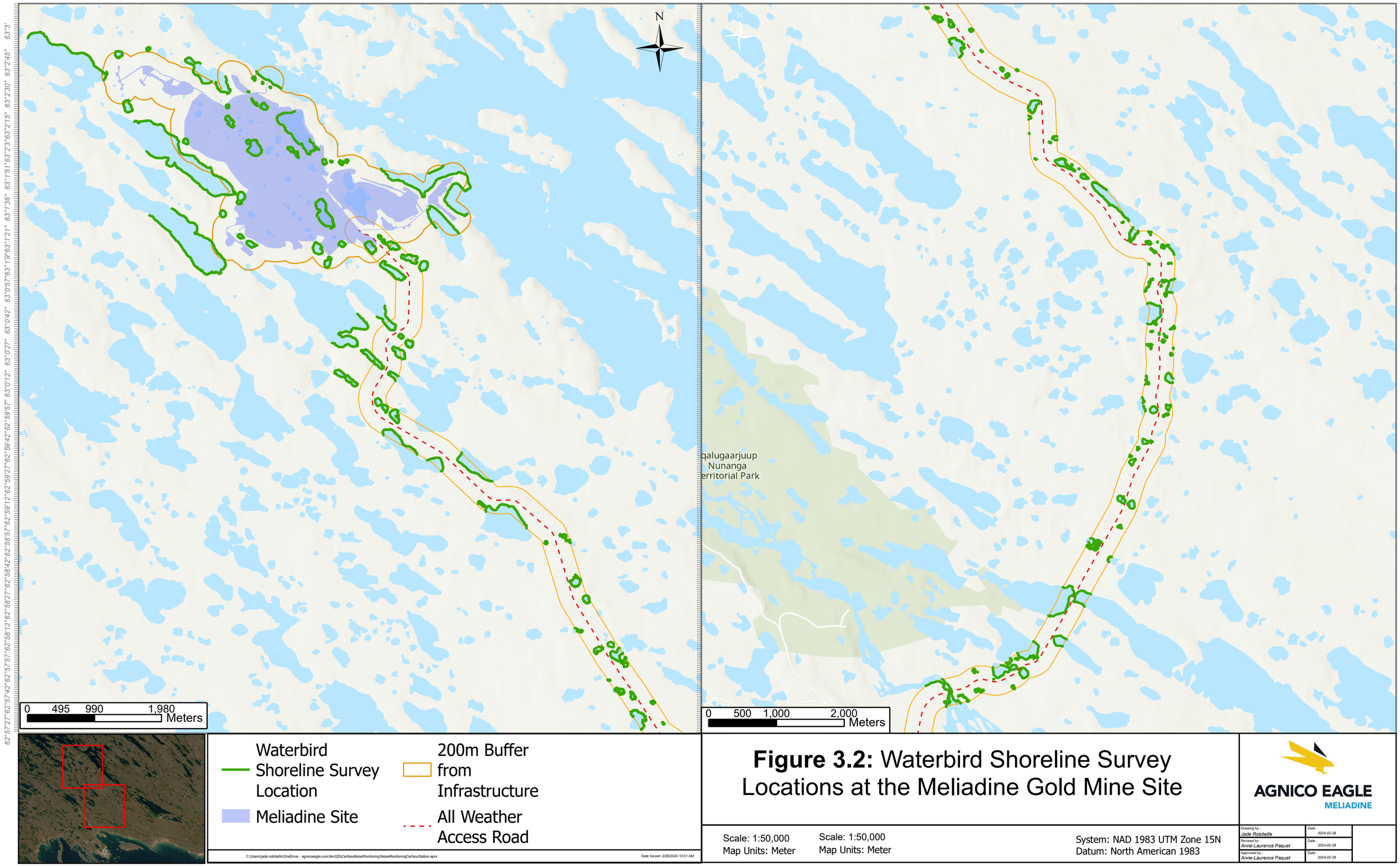


Figure 3.2: Waterbird Shoreline Survey Locations at the Meliadine Gold Mine Site

AGNICO EAGLE
MELIADINE

Scale: 1:50,000
Map Units: Meter

Scale: 1:50,000
Map Units: Meter

System: NAD 1983 UTM Zone 15N
Datum: North American 1983

Drawing by : Jade Robitaille	Date : 2024-02-28	
Revised by : Anne-Laurence Paquet	Date : 2024-02-28	
Approved by : Anne-Laurence Paquet	Date : 2024-02-28	

3.3 BIRD TRANSECTS AND POINT COUNTS

The objective of the point count surveys is to estimate the effects of increased traffic along the AWAR on upland breeding birds and how these effects change with increasing distance from the AWAR. In the future, various statistical approached, including trend analysis, may be used to determine potential road-related effects on breeding birds. A full set of surveys was conducted by Golder (now WSP) in 2018 and 2019. In 2023, road closures related to Caribou post-calving migration in mid- to late June, the prime survey period for breeding birds, made it impossible to complete any point count surveys.

Point count plots are located within 1 km on either side of the AWAR with the first point count occurring 50 m from the road edge and each subsequent plot spaced 100 m from the center of the preceding plot (see **Figure 3.3**). Six transects with 12 plots per transect result in a total of 72 point counts (see **Appendix II** for UTM coordinates). Point counts are five (5) minutes in duration and all species detected by sight or sound within 50 m and 50-100 m of the observer(s) are recorded. Observations beyond 100 m are recorded at the observer's discretion as incidentals.

3.4 PRE-CLEARANCE BIRD NEST SURVEYS

Pre-clearance surveys are conducted during the active bird breeding window to determine if any active nests will be disturbed by proposed activities. Observers survey the entire proposed clearance area and document all bird activity but especially nesting activity. For details on survey locations and results in 2023, refer to **Section 4.4**.

Surveys were conducted between May 15 and August 15, which corresponds to the reproductive period of birds breeding in the Arctic. The proposed construction areas were surveyed at least four days before any disturbance (e.g., construction or borrow pit activity). Surveys were conducted during fair weather (i.e., not raining, low winds, temperature above 5 degrees Celsius). A minimum of two people walked straight-line transects through the proposed construction area, spaced by a maximum of 10 m as shown in **Figure 3.4.** An additional 30 m area on all sides of the proposed disturbance area was surveyed. For areas with ponds and lakes, circular transects spaced by a maximum of 25 m were made. GPS points and photos were collected when a nest was found.

-92°14′ -92°13′ -92°12′ -92°11′ -92°10′ -92°9′ -92°8′ -92°7′ -92°6′ -92°5′

63°2′15″ 63°2′ 63°1′45″ 63°1′30″ 63°1′15″ 63°1′ 63°0′45″ 63°0′30″ 63°0′15″ 63° 62°59′45″ 62°59′30″ 62°59′15″ 62°59′ 62°58′45″ 62°58′30″ 62°58′15″ 62°58′ 62°57′45″ 62°57′30″ 62°57′15″ 62°57′ 62°56′45″

N

Transect 1

Transect 2

Transect 3

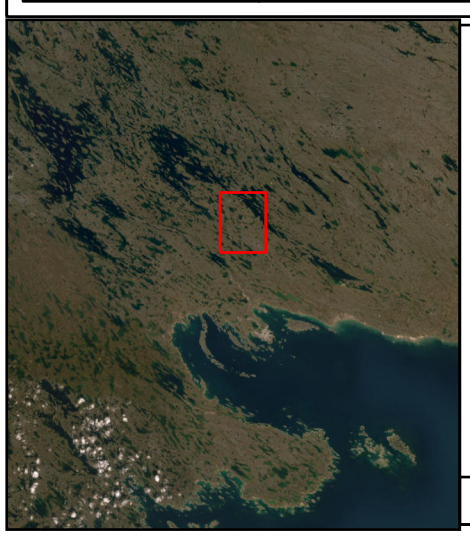
Transect 4

Transect 5

Transect 6

Meliadi
Lake

0 0.5 1 2 Kilometers



Production Lease

Meliadine Site

Breeding Bird Survey Locations

All Weather Access Road

Breeding Bird Transect

C:\Users\jade.robitaille\OneDrive - agnicoeagle.com\ArcGIS\CaribouNoiseMonitoring\NoiseMonitoringCaribouStation.aprx Date Saved: 2/26/2024 12:56 PM

Figure 3.3: Bird Transect and Plot Survey Locations at the Meliadine Gold Mine Site

System: NAD 1983 UTM Zone 15N
Datum: North American 1983

Scale: 1:32,000
Map Units: Meter

AGNICO EAGLE
MELIADINE

Drawing by : Jade Robitaille	Date : 2024-02-14
Revised by : Helene Boulanger	Date : 2024-02-14
Approved by : Helene Boulanger	Date : 2024-02-14

Figure 3.4: Pre-Clearance Survey Methods at the Meliadine Gold Mine Site

SECTION 4 • 2023 BIRD SURVEY RESULTS

4.1 PRISM PLOTS

Because of closures related to caribou post-calving movements in June 2023, only one (1) PRISM plot (MELI-IND11) was completed in 2023 (see **Table 4.1** for timing and weather details).

Table 4.1: Fieldwork Details for the Meliadine Gold Mine PRISM Plots in 2023.

Plot (MEL)	Date	Time	Weather	Observers[1]
MELI-IND11	June 22	16:00 to 17:20	8ºC, mainly clear, no precipitation, gentle breeze	CN & TP

[1] CN = Christopher Nakoolak; TP = Tom Plath

Four (4) bird species were observed during 2023 PRISM plot surveys (**Table 4.2**). Two (2) species were only observed incidentally outside plots, while the other species were observed while surveying the PRISM plot (**Table 4.2**). Species numbers, behaviours, nests, and other details have been recorded in the PRISM plot data spreadsheets as per the templates provided by CWS that will be provided to ECCC by March 31, 2024.

Table 4.2: Wildlife Species Observed on Meliadine Gold Mine PRISM Plots in 2023. Additional Species Observed outside Plots are Listed as Incidental.

Common Name	Scientific Name	PRISM Plots (MEL)	Incidental (Plot #s)
		011	
BIRDS			
Canada Goose	*Branta canadensis*		11
Common Raven	*Corvus corax*	1	
Herring Gull	*Larus argentatus*	1	
Horned Lark	*Eremophila alpestris*		11

4.2 WATERBIRD SHORELINE SURVEYS

Due to road closures during caribou migration, not all shoreline surveys were completed in 2023. See **Appendix III** for survey timing and weather conditions, **Appendix IV** for survey results by location, and **Figure 3.2** for general shoreline survey locations.

A total number of 32 bird species, of which 18 species were waterbirds, were recorded on waterbird shoreline surveys in 2023 (see **Appendix V**). The 10 most encountered species included Horned Lark (recorded at 99 wetlands), Sandhill Crane (79), American Pipit (59), Herring Gull (58), Lapland Longspur (58), Canada Goose (54), Pacific Loon (34), Savannah Sparrow (33), Tundra Swan (31). The 10 most encountered waterbird species were Herring Gull (recorded at 58 wetlands), Canada Goose (54), Least Sandpiper (41), Pacific Loon (34), Tundra Swan (31), Long-tailed Duck (26), Semipalmated Plover (17), Semipalmated Sandpiper (15), Northern Pintail (15), and Common Loon (8).

A total of 36 documented or potential nests were recorded on waterbird shoreline surveys in 2023 (see **Table 4.3**). The 36 nests were from 14 species of which nine (9) species were waterbirds.

Table 4.3: Confirmed or Potential Nest Sites for the Meliadine Gold Mine Waterbird Shoreline Survey in 2023.

Common Name	Wetland #	Details
American Pipit	103	1 adult carrying food (15W 539556 6991052)
American Pipit	153	1 adult & nest with 5 eggs (15W 539819 6989719)
Canada Goose	12, 110, 112	Depredated nest on small island with 1 dead adult (15W 541220 6987895)
Canada Goose	26, 129	5 adults & 7 juveniles (15W 541588 6985203)
Canada Goose	142, 158	2 adults & 4 juveniles (15W 544678 6982157)
Canada Goose	224	2 agitated adults (15W 547916 6978628)
Common Raven	165	Empty nest under bridge
Herring Gull	23	1 adult on nest on small island (15W 540369 6986736)
Herring Gull	98	Nest on small island (15W 544364 6982251)
Lapland Longspur	224	2 adults & nest (15W 547133 6978882)
Least Sandpiper	3	1 adult with 2 young (15W 537639 6991064)
Least Sandpiper	16	2 adults with distraction display (15W 537924 6989892)
Least Sandpiper	16	1 adult with distraction display (15W 538094 6989776)
Least Sandpiper	21, 124, 125, 263	1 agitated adult (15W 541172 6985853)
Least Sandpiper	26, 129	1 agitated adult (15W 541406 6985329)
Least Sandpiper	100	2 adults with distraction display (15W 539396 6990606)

Table 4.3: Continued.

Common Name	Wetland #	Details
Least Sandpiper	224	2 agitated adults (15W 547316 6978724)
Least Sandpiper	242, 244	1 agitated adult (15W 546603 6979568)
Herring Gull	9, 102	Nest on small island (15W 539619 6990500)
Herring Gull	98	1 adult on island nest (15W 538413 6989422)
Long-tailed Duck	181	1 female & nest with 8 eggs (15W 545754 6972244)
Red-throated Loon	2, 73	2 adults (1 sitting on nest) (15W 537125 6990998)
Red-throated Loon	21, 124, 125, 263	Nesting pair (15W 541208 6985702)
Sandhill Crane	7, 8, 84, 85	2 adults agitated & walking (15W 538796 6990688)
Sandhill Crane	16	2 adults & 1 colt (15W 538483 6989003)
Savannah Sparrow	12, 110, 112	1 adult agitated & singing (15W 540987 6988062)
Savannah Sparrow	130	1 adult flushed & agitated (15W 542738 6984698)
Semipalmated Plover	103	2 adults & nest; agitated & distraction display (15W 539667 6990187)
Semipalmated Plover	153	2 adults with distraction display & nest with 4 eggs (15W 539865 6989680)
Semipalmated Plover	164	2 agitated adults (15W 544691 6971572)
Semipalmated Plover	164	2 agitated adults (15W 544689 6971794)
Semipalmated Plover	224	1 agitated adult (15W 547070 6978939)
Semipalmated Sandpiper	16	2 adults displaying broken wing display (15W 538933 6988938)
Tundra Swan	26, 129	1 adult on nest; Arctic Fox approached but female raised wings in defense and fox left (15W 541588 6985203)
Tundra Swan	103	2 adults & 3 young (15W 539556 6990152)
Tundra Swan	132, 262	2 adults & 3 young (15W 543837 6983912)

4.3 BIRD TRANSECTS AND POINT COUNTS

Due to road closures during caribou migration, no point counts were conducted on transects in 2023.

4.4 PRE-CLEARANCE BIRD NEST SURVEYS

Details on date, timing, and results of pre-clearance nest surveys, and mitigation actions taken, are provided in **Appendix VI**.

Eighteen (18) bird species were observed on pre-clearance surveys between May 24th and August 12th, 2023. Mitigation actions were taken whenever active nesting was observed. Details on confirmed or potential nests are summarized in **Table 4.4** below. Select photos are provided.

When applicable, a setback perimeter was applied to the nest in accordance with the TEMMP.

Table 4.4: Bird Nesting Activity and Nests Identified on Pre-Clearance Bird Nest Monitoring at the Meliadine Gold Mine in 2023.

Date (2023)	Species (#)	Details and Mitigation Actions
June 05	Lapland Longspur (1)	Nest with no eggs found; no action taken; see **Photo #1**
June 06	Lapland Longspur (1)	Nest being build; nest removed at very early stage
June 08	Least Sandpiper (1)	Least Sandpiper adult incubating 4 eggs; photos taken; construction not permitted on designated road section; see **Photo #2 & Photo #3**
June 29	White-crowned Sparrow (2); nine (9) bird species observed	White-crowned Sparrow pair displaying nesting behaviour; 50 m buffer zone established
June 30	Northern Pintail (1), Semipalmated Plover (1), six (6) other bird species identified	Northern Pintail female on 7 eggs; Semipalmated Plover adult showing nesting behaviour; 50 m buffer zone established
July 08	Semipalmated Plover (1)	Semipalmated Plover nest with 2 eggs and 2 hatchling; 50 m buffer zone established
July 10	Horned Lark (1), Savannah Sparrow (2),	Savannah Sparrow adult with fledgling; no action taken
July 12	Semipalmated Plover (1)	Semipalmated Plover nestling; 100 m buffer zone established
July 13	Horned Lark (1)	Horned Lark nestling; 100 m buffer zone established
July 14	Semipalmated Plover (1), Savannah Sparrow (3)	Semipalmated Plover adult showing nesting behavior; at least 1 young Horned Lark; 100 m buffer established

Photo #1: Lapland Longspur Nest (June 05)

Photo #2: Least Sandpiper Nest (June 08)

Photo #3: Least Sandpiper Nest Mitigation (June 08)

SECTION 5 • RECOMMENDATIONS

In 2024, PRISM plots surveys, bird transect and point counts, waterbird shoreline surveys, and pre-clearance bird nest surveys will continue during the summer, subject to environmental constraints including severe weather and caribou movements.

SECTION 6 • LITERATURE CITED

Agnico Eagle. 2022. Terrestrial Environment Management and Monitoring Plan. Version 4, 2022.

Bart, J., Andres, B., Brown, S., Donaldson, G., Harrington, B., Johnston, V., Jones, S., Morrison, G., and Skagen, S. 2005. The Program for Regional and International Shorebird Monitoring (PRISM). USDA Forest Service General Technical Report, PSW-GTR-191, 893-901.

APPENDIX I

PRISM Plot Survey Protocols and Plot Coordinates for the Meliadine Gold Project

ARCTIC PRISM SURVEY DETAILS – FOR AGNICO EAGLE CREWS AT MELIADINE

(part of Arctic PRISM Region 6.4)

Canadian Wildlife Service, J. Rausch/Nik Clyde, April 2022

PLOT SELECTION LOGISTICS

Attached below are the selected plots packages (PDF). Each dot on the overview map represents a PLOT (instead of a ZONE as in previous years). The plots selected for this site are a mix of repeat surveys of previous plots and new plots. We have chosen this method to attempt to gain more accurate information on trends for most of the partner surveys. This information will be paired with results from the larger PRISM surveys to better inform shorebird population and trend estimates.

The plan is to survey 48 plots over the next 10 years.

Rather than survey plots completely at random (as in previous years), we have assigned priorities to the plots provided as part of this package (see table below for priority ranking).

Plots should still be chosen at random within the same priority level. Please do not subdivide the PRISM study area into directional quadrats where 1 quadrat per field season is surveyed, or in numerical order (b/c the numerical order assignment is not random). Just randomly choose from all available plots (within a given priority level) based on which direction the weather is the best in, or in later years, areas or distances from camp that haven't been done yet.

If a plot is not surveyable for some reason (snow cover, bear on plot, etc.) it should be attempted again in future years until all plots have been completed.

In the case where only a section of the plot is un-surveyable you could still survey the portion of the plot that is surveyable, mark how much of the plot was actually surveyed (% of total plot area surveyed) and indicate percent of plot that was surveyed on page 1 on Plot Survey Summary Form

The 'Plot Survey' section of the Plot Survey Summary Form must still be completed for an un-surveyable plot, indicating Site, plot name, Surveyors, date, % area surveyed = 0% and reason the survey was not surveyed. Indicate the reason the plot was not surveyed with details (e.g. percent snow cover, estimate of cliff height or plot steepness/slope, river width/depth, etc.).

Plot Assignments and Priority Rankings

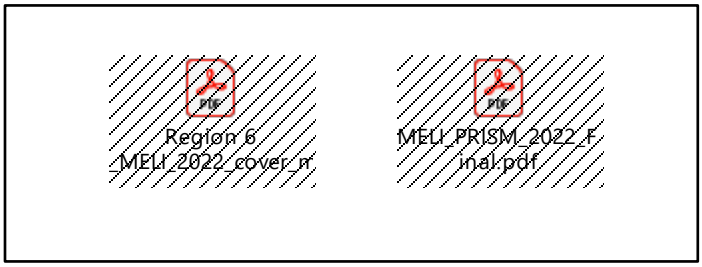
Plot	Priority	Old/New	Included?	Plot	Priority	Old/New	Included?
MELI-IND1	High	Old	Yes	MELI-108	Medium	New	No
MELI-IND10	High	Old	Yes	MELI-111	Medium	New	No
MELI-IND11	High	Old	Yes	MELI-126	Medium	New	No
MELI-IND12	High	Old	Yes	MELI-122	Medium	New	No
MELI-IND13	High	Old	Yes	MELI-127	Medium	New	No
MELI-IND14	High	Old	Yes	MELI-107	Medium	New	No
MELI-IND15	High	Old	Yes	MELI-119	Medium	New	No
MELI-IND16	High	Old	Yes	MELI-131	Medium	New	No
MELI-IND2	High	Old	Yes	MELI-120	Medium	New	No
MELI-IND3	High	Old	Yes	MELI-124	Medium	New	No
MELI-IND4	High	Old	Yes	MELI-112	Medium	New	No
MELI-IND5	High	Old	Yes	MELI-129	Medium	New	No
MELI-IND6	High	Old	Yes	MELI-103	Medium	New	No
MELI-IND7	High	Old	Yes	MELI-115	Medium	New	No
MELI-IND8	High	Old	Yes	MELI-123	Medium	New	No
MELI-IND9	High	Old	Yes	MELI-116	Medium	New	No
MELI-130	Medium	New	No	MELI-101	Medium	New	No
MELI-102	Medium	New	No	MELI-132	Medium	New	No
MELI-109	Medium	New	No	MELI-118	Medium	New	No
MELI-117	Medium	New	No	MELI-121	Medium	New	No
MELI-110	Medium	New	No	MELI-125	Medium	New	No
MELI-113	Medium	New	No	MELI-106	Medium	New	No
MELI-114	Medium	New	No	MELI-104	Medium	New	No
MELI-128	Medium	New	No	MELI-105	Medium	New	No

**note that only the old repeated plots are included in this package. These are the highest priority so should be surveyed first. We will send an updated package with new plots once they are complete.*

PLOT SELECTION PACKAGES (PDF)

In the attached selected plots package, there are two sections:

- Overview map of selected PLOTS
    - Provides an overview of the selected plots.
    - Shows the location of the southwest corner of each plot.
- Plot maps
    - Each plot has a map, which shows the general location of the plot to be surveyed.
    - The coordinates of the southwest corner for each plot is given on the plot maps for convenience.



SURVEY METHODS & DATASHEETS & DATA ENTRY TEMPLATE

The attached Word document has the survey methods as well as the datasheets.

The datasheets should be completed on site (before you leave the plot); this is especially important for the habitat datasheet. The habitat datasheet should be completed at the end of the plot so you have seen the whole plot before completing it (rather than at the beginning of the plot when you have not yet covered it). There is a landform sample guide to help with completing the habitat datasheet.

Survey Methods & Datasheets Package

Arctic PRISM -
General Instructions fo

After the field season, please send me legible scans of all the datasheets and the photograph(s) from each plot. If you don't want to keep the originals, you can mail them to me for archiving. If you would like to keep the originals, the scans will suffice.

DATA ENTRY TEMPLATE – NEW FOR 2022 SEASON

In order to standardize data entry we are asking participants to enter data directly into the new excel data entry template included in your package. This template was designed to help simplify the data entry process and has many automated features we hope will make this process easier to accomplish, including pre-filled fields, dropdown menus, and detailed explanations of each column. There is also a README file on the first tab with detailed information on the functions of the data entry template, including tips for troubleshooting any issues. The spreadsheet and new data entry forms have been designed together, so the terminology should be consistent across each and it should hopefully be clear which section of the data entry template corresponds with specific sections of the new field data sheets.

Any feedback on ways we can improve this new tool are welcomed and appreciated.

PRISM_Rapid_Survey_
Data_Entry_Template_

SURVEY EQUIPMENT LIST

The below equipment are required for the surveys. A description of what it is used for is included; it probably makes more sense after you've read through the methods document. ☺

- Binoculars (n=4, 1 pair per person)
- Field notebook or clipboard with datasheets (n=2, 1 per team lead for each 2-person team)
    - Only the team leader (western most person) needs to record, the partner calls out birds to the team leader
- GPS set in UTM (NAD 83) and True North (n=2-4, 1 per team at least but 1 per person is convenient for when a nest is found)
- Compass with the proper declination set (n=2, 1 per team for the non-lead in each team)
- Tall survey stakes with long flagging tape streamers (n=8, 4 per team with 2 stakes of 2 colours per team – bring a few spares in the heli in case a pole snaps – we use skinny bamboo garden stakes)

USING THE STAKES/COMPASS/GPS #gettingstarted

To get started on the plot, and marking with stakes:

1. The team leader starts in the SW corner, throws a point 400m north and uses GPS to go to it; partner walks due east (using compass) of the leader 25 m and drops a glove.
2. Partner walks a further 25m due east of leader and plants a stake of colour 1. This will be the leader's guidance post on the next southbound pass.
3. The partner continues another 25m and plants a stake of colour 2, this will become the partner's guidance post on the next southbound pass.
4. The partner returns to their glove (back 50m) and the pair heads north using the leader's GPS and the partner maintains a distance of 25m from the leader until they reach the north border of the plot.
5. At the north edge of the plot, the partner uses compass to find due east and walks 25m, this becomes the leader's starting position for the next southbound pass. The partner walks another 25 m and drops a glove or something they can return to. This becomes the partner's starting position for the next southbound pass. The partner then walks over 25 m and plants a stake of colour 1, this will become the leader's guidance post on the next northbound pass. The partner continues another 25m and plants a stake of colour 2, this will become the partner's guidance post on the next northbound pass. The partner returns to their glove (back 50m) and the pair heads south to the first set of deployed stakes which are picked up and subsequently deployed in anticipation of the next southbound pass.
6. Repeat until 3 return passes (3 northbound and 3 southbound) have been completed.

Note: on the first pass north, the leader is only looking 12.5m eastward into the plot. On the last pass south, the partner is looking 25m eastward.

Another option is to not use the stakes and have both people use their GPS and know what easting they should be on; however this often results in people spending too much time looking at their GPS screens, and not enough time scanning the landscape for birds, so the stake method is preferred.

PHOTOGRAPHS (PLOTS & NESTS)

Take a photo of the plot from any of the 4 corners looking in to the plot (1 photo per plot is fine), and record what corner the photo was taken from.

When the photos are downloaded (back at the office or camp), please label the photos using the below (or a similar) convention:

- PLOT PHOTOS:
  - Plot_AAA-XXA_twolettercodeforplotcornerphotowastakenfrom_RegionX_YEAR_PhotographerFirstnameLastname.JPG
    - e.g.:
      - Plot_IGL-154D_SW_Region5_2016_JennieRausch.JPG
      - Plot_KUG-99A_NW_Region5_2016_LisaPirieDominix.JPG
  - If there is more than one photo from a plot, and it was from the same direction/corner, add numbers behind direction in brackets.
    - e.g.
      - Plot_AAA-XXXA_twolettercodeforplotcornerphotowastakenfrom(1)_RegionX_YEAR_FirstnameLastname.JPG
      - Plot_AAA-XXXA_twolettercodeforplotcornerphotowastakenfrom(2)_RegionX_YEAR_FirstnameLastname.JPG
      - Plot_AAA-XXXA_twolettercodeforplotcornerphotowastakenfrom(3)_RegionX_YEAR_FirstnameLastname.JPG
  - If the photos were taken from different corners, then they will have different file names already so no need to number.
    - e.g.
      - Plot_AAA-XXXA_SE_RegionX_YEAR_FirstnameLastname.JPG
      - Plot_AAA-XXXA_SW_RegionX_YEAR_FirstnameLastname.JPG

- NEST PHOTOS:
  - NestID_4letterspeciescode_RegionX_YEAR_PhotographerFirstnameLastname.JPG
    - e.g.
      - JJP-01_LALO_Region5_2016_LisaPirieDominix.JPG

- If there is more than one photo from a nest, add numbers behind the 4 letter species code in brackets.
    - e.g.
        - LPD-08_AMPI(1)_ Region5_2016_LisaPirieDominix.JPG
        - LPD-08_AMPI(2)_ Region5_2016_LisaPirieDominix.JPG
        - LPD-08_AMPI(3)_ Region5_2016_LisaPirieDominix.JPG

QUESTIONS FOR {2022} FIELD SEASON

If you have questions or run into any problems while completing the surveys and want to talk to Nik (acting for Jennie) during:

- Up to {11 June}: email (nik.clyde@ec.gc.ca) or call me on my cell phone at 604-356-8226.

- {12 June – 08 July}:
    - The best method would be to leave a message for me with the PCSP Base Managers (**867-252-3872**) with your number and a time to call. We talk to PCSP every night ~6:30pm Central time.

- {09 July - September}: email (nik.clyde@ec.gc.ca) or call me on my cell phone at 604-356-8226.

Thanks for participating in the Arctic PRISM!

Our partners are an important and valued part of our program! ☺

Crosswalk from original 2008/2009 Meliadine Plot names ('OriginalPlotName') in the .kmz files to Standardized Arctic PRISM Database Plot names ('StandardizedArcticPRISMPlotName') for re-survey/data entry													
Site Name	**Standardized Arctic PRISM Plot Name**	**Original Plot Name**	**Original Survey Date**	**UTM Zone**	**SW corner Easting**	**SW corner Northing**	**NW corner Easting**	**NW corner Northing**	**NE corner Easting**	**NE corner Northing**	**SE corner Easting**	**SE corner Northing**	**Original Surveyed Plot Area (km2)**
Meliadine	MELI-IND1	PR001	June 14, 2008	15	543543	6985728	543536	6986128	543836	6986132	543843	6985732	0.12
Meliadine	MELI-IND2	PR002	June 15, 2008	15	543361	6986175	543355	6986575	543655	6986579	543661	6986179	0.12
Meliadine	MELI-IND3	PR003	June 15, 2008	15	543022	6987099	542735	6987377	542944	6987593	543231	6987315	0.12
Meliadine	MELI-IND4	PR004	June 15, 2008	15	537894	6991283	537632	6991585	537859	6991782	538121	6991479	0.12
Meliadine	MELI-IND5	PR005	June 15, 2008	15	538221	6990731	537886	6991072	538180	6991129	538467	6990851	0.11
Meliadine	MELI-IND6	PR006	June 15, 2008	15	540151	6989892	539904	6990176	540199	6990233	540401	6989992	0.09
Meliadine	MELI-IND7	PR007	June 15, 2008	15	540351	6989242	540301	6989642	540539	6989643	540601	6989242	0.1
Meliadine	MELI-IND8	PR9001	June 14, 2009	15	541105	6988807	540701	6989242	541101	6989392	541451	6988992	0.21
Meliadine	MELI-IND9	PR9002	June 14, 2009	15	540201	6989192	539801	6989542	540151	6989742	540431	6989435	0.17
Meliadine	MELI-IND10	PR9003	June 14, 2009	15	539551	6988992	539351	6989342	539601	6989442	539901	6989092	0.13
Meliadine	MELI-IND11	PR9004	June 15, 2009	15	542451	6984292	542251	6984642	542379	6984756	542648	6984402	0.08
Meliadine	MELI-IND12	PR9005	June 15, 2009	15	542051	6983942	541901	6984292	542118	6984405	542261	6984030	0.09
Meliadine	MELI-IND13	PR9006	June 15, 2009	15	542101	6988342	541751	6988592	541976	6988809	542258	6988525	0.11
Meliadine	MELI-IND14	PR9007	June 17, 2009	15	538564	6987525	538524	6987620	538881	6987804	538921	6987712	0.04
Meliadine	MELI-IND15	PR9008	June 17, 2009	15	539490	6987439	539189	6987709	539383	6987925	539684	6987655	0.11
Meliadine	MELI-IND16	PR9009	June 17, 2009	15	539981	6987795	540013	6988072	540429	6988024	540397	6987747	0.11

APPENDIX II

Bird Transect and Plot Coordinates for the Meliadine Gold Project

Transect & Point #	UTM Zone	Point X	Point Y
1-01	15V	539980	6988148
1-03	15V	540528	6988065
1-04	15V	540907	6988008
1-05	15V	541072	6987984
1-06	15V	541237	6987959
1-08	15V	541356	6987982
1-09	15V	541427	6988052
1-10	15V	541498	6988123
1-11	15V	541675	6988299
1-12	15V	541853	6988475
1-14	15V	542201	6988480
1-15	15V	540226	6988032
2-01	15V	540087	6987829
2-02	15V	540460	6987748
2-03	15V	540910	6987650
2-04	15V	541258	6987572
2-05	15V	541358	6987550
2-06	15V	541457	6987528
2-08	15V	541557	6987526
2-09	15V	541658	6987546
2-10	15V	541758	6987565
2-11	15V	542010	6987613
2-12	15V	542261	6987661
2-13	15V	542510	6987709
3-01	15V	540121	6986568
3-02	15V	540414	6986620
3-03	15V	540661	6986663
3-04	15V	540911	6986707
3-05	15V	541012	6986725
3-06	15V	541115	6986743
3-08	15V	541217	6986739
3-09	15V	541313	6986713
3-10	15V	541434	6986681
3-11	15V	541758	6986594
3-12	15V	542033	6986520
3-13	15V	542293	6986451

Transect & Point #	UTM Zone	Point X	Point Y
4-02	15V	542000	6984084
4-03	15V	542200	6984238
4-04	15V	542401	6984393
4-05	15V	542481	6984454
4-06	15V	542562	6984516
4-08	15V	542647	6984573
4-09	15V	542737	6984625
4-10	15V	542834	6984681
4-11	15V	543078	6984930
4-12	15V	543155	6985171
4-13	15V	543231	6985411
4-14	15V	541764	6983982
5-01	15V	543200	6982247
5-02	15V	543414	6982377
5-03	15V	543627	6982507
5-04	15V	543841	6982637
5-05	15V	543926	6982689
5-06	15V	544012	6982741
5-08	15V	544104	6982782
5-09	15V	544202	6982812
5-10	15V	544301	6982843
5-11	15V	544547	6982919
5-12	15V	544793	6982996
5-13	15V	545039	6983072
6-01	15V	544968	6979943
6-02	15V	545107	6980151
6-03	15V	545246	6980359
6-04	15V	545384	6980567
6-05	15V	545440	6980651
6-06	15V	545495	6980734
6-08	15V	545551	6980817
6-09	15V	545606	6980900
6-10	15V	545662	6980984
6-11	15V	545800	6981192
6-12	15V	545939	6981400
6-13	15V	546078	6981608

APPENDIX III

Fieldwork Dates and Time, Weather, and Observers for the Meliadine Gold Mine Project Waterbird Shoreline Surveys in 2023

Appendix III

Wetland #	Date	Time	Weather	Observers[1]
1 (& 72, 83)	06 July	09:50 to 10:40	12ºC, clear, gentle breeze (NW)	LQ & TP
2 (& 73)	06 July	11:25 to 11:45	12ºC, 5% cloud cover, moderate breeze (NW)	LQ & TP
3	06 July	12:00 to 12:15	13ºC, 10% cloud cover, moderate breeze (NW)	LQ & TP
4 (& 74)	06 July	13:00 to 13:20	13ºC, 10% cloud cover, moderate breeze (NW)	LQ & TP
7 (& 8, 84, 85)	01 July	ND	18ºC, 10% cloud cover, light breeze	LQ & DW
8 (& 7, 84, 85)	01 July	ND	18ºC, 10% cloud cover, light breeze	LQ & DW
9	29 June	ND	14ºC, 20% cloud cover, gentle breeze	LQ & TP
10 (& 11, 106, 107, 108, 109, 111)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
11 (& 10, 106, 107, 108, 109, 111)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
12 (& 110, 112)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
13 (& 113)	29 June	ND	13ºC, 30% cloud cover, light air	LQ & DW
14 (& 114)	29 June	07:20	13ºC, 30% cloud cover, light air	LQ & DW
16	06 July	13:30 to 16:00	13ºC, 15% cloud cover, moderate breeze (NW)	LQ & TP
17 (& 18, 117)	07 July	08:25 to 10:00	10ºC, 90% cloud cover, gentle breeze (NW)	LQ & TP
18 (& 17, 117)	07 July	08:25 to 10:00	10ºC, 90% cloud cover, gentle breeze (NW)	LQ & TP
19 (& 122)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
20 (& 118, 123)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
21 (& 124, 125, 263)	03 July	07:00 to	7ºC, 90% cloud cover, gentle breeze	LQ & DW
22 (& 126)	03 July	ND	7ºC, 90% cloud cover, gentle breeze	LQ & DW
23	03 July	ND	7ºC, 90% cloud cover, gentle breeze	LQ & DW
24	03 July	10:40 to	11ºC, 90% cloud cover, moderate breeze	LQ & DW
25 (& 128)	03 July	ND	7ºC, 90% cloud cover, gentle breeze	LQ & DW
26 (& 129)	02 July	15:20 to	16ºC, 70% cloud cover, light breeze	LQ & DW
28 (& 133, 134)	02 July	14:09	16ºC, 70% cloud cover, light breeze	LQ & DW

Appendix III

Wetland #	Date	Time	Weather	Observers[1]
31 (& 137, 140)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
32 (& 139)	02 July	10:25 to	16ºC, 20% cloud cover, light breeze	LQ & DW
34 (& 141, 143)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
39 (& 43, 148, 159)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
40 (& 150, 161)	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
43 (& 39, 148, 159)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
72 (& 1, 83)	July 06	09:50 to 10:40	12ºC, clear, gentle breeze (NW)	LQ & TP
73 (& 2)	July 06	11:25 to 11:45	12ºC, 5% cloud cover, moderate breeze (NW)	LQ & TP
74 (& 4)	July 06	13:00 to 13:20	13ºC, 10% cloud cover, moderate breeze (NW)	LQ & TP
75	July 06	14:14 to 14:20	13ºC, 10% cloud cover, moderate breeze (NW)	LQ & TP
76	July 06	15:03 to 15:14	13ºC, 30% cloud cover, moderate breeze (NW)	LQ & TP
77[2]	NA	NA	NA	NA
78[2]	NA	NA	NA	NA
79[2]	NA	NA	NA	NA
83 (& 1, 72)	06 July	09:50 to 10:40	12ºC, clear, gentle breeze (NW)	LQ & TP
84 (& 7, 8, 85)	01 July	ND	18ºC, 10% cloud cover, light breeze	LQ & DW
85 (& 7, 8, 84)	01 July	ND	18ºC, 10% cloud cover, light breeze	LQ & DW
90 (& 91)	01 July	14:43 to	18ºC, 10% cloud cover, light breeze	LQ & DW
91 (& 90)	01 July	14:43 to	18ºC, 10% cloud cover, light breeze	LQ & DW
93[2]	NA	NA	NA	NA
94	07 July	11:46 to 11:48	11ºC, 90% cloud cover, moderate breeze (NW)	LQ & TP
95	29 June	ND	14ºC, 20% cloud cover, gentle breeze	LQ & TP
96	29 June	ND	14ºC, 20% cloud cover, gentle breeze	LQ & TP
97	29 June	12:17 to	15ºC, 20% cloud cover, gentle breeze	LQ & DW
98	29 June	11:17 to	14ºC, 20% cloud cover, gentle breeze	LQ & TP

Appendix III

Wetland #	Date	Time	Weather	Observers[1]
99	29 June	ND	15ºC, 20% cloud cover, gentle breeze	LQ & DW
100	29 June	ND	14ºC, 20% cloud cover, gentle breeze	LQ & TP
101	29 June	ND	15ºC, 20% cloud cover, gentle breeze	LQ & DW
102	29 June	ND	14ºC, 20% cloud cover, gentle breeze	LQ & TP
103	29 June	16:55 to 17:41	14ºC, 30% cloud cover, gentle breeze	LQ & DW
106 (& 10, 11, 107, 108, 109, 111)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
107 (& 10, 11, 106, 108, 109, 111)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
108 (& 10, 11, 106, 107, 109, 111)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
109 (& 10, 11, 107, 108, 111)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
110 (& 12, 112)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
111 (& 10, 11, 107, 108, 109, 110)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
112 (& 12, 110)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
113 (& 13)	29 June	ND	13ºC, 30% cloud cover, light air	LQ & DW
114 (& 14)	29 June	07:20	13ºC, 30% cloud cover, light air	LQ & DW
115	07 July	13:50 to 14:02	12ºC, 70% cloud cover, gentle breeze (NW)	LQ & TP
117 (& 17, 18)	07 July	08:25 to 10:00	10ºC, 90% cloud cover, gentle breeze (NW)	LQ & TP
118 (& 20, 123)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
120 (& 121)	03 July	ND	7ºC, 90% cloud cover, gentle breeze	LQ & DW
121 (& 120)	03 July	ND	7ºC, 90% cloud cover, gentle breeze	LQ & DW
122 (& 19)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
123 (& 20, 118)	03 July	ND	11ºC, 90% cloud cover, moderate breeze	LQ & DW
124 (& 21, 125, 263)	03 July	07:00 to	7ºC, 90% cloud cover, gentle breeze	LQ & DW
125 (& 21, 124, 263)	03 July	07:00 to	7ºC, 90% cloud cover, gentle breeze	LQ & DW
126 (& 22)	03 July	ND	7ºC, 90% cloud cover, gentle breeze	LQ & DW

Appendix III

Wetland #	Date	Time	Weather	Observers[1]
128 (& 25)	03 July	ND	7ºC, 90% cloud cover, gentle breeze	LQ & DW
129 (& 26)	02 July	15:20 to	16ºC, 70% cloud cover, light breeze	LQ & DW
130	02 July	15:15 to	16ºC, 70% cloud cover, light breeze	LQ & DW
131	02 July	ND	16ºC, 20% cloud cover, light breeze	LQ & DW
132 (& 262)	02 July	ND	16ºC, 20% cloud cover, light breeze	LQ & DW
133 (& 28, 134)	02 July	14:09	16ºC, 70% cloud cover, light breeze	LQ & DW
134 (& 28, 133)	02 July	14:09	16ºC, 70% cloud cover, light breeze	LQ & DW
135 (& 261)	02 July	ND	16ºC, 20% cloud cover, light breeze	LQ & DW
137 (& 31, 140)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
138	02 July	ND	16ºC, 20% cloud cover, light breeze	LQ & DW
139 (& 32)	02 July	10:25 to	16ºC, 20% cloud cover, light breeze	LQ & DW
140 (& 31, 137)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
141 (& 34, 143)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
142 (& 158)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
143 (& 34, 141)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
144 (& 145, 162)	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
145 (& 144, 162)	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
146 (& 147)	01 July	10:18 to ND	14ºC, 10% cloud cover, light breeze	LQ & DW
147 (& 146)	01 July	10:18 to ND	14ºC, 10% cloud cover, light breeze	LQ & DW
148 (& 39, 43, 159)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
149 (& 151, 152, 160)	02 July	08:12 to	14ºC, 70% cloud cover, light breeze	LQ & DW
150 (& 40, 161)	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
151 (& 149, 152, 160)	02 July	08:12 to	14ºC, 70% cloud cover, light breeze	LQ & DW
152 (& 149, 151, 160)	02 July	08:12 to	14ºC, 70% cloud cover, light breeze	LQ & DW

Appendix III

Wetland #	Date	Time	Weather	Observers[1]
153	01 July	14:21 to	18ºC, 10% cloud cover, light breeze	LQ & DW
154	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
155 (& 156, 157, 264, 265)	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
156 (& 155, 157, 264, 265)	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
157 (& 155, 156, 264, 265)	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
158 (& 142)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
159 (& 39, 43, 148)	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
160 (& 149, 151, 152)	02 July	08:12 to	14ºC, 70% cloud cover, light breeze	LQ & DW
161 (& 40, 150)	01 July	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
162 (& 144, 145)	30 June	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
164	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
165	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
166 (& 167, 168, 169, 170)	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
167 (& 166, 168, 169, 170)	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
168 (& 166, 167, 169, 170)	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
169 (& 166, 167, 168, 170)	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
170 (& 166, 167, 168, 169)	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
171	24 June	10:24 to	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
172 (& 178, 180)	24 June	11:07 to	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
173 (& 174)	24 June	10:44 to	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
174 (& 173)	24 June	10:44 to	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
175	24 June	14:30 to	14ºC, 80% cloud cover, moderate breeze	LQ, CN & DW
176	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
177	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW

Appendix III

Wetland #	Date	Time	Weather	Observers[1]
178 (& 172, 180)	24 June	11:07 to	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
179	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
180 (& 172, 178)	24 June	11:07 to	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
181	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
186	24 June	ND	10ºC, 30% cloud cover, gentle breeze	LQ, CN & DW
188	08 July	16:44 to 16:51	11ºC, 90% cloud cover, moderate breeze (S)	LQ & TP
189	08 July	16:56 to 17:03	11ºC, 90% cloud cover, moderate breeze (S)	LQ & TP
194	08 July	13:40 to 13:50	12ºC, 87% cloud cover, gentle breeze (S)	LQ & TP
195	08 July	14:12 to 14:14	12ºC, 80% cloud cover, moderate breeze (S)	LQ & TP
196	08 July	14:07 to 14:09	12ºC, 87% cloud cover, gentle breeze (S)	LQ & TP
197	08 July	13:57 to 14:03	12ºC, 87% cloud cover, gentle breeze (S)	LQ & TP
198	08 July	12:51 to 12:56	12ºC, 80% cloud cover, gentle breeze (S)	LQ & TP
199	08 July	14:18 to 14:25	12ºC, 80% cloud cover, moderate breeze (S)	LQ & TP
200	08 July	14:28 to 14:36	12ºC, 80% cloud cover, moderate breeze (S)	LQ & TP
204	08 July	12:30 to 12:40	11ºC, 80% cloud cover, gentle breeze (S)	LQ & TP
205	08 July	12:30 to 12:40	12ºC, 80% cloud cover, gentle breeze (S)	LQ & TP
207	08 July	13:24 to 13:27	11ºC, 80% cloud cover, gentle breeze (S)	LQ & TP
208	08 July	Dry	12ºC, 80% cloud cover, gentle breeze (S)	LQ & TP
210	08 July	12:45 to 12:50	12ºC, 80% cloud cover, gentle breeze (S)	LQ & TP
211 (& 212, 215, 216, 218, 219)	24 June	ND	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
212 (& 211, 215, 216, 218, 219)	24 June	ND	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
213 (& 214)	24 June	14:00	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
214 (& 213)	24 June	14:00	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
215 (& 211, 212, 216, 218, 219)	24 June	ND	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW

Appendix III

Wetland #	Date	Time	Weather	Observers[1]
216 (& 211, 212, 215, 218, 219)	24 June	ND	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
217	24 June	14:00	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
218 (& 211, 212, 215, 216, 219)	24 June	ND	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
219 (& 211, 212, 215, 216, 218)	24 June	ND	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
220	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
221	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
222	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
223	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
224	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
225	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
226	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
227	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
228	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
229	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
230	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
231 (& 232, 233)	30 June	10:30 to 10:45	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
232 (& 231, 233)	30 June	10:30 to 10:45	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
233 (& 231, 232)	30 June	10:30 to 10:45	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
234	30 June	ND	8ºC, 80% cloud cover, gentle breeze	LQ & DW
235	30 June	ND	8ºC, 80% cloud cover, gentle breeze	LQ & DW
237 (& 238)	30 June	10:45 to 10:55	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
238 (& 237)	30 June	10:45 to 10:55	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
239	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
240	30 June	ND	9ºC, 90% cloud cover, drizzle, gentle breeze	LQ & DW
241	01 July	09:20 to	14ºC, 10% cloud cover, light breeze	LQ & DW

Appendix III

Wetland #	Date	Time	Weather	Observers[1]
242 (& 244)	01 July	09:20 to	14ºC, 10% cloud cover, light breeze	LQ & DW
243	01 July	09:20 to	14ºC, 10% cloud cover, light breeze	LQ & DW
244 (& 242)	01 July	09:20 to	14ºC, 10% cloud cover, light breeze	LQ & DW
245 (& 246)	01 July	09:20 to	14ºC, 10% cloud cover, light breeze	LQ & DW
246 (& 245)	01 July	09:20 to	14ºC, 10% cloud cover, light breeze	LQ & DW
247	24 June	15:25 to	15ºC, 90% cloud cover, moderate breeze	LQ, CN & DW
249[2]	NA	NA	NA	NA
250	08 July	Dry	11ºC, 80% cloud cover, gentle breeze (S)	LQ & TP
251	08 July	14:48 to 14:51	12ºC, 80% cloud cover, moderate breeze (S)	LQ & TP
252	08 July	14:48 to 14:51	12ºC, 80% cloud cover, moderate breeze (S)	LQ & TP
253	08 July	13:05 to 13:09	11ºC, 80% cloud cover, gentle breeze (S)	LQ & TP
259	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
260	02 July	ND	14ºC, 70% cloud cover, light breeze	LQ & DW
261 (& 135)	02 July	ND	16ºC, 20% cloud cover, light breeze	LQ & DW
262 (& 132)	02 July	ND	16ºC, 20% cloud cover, light breeze	LQ & DW
263 (& 21, 124, 125)	03 July	07:00 to	7ºC, 90% cloud cover, gentle breeze	LQ & DW
264 (& 155, 156, 157, 265)	30 June	ND	14ºC, 10% cloud cover, light breeze	LQ & DW
265 (& 155, 156, 157, 264)	30 June	ND	14ºC, 10% cloud cover, light breeze	LQ & DW

[1] CN = Christopher Nakoolak; LQ = Lars Qaqqaq; DW = Dylan White; TP = Tom Plath
[2] Heavily impacted or developed; not surveyed

APPENDIX IV

Detailed Results by Survey Location for Meliadine Gold Mine Waterbird Shoreline Surveys in 2023

Appendix IV

Wetland #	Date (2023)	Observations [1]
1 (& 72, 83)	06 July	Loon (2 heard), LESA (1, distraction display), COLO (1), CANG (10), SACR (2), AMPI (1)
2 (& 73)	06 July	RTLO (pair with 1 adult sitting on nest)
3	06 July	CORE (1), LESA (1 adult with 2 fledged young)
4 (& 74)	06 July	SAVS (1 singing), LALO (1 singing), CORE (flying over & calling)
7 (& 8, 84, 85)	01 July	SACR (2 agitated adults & walking), HOLA (1 calling), WCSP (1 singing), AMPI (1 calling), LESA (1 taking off), AMPI (1 flushed), AMPI (1 flushed)
8 (& 7, 84, 85)	01 July	SACR (2 agitated adults & walking), HOLA (1 calling), WCSP (1 singing), AMPI (1 calling), LESA (1 taking off), AMPI (1 flushed), AMPI (1 flushed)
9 (& 102)	29 June	HERG (1 nest on small island), HOLA (1 singing), RBME (pair swimming), LESA (1 calling), HERG (1 flying), COLO (1 swimming)
10 (& 11, 106, 107, 108, 109, 111)	03 July	SAVS (1 singing), LESA (1 calling), SACR (3 walking), NOPI (3 swimming), Sik Sik (1 calling), HOLA (1 singing), LALO (1 calling), HERG (1 flying), CANG (1 landing), PALO (1 flying), LALO (1 male displaying), SAVS (1 calling), HOLA (1), SACR (25 resting), SAVS (1), TUSW (2 resting), HERG (1 flying), SAVS (1), HOLA (1 singing), LALO (1 male displaying), HOLA (1 singing)
11 (& 10, 106, 107, 108, 109, 111)	03 July	SAVS (1 singing), LESA (1 calling), SACR (3 walking), NOPI (3 swimming), Sik Sik (1 calling), HOLA (1 singing), LALO (1 calling), HERG (1 flying), CANG (1 landing), PALO (1 flying), LALO (1 male displaying), SAVS (1 calling), HOLA (1), SACR (25 resting), SAVS (1), TUSW (2 resting), HERG (1 flying), SAVS (1), HOLA (1 singing), LALO (1 male displaying), HOLA (1 singing)
12 (& 110, 112)	03 July	SACR (25 resting), LALO (1 male displaying), CANG (1 nest depredated and 1 dead adult), LTDU (pair swimming), LESA (1 skulking), HOLA (1 singing), CANG (1 flying & landing on pond), PALO (1 swimming), HOLA (1 singing), LALO (1 male chasing 1 female), LALO (1 male calling), CORA (1 flying), LESA (1 skulking), SAVS (1 agitated & singing), CANG (6 flying)
13 (& 113)	29 June	CANG (2 agitated & flying away), SESA (1 calling), AMPI (1 calling), LALO (pair displaying), HOLA (1 singing), CORA (1 flying), PALO (1 flying & calling), HOLA (1), Sik Sik (burrows), CANG (18 flying), LALO (1 male calling), HERG (1 flying), SAVS (1), SNBU (1 flushed), WCSP (1 singing), HOLA (1 singing), Sik Sik (burrows), AMPI (1 calling), SAVS (1 singing), CANG (1 calling), HORE (pair), LALO (pair), TUSW (1 swimming), HOLA (1 singing), CANG (2 flying), HOLA (1 singing), LALO (1 calling),
14 (& 114)	29 June	HOLA (3 chasing & singing), WCSP (1 singing), HERG (3 flying), AMPI (1 singing), AMRO (1 singing), SACR (1 calling), HOLA (1 carrying nesting material), HOLA (2), PALO (1 flying), LALO (1), HOLA (1), WCSP (1 singing), WIPT (1 male calling), AMPI (1), WIPT (1 female), LALO (1 female), HOLA (1 flushed), LALP (1 male), HOLA (1 singing), SESA (1 calling), HOLAR (1 singing), LALO (1 singing), AMPI (1 displaying), SACR (5), LALO (1 male), HOLA (1 pair), CANG (12), CANG (1 injured), WCSP (1 singing), LALO (1 singing), HOLA (1 singing), SAVS (1 singing), Sik Sik (burrows), HERG (1 flying), COLO (2 swimming), LALO (1 calling), REDP (1 flying & calling), AMPI (1), HOLA (1 singing), CANG (5 flying), LALO (1 singing), HOLA (1), Sik Sik (burrows), HOLA (1 calling), WCSP (1 singing), HERG (1 flying), LALO (1 singing), Sik Sik (burrows), AMPI (1), WCSP (1 singing), LTDU (2 flying), CANG (2 flying), WCSP (1 singing), HOLA (1 singing), AMPI (pair), HOLA (pair)

Appendix IV

Wetland #	Date (2023)	Observations
16	06 July	BAEA (1 adult), LESA (1 calling), LESA (2 adults with distraction display), LALO (1 male), LESA (1 adult with distraction display), CANG (46 in flock), HERG (1 adult incubating on island nest), HOLA (1), AMPI (1), HOLA (1), SEPL (1), SEPL (2 adults with broken-wing distraction display), SACR (2 adults & 1 colt), COLO (1)
17 (& 18, 117)	07 July	CORE (1 flying), CANG (1 flying & calling), CORE (1 flying & calling), AMPI (1), LALO (1 female), SAVS (1), PALO (1 flying), SACR (3), LESA (1), AMPI (1), LALO (1 female), LESA (1), LALO (1 flushed but no nest found), HERG (1 flying), CORA (1 flying)
18 (& 17, 117)	07 July	CORE (1 flying), CANG (1 flying & calling), CORE (1 flying & calling), AMPI (1), LALO (1 female), SAVS (1), PALO (1 flying), SACR (3), LESA (1), AMPI (1), LALO (1 female), LESA (1), LALO (1 flushed but no nest found), HERG (1 flying), CORA (1 flying)
19 (& 122)	03 July	HOLA (1 flying), LALO (1 calling), HERG (1 flying), LALO (1 displaying male)
20 (& 118, 123)	03 July	LTDU (pair swimming), CANG (1 calling), HOLA (2 flying), HERG (1 flying), SACR (1 calling), Sik Sik (1 calling)
21 (& 124, 125, 263)	03 July	SACR (1 calling), RTLO (nesting pair), LESA (1 calling), HOLA (1 singing), LALO (1 singing), SEPL (1), HOLA (1 singing), LTDU (1 calling), LALO (1 female observed), HERG (1 flying), LALO (1 male displaying), LESA (1 agitated adult), HOLA (1 singing), HOLA (1 singing), SACR (2 calling), LALO (1 calling)
22 (& 126)	03 July	LALO (1 male calling), LESA (1 calling), HOLA (1 singing), LALO (1 displaying male), HERG (1 flying), HOLA (1 singing)
23	03 July	HERG (1 adult on nest on small island), HOLA (1 calling), LALO (1 calling), LALO (1 male displaying)
24	03 July	TUSW (1 swimming), GRSC (1 swimming), HOLA (1 calling), LALO (1 male displaying), LESA (1 calling), HOLA (1 calling), LALO (1 calling), LALO (1 female calling), SAVS (1 singing), SACR (2 calling), CANG (2 calling)
25 (& 128)	03 July	SACR (2 calling), LALO (1 male), HERG (1 flying), LALO (1 male calling), LALO (2 chasing pair), PALO (2 swimming), LALO (1 displaying male)
26 (& 129)	02 July	HOLA (1 singing), LALO (1 singing), HERG (1 flying), LALO (1 male displaying), PALO (1 swimming), CANG (5 adults & 7 juveniles on land), HOLA (2 males singing), SACR (2 flying), TUSW (1 adult on nest; raised wings when fox approached), LALO (1 female), Arctic Fox (1 approaching and then leaving nesting TUSW)
28 (& 133, 134)	02 July	LALO (1 displaying), GOEA (1 scavenging a Caribou), LALO (1 singing), LALO (1 female flushed), TUSW (pair is agitated when approached), HERG (pair), HOLA (1 singing), HOLA (1 singing), REDP (flying & singing), LTDU (1 male swimming), LALO (1 female flying off)
31 (& 137, 140)	02 July	LTDU (2 male swimming)
32 (& 139)	02 July	REDP (1 flying & calling), LTDU (pair swimming), NOPI (3 taking off), SACR (2 flying), SACR (1 calling & walking), AMPI (1 calling), LALO (1 male)
34 (& 141, 143)	02 July	HOLA (1 singing), SACR (2 flying), HERG (1 flying)

Appendix IV

Wetland #	Date (2023)	Observations
39 (& 43, 148, 159)	02 July	GWFG (2 flying), AMPI (1 calling)
40 (& 150, 161)	01 July	HOLA (1 singing)
43 (& 39, 148, 159)	02 July	GWFG (2 flying), AMPI (1 calling)
72 (& 1, 83)	06 July	Loon (2 heard), LESA (1, distraction display), COLO (1), CANG (10), SACR (2), AMPI (1)
73 (& 2)	06 July	RTLO (pair with 1 adult sitting on nest)
74 (& 4)	06 July	SAVS (1 singing), LALO (1 singing), CORE (flying over & calling)
75	06 July	None observed
76	06 July	None observed
83 (& 1, 72)	06 July	Loon (2 heard), LESA (1, distraction display), COLO (1), CANG (10), SACR (2), AMPI (1)
84 (& 7, 8, 85)	01 July	SACR (2 agitated adults & walking), HOLA (1 calling), WCSP (1 singing), AMPI (1 calling), LESA (1 taking off), AMPI (1 flushed), AMPI (1 flushed)
85 (& 7, 8, 84)	01 July	SACR (2 agitated adults & walking), HOLA (1 calling), WCSP (1 singing), AMPI (1 calling), LESA (1 taking off), AMPI (1 flushed), AMPI (1 flushed)
90 (& 91)	01 July	AMPI (1 calling), HOLA (1 female flushed)
91 (& 90)	01 July	AMPI (1 calling), HOLA (1 female flushed)
94	07 July	None observed
95	29 June	AMPI (1 calling), SESA (1 calling)
96	29 June	AMPI (1 calling), SESA (1 calling)
97	29 June	HOLA (1), AMPI (1 calling)
98	29 June	SAVS (1 singing), AMPI (1 singing), CANG (1 calling), HERG (1 calling), SESA (1 calling), Sik Sik (standing), Sik Sik (standing), HERG (nest on small island)
99	29 June	Wetland filled
100	29 June	SESA (1 calling), NOPI (1 flying), LESA (2 distraction display)
101	29 June	Wetland filled
102 (& 9)	29 June	HERG (1 nest on small island), HOLA (1 singing), RBME (pair swimming), LESA (1 calling), HERG (1 flying), COLO (1 swimming)

Appendix IV

Wetland #	Date (2023)	Observations
103	29 June	GRSC (2 males & 1 female swimming), LTDU (16 swimming), TUSW (2 adults & 3 young), AMPI (1 carrying food), HOLA (2 singing), SNBU (1), COGO (1 swimming), SEPL (pair & nest; agitated and distraction display), NOPI (1 swimming), AMPI (1 calling), HOLA (1), LESA (1), AMPI (1 calling), NOPI (2 females), HERG (1 calling), NOPI (2 males & 1 female flying), LTDU (1 male swimming), GRSC (1 male swimming)
106 (& 10, 11, 107, 108, 109, 111)	03 July	SAVS (1 singing), LESA (1 calling), SACR (3 walking), NOPI (3 swimming), Sik Sik (1 calling), HOLA (1 singing), LALO (1 calling), HERG (1 flying), CANG (1 landing), PALO (1 flying), LALO (1 male displaying), SAVS (1 calling), HOLA (1), SACR (25 resting), SAVS (1), TUSW (2 resting), HERG (1 flying), SAVS (1), HOLA (1 singing), LALO (1 male displaying), HOLA (1 singing)
107 (& 10, 11, 106, 108, 109, 111)	03 July	SAVS (1 singing), LESA (1 calling), SACR (3 walking), NOPI (3 swimming), Sik Sik (1 calling), HOLA (1 singing), LALO (1 calling), HERG (1 flying), CANG (1 landing), PALO (1 flying), LALO (1 male displaying), SAVS (1 calling), HOLA (1), SACR (25 resting), SAVS (1), TUSW (2 resting), HERG (1 flying), SAVS (1), HOLA (1 singing), LALO (1 male displaying), HOLA (1 singing)
108 (& 10, 11, 106, 107, 109, 111)	03 July	SAVS (1 singing), LESA (1 calling), SACR (3 walking), NOPI (3 swimming), Sik Sik (1 calling), HOLA (1 singing), LALO (1 calling), HERG (1 flying), CANG (1 landing), PALO (1 flying), LALO (1 male displaying), SAVS (1 calling), HOLA (1), SACR (25 resting), SAVS (1), TUSW (2 resting), HERG (1 flying), SAVS (1), HOLA (1 singing), LALO (1 male displaying), HOLA (1 singing)
109 (& 10, 11, 106, 107, 108, 111)	03 July	SAVS (1 singing), LESA (1 calling), SACR (3 walking), NOPI (3 swimming), Sik Sik (1 calling), HOLA (1 singing), LALO (1 calling), HERG (1 flying), CANG (1 landing), PALO (1 flying), LALO (1 male displaying), SAVS (1 calling), HOLA (1), SACR (25 resting), SAVS (1), TUSW (2 resting), HERG (1 flying), SAVS (1), HOLA (1 singing), LALO (1 male displaying), HOLA (1 singing)
110 (& 12, 112)	03 July	SACR (25 resting), LALO (1 male displaying), CANG (1 nest depredated and 1 dead adult), LTDU (pair swimming), LESA (1 skulking), HOLA (1 singing), CANG (1 flying & landing on pond), PALO (1 swimming), HOLA (1 singing), LALO (1 male chasing 1 female), LALO (1 male calling), CORA (1 flying), LESA (1 skulking), SAVS (1 agitated & singing), CANG (6 flying)
111 (& 10, 11, 106, 107, 108, 109)	03 July	SAVS (1 singing), LESA (1 calling), SACR (3 walking), NOPI (3 swimming), Sik Sik (1 calling), HOLA (1 singing), LALO (1 calling), HERG (1 flying), CANG (1 landing), PALO (1 flying), LALO (1 male displaying), SAVS (1 calling), HOLA (1), SACR (25 resting), SAVS (1), TUSW (2 resting), HERG (1 flying), SAVS (1), HOLA (1 singing), LALO (1 male displaying), HOLA (1 singing)
112 (& 12, 110)	03 July	SACR (25 resting), LALO (1 male displaying), CANG (1 nest depredated and 1 dead adult), LTDU (pair swimming), LESA (1 skulking), HOLA (1 singing), CANG (1 flying & landing on pond), PALO (1 swimming), HOLA (1 singing), LALO (1 male chasing 1 female), LALO (1 male calling), CORA (1 flying), LESA (1 skulking), SAVS (1 agitated & singing), CANG (6 flying)
113 (& 13)	29 June	CANG (2 agitated & flying away), SESA (1 calling), AMPI (1 calling), LALO (pair displaying), HOLA (1 singing), CORA (1 flying), PALO (1 flying & calling), HOLA (1), Sik Sik (burrows), CANG (18 flying), LALO (1 male calling), HERG (1 flying), SAVS (1), SNBU (1 flushed), WCSP (1 singing), HOLA (1 singing), Sik Sik (burrows), AMPI (1 calling), SAVS (1 singing), CANG (1 calling), HORE (pair), LALO (pair), TUSW (1 swimming), HOLA (1 singing), CANG (2 flying), HOLA (1 singing), LALO (1 calling),

Appendix IV

Wetland #	Date (2023)	Observations
114 (& 14)	29 June	HOLA (3 chasing & singing), WCSP (1 singing), HERG (3 flying), AMPI (1 singing), AMRO (1 singing), SACR (1 calling), HOLA (1 carrying nesting material), HOLA (2), PALO (1 flying), LALO (1), HOLA (1), WCSP (1 singing), WIPT (1 male calling), AMPI (1), WIPT (1 female), LALO (1 female), HOLA (1 flushed), LALP (1 male), HOLA (1 singing), SESA (1 calling), HOLAR (1 singing), LALO (1 singing), AMPI (1 displaying), SACR (5), LALO (1 male), HOLA (1 pair), CANG (12), CANG (1 injured), WCSP (1 singing), LALO (1 singing), HOLA (1 singing), SAVS (1 singing), Sik Sik (burrows), HERG (1 flying), COLO (2 swimming), LALO (1 calling), REDP (1 flying & calling), AMPI (1), HOLA (1 singing), CANG (5 flying), LALO (1 singing), HOLA (1), Sik Sik (burrows), HOLA (1 calling), WCSP (1 singing), HERG (1 flying), LALO (1 singing), Sik Sik (burrows), AMPI (1), WCSP (1 singing), LTDU (2 flying), CANG (2 flying), WCSP (1 singing), HOLA (1 singing), AMPI (pair), HOLA (pair)
115	07 July	CANG (22 resting at tip), SNGO (1 resting at tip), AMPI (1)
117 (& 17, 18)	07 July	CORE (1 flying), CANG (1 flying & calling), CORE (1 flying & calling), AMPI (1), LALO (1 female), SAVS (1), PALO (1 flying), SACR (3), LESA (1), AMPI (1), LALO (1 female), LESA (1), LALO (1 flushed but no nest found), HERG (1 flying), CORA (1 flying)
118 (& 20, 123)	03 July	LTDU (pair swimming), CANG (1 calling), HOLA (2 flying), HERG (1 flying), SACR (1 calling), Sik Sik (1 calling)
120 (& 121)	03 July	HOLA (1 singing), Sik Sik (1 calling), LALO (1 male displaying), LALO (1 displaying), HOLA (1 singing), HOLA (1), GERG (1 flying), LTDU (1 male swimming), TUSW (1 flying), CANG (6 flying)
121 (& 120)	03 July	HOLA (1 singing), Sik Sik (1 calling), LALO (1 male displaying), LALO (1 displaying), HOLA (1 singing), HOLA (1), GERG (1 flying), LTDU (1 male swimming), TUSW (1 flying), CANG (6 flying)
122 (& 19)	03 July	HOLA (1 flying), LALO (1 calling), HERG (1 flying), LALO (1 displaying male)
123 (& 20, 118)	03 July	LTDU (pair swimming), CANG (1 calling), HOLA (2 flying), HERG (1 flying), SACR (1 calling), Sik Sik (1 calling)
124 (& 21, 125, 263)	03 July	SACR (1 calling), RTLO (nesting pair), LESA (1 calling), HOLA (1 singing), LALO (1 singing), SEPL (1), HOLA (1 singing), LTDU (1 calling), LALO (1 female observed), HERG (1 flying), LALO (1 male displaying), LESA (1 agitated adult), HOLA (1 singing), HOLA (1 singing), SACR (2 calling), LALO (1 calling)
125 (& 21, 124, 263)	03 July	SACR (1 calling), RTLO (nesting pair), LESA (1 calling), HOLA (1 singing), LALO (1 singing), SEPL (1), HOLA (1 singing), LTDU (1 calling), LALO (1 female observed), HERG (1 flying), LALO (1 male displaying), LESA (1 agitated adult), HOLA (1 singing), HOLA (1 singing), SACR (2 calling), LALO (1 calling)
126 (& 22)	03 July	LALO (1 male calling), LESA (1 calling), HOLA (1 singing), LALO (1 displaying male), HERG (1 flying), HOLA (1 singing)
128 (& 25)	03 July	SACR (2 calling), LALO (1 male), HERG (1 flying), LALO (1 male calling), LALO (2 chasing pair), PALO (2 swimming), LALO (1 displaying male)
129 (& 26)	02 July	HOLA (1 singing), LALO (1 singing), HERG (1 flying), LALO (1 male displaying), PALO (1 swimming), CANG (5 adults & 7 juveniles on land), HOLA (2 males singing), SACR (2 flying), TUSW (1 adult on nest; raised wings when fox approached), LALO (1 female), Arctic Fox (1 approaching and then leaving nesting TUSW), LESA (1 agitated), LALO (2 males displaying)

Appendix IV

Wetland #	Date (2023)	Observations
130	02 July	SAVS (1 flushed & agitated), PALO (1 swimming & diving), SAVS (1 flushed), HOLA (1 singing), HOLA (1 singing)
131	02 July	SEPL (1 calling), LALO (1 calling), CANG (1 walking), HOLA (1 flying), LALO (1 male displaying)
132 (& 262)	02 July	LALO (1 male displaying), SACR (9 flying), SACR (2 flying), TUSW (2 adults & 3 juveniles), GOEA (1 soaring)
135	02 July	None observed
137 (& 31, 140)	02 July	LTDU (2 male swimming)
138	02 July	SACR (1 calling), LALO (1 male), REDP (1 flying & calling), LALO (1 calling), SEPL (1 calling)
139 (& 32)	02 July	REDP (1 flying & calling), LTDU (pair swimming), NOPI (3 taking off), SACR (2 flying), SACR (1 calling & walking), AMPI (1 calling), LALO (1 male)
140 (& 31, 137)	02 July	LTDU (2 male swimming)
141 (& 34, 143)	02 July	HOLA (1 singing), SACR (2 flying), HERG (1 flying)
142 (& 158)	02 July	CANG (2 adults & 4 juveniles), HERG (1), LALO (1 calling), HERG (2 flying), SAVS (1 flushed)
143 (& 34, 141)	02 July	HOLA (1 singing), SACR (2 flying), HERG (1 flying)
144 (& 145, 162)	01 July	HOLA (1 singing), LESA (1 calling), HOLA (2 chasing & singing), SACR (1 calling)
145 (& 144, 162)	01 July	HOLA (1 singing), LESA (1 calling), HOLA (2 chasing & singing), SACR (1 calling)
146 (& 147)	01 July	SACR (1 calling), HOLA (2 singing & flushed)
147 (& 146)	01 July	SACR (1 calling), HOLA (2 singing & flushed)
148 (& 39, 43, 159)	02 July	GWFG (2 flying), AMPI (1 calling)
149 (& 151, 152, 160)	02 July	REDP (1 flying & calling), AMPI (1 calling), WCSP (1 singing), HOLA (1 singing)
150 (& 40, 161)	01 July	HOLA (1 singing)
151 (& 149, 152, 160)	02 July	REDP (1 flying & calling), AMPI (1 calling), WCSP (1 singing), HOLA (1 singing)
152 (& 149, 151, 160)	02 July	REDP (1 flying & calling), AMPI (1 calling), WCSP (1 singing), HOLA (1 singing)
153	01 July	TUSW (1), LTDU (1), GRSC (1), AMPI (1 adult flushed from nest with 5 eggs), SEPL (2 adults with distraction display & nest with 4 eggs), NOPI (pair swimming), SACR (1 walking), HOLA (1 singing), SNBU (1 singing)
154	01 July	GOEA (1 juvenile soaring), LALO (1 displaying), HOLA (1 singing)
155 (& 156, 157, 264, 265)	01 July	LALO (1 male displaying), HOLA (1 calling), SACR (1 calling)

Appendix IV

Wetland #	Date (2023)	Observations
156 (& 155, 157, 264, 265)	01 July	LALO (1 male displaying), HOLA (1 calling), SACR (1 calling)
157 (& 155, 156, 264, 265)	01 July	LALO (1 male displaying), HOLA (1 calling), SACR (1 calling)
158 (& 142)	02 July	CANG (2 adults & 4 juveniles), HERG (1), LALO (1 calling), HERG (2 flying), SAVS (1 flushed)
159 (& 39, 43, 148)	02 July	GWFG (2 flying), AMPI (1 calling)
160 (& 149, 151, 152)	02 July	REDP (1 flying & calling), AMPI (1 calling), WCSP (1 singing), HOLA (1 singing)
161 (& 40, 150)	01 July	HOLA (1 singing)
162 (& 144, 145)	01 July	HOLA (1 singing), LESA (1 calling), HOLA (2 chasing & singing), SACR (1 calling)
164	24 June	AMPI (1 calling), HOLA (1 singing), Sik Sik (1 standing), SEPL (2 agitated adults & nest), SAVS (1 singing), HERG (1 flying), CANG (5 flying), SACR (2 flying), Sik Sik (1 resting), SEPL (2 adults agitated), AMPI (1 displaying), REDP (1 flying & calling), HOLA (1 singing), AMPI (2 displaying)
165	24 June	HERG (2 flying), REDP (1 flying & calling), WCSP (1 singing), PALO (1 flying), CORA (empty nest under bridge), HOLA (1 calling), HERG (1 flying), CANG (19 flying), CACG (2 flying), HOLA (1), HERG (1 flying)
166 (& 167, 168, 169, 170)	24 June	PALO (2 flying), SACR (1 calling), CANG (2 flying), AMPI (1 singing), TUSW (3 flying), CANG (17 flying), AMPI (2), SEPL (1 calling)
167 (& 166, 168, 169, 170)	24 June	PALO (2 flying), SACR (1 calling), CANG (2 flying), AMPI (1 singing), TUSW (3 flying), CANG (17 flying), AMPI (2), SEPL (1 calling)
168 (& 166, 167, 169, 170)	24 June	PALO (2 flying), SACR (1 calling), CANG (2 flying), AMPI (1 singing), TUSW (3 flying), CANG (17 flying), AMPI (2), SEPL (1 calling)
169 (& 166, 167, 168, 170)	24 June	PALO (2 flying), SACR (1 calling), CANG (2 flying), AMPI (1 singing), TUSW (3 flying), CANG (17 flying), AMPI (2), SEPL (1 calling)
170 (& 166, 167, 168, 169)	24 June	PALO (2 flying), SACR (1 calling), CANG (2 flying), AMPI (1 singing), TUSW (3 flying), CANG (17 flying), AMPI (2), SEPL (1 calling)
171	24 June	TUSW (2 flushed from pond), HOLA (1 singing), CANG (2), SACR (1), HOLA (1 singing), TUSW (14 flying), SAVS (1 singing), WCSP (1 singing), CANG (17 flying)

Appendix IV

Wetland #	Date (2023)	Observations
172 (& 178, 180)	24 June	LALO (1 singing), SAVS (2 singing), HOLA (1 singing), LTDU (2 swimming), NOPI (2 flying), PALO (1 flying), CANG (2 flying), SAVS (2 in territorial dispute), KIEI (pair along shore), SACR (1 foraging), HERG (1 flying), CANG (4), HOLA (1 singing), CANG (3 taking off)
173 (& 174)	24 June	LALO (1 singing), HOLA (1 singing), GWFG (3 flying), SNGO (6 flying), REDP (flying & calling), SACR (1 flying), PALO (1 flying)
174 (& 173)	24 June	LALO (1 singing), HOLA (1 singing), GWFG (3 flying), SNGO (6 flying), REDP (flying & calling), SACR (1 flying), PALO (1 flying)
175	24 June	SACR (1 calling), HOLA (1 singing), SAVS (1 singing)
176	24 June	HERG (1 flying), PALO (1 flying)
177	24 June	CANG (8 flying), SESA (1 taking off & calling), TUSW (1 swimming)
178 (& 172, 180)	24 June	LALO (1 singing), SAVS (2 singing), HOLA (1 singing), LTDU (2 swimming), NOPI (2 flying), PALO (1 flying), CANG (2 flying), SAVS (2 in territorial dispute), KIEI (pair along shore), SACR (1 foraging), HERG (1 flying), CANG (4), HOLA (1 singing), CANG (3 taking off)
179	24 June	Doesn't exist in same location; new area flooded
180 (& 172, 178)	24 June	LALO (1 singing), SAVS (2 singing), HOLA (1 singing), LTDU (2 swimming), NOPI (2 flying), PALO (1 flying), CANG (2 flying), SAVS (2 in territorial dispute), KIEI (pair along shore), SACR (1 foraging), HERG (1 flying), CANG (4), HOLA (1 singing), CANG (3 taking off)
181	24 June	LTDU (female & nest with 8 eggs in moss rich tundra heath; nest lined with down feathers), CANG (3 flying), SESA (1 calling), SAVS (1), TUSW (1 flying), CANG (35 flying), SACR (2), AMPI (1 flushed)
186	24 June	SESA (1 singing), SAVS (1), CANG (2 taking off)
188	08 July	TUSW (1), TUSW (1)
189	08 July	None observed
194	08 July	TUSW (2 flying), HERG (1 flying)
195	08 July	None observed
196	08 July	None observed
197	08 July	HOLA (1), HERG (1 flying)
198	08 July	HERG (1 flying), CORA (2 flying)
199	08 July	None observed
200	08 July	LTDU (2 flushed)

Appendix IV

Wetland #	Date (2023)	Observations
204	08 July	LESA (1 calling)
205	08 July	None observed
207	08 July	None observed
208	08 July	Dry
210	08 July	None observed
211 (& 212, 215, 216, 218, 219)	24 June	SACR (2 calling), CANG (7 flying)
212 (& 211, 215, 216, 218, 219)	24 June	SACR (2 calling), CANG (7 flying)
213 (& 214)	24 June	SACR (1 calling), PALO (1 calling), HOLA (1 singing)
214 (& 213)	24 June	SACR (1 calling), PALO (1 calling), HOLA (1 singing)
215 (& 211, 212, 216, 218, 219)	24 June	SACR (2 calling), CANG (7 flying)
216 (& 211, 212, 215, 218, 219)	24 June	SACR (2 calling), CANG (7 flying)
217	24 June	Adjacent to new flooded wetland due to impoundment by road
218 (& 211, 212, 215, 216, 219)	24 June	SACR (2 calling), CANG (7 flying)
219 (& 211, 212, 215, 216, 218)	24 June	SACR (2 calling), CANG (7 flying)
220 (& 221)	30 June	AMPI (1 calling)
221 (& 220)	30 June	AMPI (1 calling)
222 (& 223)	30 June	HERG (1 flying), HOLA (1 singing), AMPI (1 calling), HOLA (1 singing)
223 (& 222)	30 June	HERG (1 flying), HOLA (1 singing), AMPI (1 calling), HOLA (1 singing)
224	30 June	CANG (2 adults agitated & walking), LESA (1 flying & calling), SACR (2), HOLA (1), AMPI (1), LESA (agitated pair & nest), LALO (1 singing), HERG (1 sitting), SEPL (1 agitated adult), GOEA (1 soaring above), WCSP (1 singing), LESA (1 flying), AMPI (1 sitting), HOLA (1 singing)

Appendix IV

Wetland #	Date (2023)	Observations
225 (& 239)	30 June	HOLA (1 singing), SESA (1 calling), WCSP (1 singing), REDP (1 flying), AMPI (1 calling), AMPI (1 calling), SAVS (1 singing), Sik Sik (standing), CORA (1 calling), HOLA (1 singing)
226	30 June	SESA (1 calling), AMPI (1 singing), HERG (1 flying), HOLA (1 singing)
227	30 June	None observed
228	30 June	REDP (1 flying & calling), AMPI (1 calling), WCSP (1 singing)
229 (& 230)	30 June	AMPI (1 calling), CORA (1 calling), AMPI (1 calling)
230 (& 229)	30 June	AMPI (1 calling), CORA (1 calling), AMPI (1 calling)
231 (& 232, 233)	30 June	AMPI (1 singing), HOLA (1 singing)
232 (& 231, 233)	30 June	AMPI (1 singing), HOLA (1 singing)
233 (& 231, 232)	30 June	AMPI (1 singing), HOLA (1 singing)
234	30 June	Sik Sik (1 running), HOLA (1 singing), CORA (1 calling), HERG (2 flying), SNGO (16 flying), AMPI (1 singing), LESA (1 calling & skulking)
235	30 June	AMPI (1 singing), HOLA (1 singing), TUSW (2 swimming), HOLA (2 chasing & singing), SESA (1 calling), PALO (1 calling), REDP (1 flying & calling), AMPI (1 singing), AMPI (1 singing), WCSP (1 singing)
237 (& 238)	30 June	HOLA (1 singing), SACR (2 calling), AMPI (1 singing), LALO (1 singing), HOLA (1 singing), HOLA (1 singing)
238 (& 237)	30 June	HOLA (1 singing), SACR (2 calling), AMPI (1 singing), LALO (1 singing), HOLA (1 singing), HOLA (1 singing)
239 (& 225)	30 June	HOLA (1 singing), SESA (1 calling), WCSP (1 singing), REDP (1 flying), AMPI (1 calling), AMPI (1 calling), SAVS (1 singing), Sik Sik (standing), CORA (1 calling), HOLA (1 singing)
240	30 June	REDP (1 flying & calling), WCSP (1 singing), SACR (1 calling), AMPI (1 calling)
241	01 July	SAVS (1 singing), WCSP (1 singing), SACR (1 calling), HOLA (1 calling)
242 (& 244)	01 July	AMPI (1 calling), LESA (1 agitated & calling), AMPI (1 calling), HOLA (1 singing)
243	01 July	REDP (1 flying & calling)
244 (& 242)	01 July	AMPI (1 calling), LESA (1 agitated & calling), AMPI (1 calling), HOLA (1 singing)
245 (& 246)	01 July	HOLA (1 singing), HOLA (1 singing), WCSP (1 singing)
246 (& 245)	01 July	HOLA (1 singing), HOLA (1 singing), WCSP (1 singing)
247	24 June	WCSP (1 singing), HERG (1 flying), SACR (1 calling)

Appendix IV

Wetland #	Date (2023)	Observations
250	08 July	Dry
251	08 July	None observed
252	08 July	None observed
253	08 July	None observed
259	02 July	SEPL (1 calling), HOLA (1 male foraging), HOLA (1 singing)
260	02 July	REDP (1 flying & calling), HOLA (1 calling), CANG (2 flying)
261	02 July	None observed
262 (& 132)	02 July	LALO (1 male displaying), SACR (9 flying), SACR (2 flying), TUSW (2 adults & 3 juveniles), GOEA (1 soaring)
263 (& 21, 124, 125)	03 July	SACR (1 calling), RTLO (nesting pair), LESA (1 calling), HOLA (1 singing), LALO (1 singing), SEPL (1), HOLA (1 singing), LTDU (1 calling), LALO (1 female observed), HERG (1 flying), LALO (1 male displaying), LESA (1 agitated adult), HOLA (1 singing), HOLA (1 singing), SACR (2 calling), LALO (1 calling)
264 (& 155, 156, 157, 265)	01 July	LALO (1 male displaying), HOLA (1 calling), SACR (1 calling)
265 (& 155, 156, 157, 264)	01 July	LALO (1 male displaying), HOLA (1 calling), SACR (1 calling)

[1] **Bird Codes:** AMPI (American Pipit), AMRO (American Robin), BAEA (Bald Eagle), CACG (Cackling Goose), CANG (Canada Goose), COGO (Common Goldeneye), COLO (Common Loon), CORA (Common Raven), CORE (Common Redpoll), GOEA (Golden Eagle), GRSC (Greater Scaup), GWFG (Greater White-fronted Goose), HERG (Herring Gull), HOLA (Horned Lark), HORE (Hoary Redpoll), KIEI (King Eider), LALO (Lapland Longspur), LESA (Least Sandpiper), LTDU (Long-tailed Duck), LOON (Loon sp.), NOPI (Northern Pintail), PALO (Pacific Loon), REDP (Redpoll sp.), RBME (Red-breasted Merganser), RTLO (Red-throated Loon), SACR (Sandhill Crane), SAVS (Savannah Sparrow), SEPL (Semipalmated Plover), SESA (Semipalmated Sandpiper), SNBU (Snow Bunting), SNGO (Snow Goose), TUSW (Tundra Swan), WCSP (White-crowned Sparrow), WIPT (Willow Ptarmigan)

APPENDIX V

Summary of Results by Species for the Meliadine Gold Mine Project Waterbird Shoreline Surveys in 2023

Appendix V

Common Name (Code)	Scientific Name	Wetland #	Total Wetlands
BIRDS			
American Pipit (AMPI)	*Anthus rubescens*	1, 7, 8, 13, 14, 16, 17, 32, 39, 43, 72, 83, 84, 85, 90, 91, 95, 96, 97, 98, 103, 113, 114, 115, 139, 148, 149, 151, 152, 153, 159, 160, 164, 166, 167, 168, 169, 170, 181, 221, 222, 223, 224, 225, 226, 228, 229, 230, 231, 232, 233, 234, 235, 237, 238, 239, 240, 242, 244	59
American Robin (AMRO)	*Turdus migratorius*	14, 114	2
Bald Eagle (BAEA)	*Haliaeetus leucocephalus*	16	1
Cackling Goose (CACG)	*Branta hutchinsii*	165	1
Canada Goose (CANG)	*Branta canadensis*	1, 10, 11, 12, 13, 14, 16, 17, 20, 24, 26, 72, 83, 98, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 118, 120, 121, 123, 129, 131, 142, 158, 164, 165, 166, 167, 168, 169, 170, 171, 172, 177, 178, 180, 181, 186, 211, 212, 215, 216, 218, 219, 224, 260	54
Common Goldeneye (COGO)	*Bucephala clangula*	103	1
Common Loon (COLO)	*Gavia immer*	1, 9, 14, 16, 72, 83, 102, 114	8
Common Raven (CORA)	*Corvus corax*	12, 13, 110, 112, 113, 17, 165, 198, 225, 229, 230, 234, 239	13
Common Redpoll (CORE)	*Bucephala clangula*	3, 4, 17, 74	4
Golden Eagle (GOEA)	*Aquila chrysaetos*	28, 132, 133, 134, 154, 224, 262	7
Greater Scaup (GRSC)	*Aythya marila*	24, 103, 153	3
Greater White-fronted Goose (GWFG)	*Anser albifrons*	39, 43, 148, 159, 173	5
Hoary Redpoll (HORE)	*Acanthis hornemanni*	13, 113	2
Herring Gull (HERG)	*Larus argentatus*	9, 10, 11, 13, 14, 16, 17, 19, 20, 21, 22, 23, 25, 26, 28, 34, 98, 102, 103, 106, 107, 108, 109, 111, 113, 114, 118, 120, 121, 122, 123, 124, 125, 126, 128, 129, 132, 133, 141, 142, 143, 158, 164, 165, 172, 176, 178, 180, 194, 197, 198, 222, 223, 224, 226, 234, 247, 263	58

Appendix V

Common Name	Scientific Name	Wetland #	Total Wetlands
BIRDS			
Horned Lark (HOLA)	*Eremophila alpestris*	7, 8, 9, 10, 11, 12, 13, 14, 16, 19, 20, 21, 22, 23, 24, 26, 28, 34, 40, 84, 85, 90, 91, 97, 102, 103, 106, 107, 108, 109, 110, 111, 112, 113, 114, 118, 120, 121, 122, 123, 124, 125, 126, 129, 130, 131, 133, 134, 141, 143, 144, 145, 146, 147, 149, 150, 151, 152, 154, 155, 156, 157, 160, 161, 162, 164, 165, 171, 172, 173, 175, 178, 180, 197, 213, 214, 222, 223, 224, 225, 226, 231, 232, 233, 234, 235, 237, 238, 239, 241, 242, 244, 245, 246, 259, 260, 263, 264, 265	99
King Eider (KIEI)	*Somateria spectabilis*	172, 78, 180	3
Lapland Longspur (LALO)	*Calcarius lapponicus*	4, 10, 11, 12, 13, 14, 16, 17, 19, 21, 22, 23, 24, 25, 26, 28, 32, 74, 106, 107, 108, 109, 110, 111, 112, 113, 114, 120, 121, 122, 124, 125, 126, 128, 129, 131, 132, 133, 134, 138, 139, 142, 154, 155, 156, 157, 158, 172, 173, 178, 180, 224, 237, 238, 262, 263, 264, 265	58
Least Sandpiper (LESA)	*Calidris minutilla*	1, 3, 7, 8, 9, 10, 11, 12, 16, 17, 21, 22, 24, 26, 72, 83, 84, 85, 100, 102, 106, 107, 108, 109, 110, 111, 112, 103, 124, 125, 126, 129, 144, 145, 162, 204, 224, 234, 242, 244, 263	41
Long-tailed Duck (LTDU)	*Clangula hyemalis*	14, 20, 21, 28, 31, 32, 103, 114, 118, 120, 121, 123, 124, 125, 133, 134, 137, 139, 140, 153, 172, 178, 180, 181, 200, 263	26
Loon sp. (LOON)	*Gavia* sp.	1, 72, 83	3
Northern Pintail (NOPI)	*Anas acuta*	10, 11, 32, 100, 103, 106, 107, 108, 109, 111, 139, 153, 172, 178, 180	15
Pacific Loon (PALO)	*Gavia pacifica*	10, 11, 12, 13, 14, 17, 25, 26, 106, 107, 108, 109, 110, 111, 112, 113, 114, 128, 129, 130, 165, 166, 167, 168, 169, 170, 172, 173, 176, 178, 180, 213, 214, 235	34
Redpoll sp. (REDP)	*Acanthis* sp.	14, 28, 32, 114, 133, 134, 138, 139, 149, 151, 152, 160, 164, 165, 173, 225, 228, 235, 239, 240, 243, 260	22
Red-breasted Merganser (RBME)	*Mergus serrator*	9, 102	2
Red-throated Loon (RTLO)	*Gavia stellata*	2, 21, 73, 124, 125, 263	6

Appendix V

Common Name	Scientific Name	Wetland #	Total Wetlands
BIRDS			
Sandhill Crane (SACR)	*Grus canadensis*	1, 7, 8, 10, 11, 12, 14, 16, 17, 20, 21, 24, 25, 26, 32, 34, 72, 83, 84, 85, 106, 107, 108, 109, 110, 111, 112, 114, 118, 123, 124, 125, 128, 129, 132, 138, 139, 141, 143, 144, 145, 146, 147, 153, 155, 156, 157, 162, 164, 166, 167, 168, 169, 170, 171, 172, 173, 175, 178, 180, 181, 211, 212, 215, 216, 218, 219, 213, 214, 224, 237, 238, 240, 241, 247, 262, 263, 264, 265	79
Savannah Sparrow (SAVS)	*Passerculus sandwichensis*	4, 10, 11, 12, 13, 14, 17, 24, 74, 98, 106, 107, 108, 109, 110, 111, 112, 113, 114, 130, 142, 158, 164, 171, 172, 175, 178, 180, 181, 186, 225, 239, 241	33
Semipalmated Plover (SEPL)	*Charadrius semipalmatus*	16, 21, 103, 124, 125, 131, 138, 153, 164, 166, 167, 168, 169, 170, 224, 259, 263	17
Semipalmated Sandpiper (SESA)	*Calidris pusilla*	13, 14, 95, 96, 98, 100, 113, 114, 177, 181, 186, 225, 226, 235, 239	15
Snow Bunting (SNBU)	*Plectrophenax nivalis*	13, 103, 113	3
Snow Goose (SNGO)	*Anser caerulescens*	115, 153, 173, 234	4
Tundra Swan (TUSW)	*Cygnus columbianus*	10, 11, 13, 24, 26, 28, 103, 106, 107, 108, 109, 111, 113, 120, 121, 129, 132, 133, 134, 166, 167, 168, 169, 170, 171, 177, 181, 188, 194, 235, 262	31
White-crowned Sparrow (WCSP)	*Zonotrichia leucophrys*	7, 8, 13, 14, 84, 85, 113, 114, 149, 151, 152, 153, 160, 165, 171, 224, 225, 235, 228, 239, 240, 241, 245, 246, 247	25
Willow Ptarmigan (WIPT)	*Lagopus lagopus*	14, 114	2
Total # of Species			**32**
MAMMALS			
Arctic Fox	*Vulpes lagopus*	26, 129	2
Arctic Ground Squirrel	*Spermophilus parryii*	10, 11, 13, 14, 20, 98, 106, 107, 108, 109, 111, 113, 114, 118, 120, 121, 123, 164, 225, 234, 239	21

APPENDIX VI

Survey Methods and Results for the Meliadine Gold Mine Project Pre-Clearance Bird Survey Monitoring in 2023

Appendix VI

Date (2023	Time	Coordinates (15W)	Observers	Pre-Clearance Nest Survey Results [1]	Mitigation Actions
May 24	15:35-17:00	Start: 541741 6985300 End: 541737 6985300	DM,IL	AMPI (1), CANG (1), GWGO (2), HERG (1), HOLA (3), LALO (2), TUSW (1), UNSO (2)	No nests found; no action taken
May 25	15:22-16:00	Start: 542680 6984450 End: ~300 m from start	DM,IL	No birds or nest observed (too much wind to survey)	No nests found; no action taken
May 26	13:41-14:37	Start: 543059 6984455 End: 543612 6983969	DM,IL,SG,SK	HOLA (9), SNBU (4)	No nests found; no action taken
May 27 #1	13:00-13:55	Start: 543602 6983929 End: 543990 6982852	IL,JC	CANG (2), HOLA (4), SACR (1), SAND (2), UNSO (1)	No nests found; no action taken
May 27 #2	13:00-14:00	Start: 543994 6982904 End: 543633 6988956	AT,IL,JC,SG	CANG (1), HOLA (4), UNSO (1)	No nests found; no action taken
May 30	16:15-17:00	Start: 543697 6983782 End: 543978 6982920	AT,JC,SG,SK	CANG (2), HOL (2), UNSO (1)	No nests found; no action taken
June 03	09:00-09:45	Start: 544293 6982394 End: 543713 6983738	GL,JT,SG,SK	CANG (1), HOLA (2), LALO (2), LTDU (2), SNBU (1), UNSO (6), WCSP (2)	No nests found; construction not permitted on designated road section
June 04	08:01-08:50	Start: 544376 6982263 End: 545435 6980862	SR,JT,SG,SK	DUNL (2), HOLA (3), SNBU (2), UNSO (1)	No nests found; construction not permitted on designated road section
June 05	14:20-14:50	Start: 545550 6980728 End: 545550 6980728	JC,JR,JT,NM, SG,SK	LALO (1)	Nest with no eggs found; no action taken
June 06	15:30-16:15	Start: 545585 6980784 End: 545585 6980784	MM,SK	LALO (1)	Nest being build; nest removed at very early stage
June 08	10:00-10:29	Start: 544847 6981493 End: 545967 6980487	DI,GL,JT,MM	LESA (1)	LESA adult incubating 4 eggs; photos taken; construction not permitted on designated road section
June 13 #1	ND	Start: 545645 6981303 End: 545520 6981302	JP,MM	No birds or nests observed	No nests found; construction not permitted on designated road section
June 13 #2	ND	Start: 545461 6980809 End: 546430 6979347	JT,MM	No birds or nests observed	No nests found; construction not permitted on designated road section

Appendix VI

Date (2023	Time	Coordinates (15W)	Observers	Pre-Clearance Nest Survey Results [1]	Mitigation Actions
June 13 #3	15:30-17:00	Start: 546527 6979363 End: 545484 6980814	IL,JP	HOLA (3), UNSO (1)	No nests found; construction not permitted on designated road section
June 29 #1	14:00-15:00	Start: 547391 6977106 End: 547391 6977106	DW,LQ	Four (4) bird species observed	No nests found; no action taken
June 29 #2	15:15-16:40	Start: 546839 6974347 End: 546839 6974347	DW,LQ	WCSP (2); nine (9) bird species observed	WCSP pair displaying nesting behaviour; 50 m buffer zone established
June 30	14:10-15:50	Start: KM19 sign east End: KM19 sign west	DW,LQ	NOPI (1), SEPL (1), six (6) other bird species identified	NOPI female on 7 eggs; SEPL adult showing nesting behaviour; 50 m buffer zone established
July 01	17:05-17:45	Start: 545528 6980793 End: 545692 6980695	DW,LQ	Seven (7) bird species observed	No nests found; no action taken
July 02	07:15-08:10	Start: 545528 6980793 End: 545692 6980695	DW,LQ	Seven (7) bird species observed	No nests found; no action taken
July 04	15:00-16:15	Start: 546164 6980099 End: 544876 6981505	LQ,TP	HERG (1), HOLA (2), SACR (2)	No nests found; no action taken
July 05	09:15-09:40	Start: 543495 6984095 End: 542587 6984599	LQ,TP	HOLA (3)	Adult with fledged young; no action taken
July 08	08:00-08:48	Start: 544936 6981469 End: 545967 6980487	LQ,TP	HOLA (2), LALO (1), TUSW (1)	No nests found; construction not permitted on designated road section
July 10	16:43-16:54	Start: 546777 6972936 End: 543868 6983236	DI,LQ	HOLA (1), SAVS (2),	SAVS adult with fledgling; no action taken
July 12	16:02-16:45	Start: 545593 6980819 End: 544418 6982138	AT,IL	SEPL (1)	SEPL nestling; 100 m buffer zone established
July 13	10:00-10:45	Start: 543491 6984113 End: 542560 6984589	IL,RH	HOLA (1)	HOLA nestling; 100 m buffer zone established
July 14	08:00-10:30	Start: 543491 6984113 End: 542560 6984589	IL,RH	SEPL (1), SAVS (3)	SEPL adult showing nesting behavior; at least 1 young HOLA; 100 m buffer established

Appendix VI

Date (2023	Time	Coordinates (15W)	Observers	Pre-Clearance Nest Survey Results [1]	Mitigation Actions
July 15	10:00-11:00	Start: 546135 6980332 End: 546194 6979604	IL,RH	No birds or nests observed	No nests found; construction not permitted on designated road section
July 16	07:50-08:25	Start: 546654 6979246 End: 547236 6978525	IL,RH	No birds or nests observed	No nests found; construction not permitted on designated road section
July 18 #1	14:00-15:00	Start: 540959 6985838 End: 541042 6986184	IL,RH	No birds or nests observed	Construction not permitted on designated road section
July 18 #2	14:00-15:00	Start: 541511 6987725 End: 541517 6987608	IL,RH	No birds or nests observed	Construction not permitted on designated road section
July 20 #1	14:00-15:30	Start: 547091 6978770 End: 547873 6978117	IL,RH	No birds or nests observed	Construction not permitted on designated road section
July 20 #2	14:00-15:30	Start: 545238 6980957 End: 544860 6981504	IL,RH	No birds or nests observed	Construction not permitted on designated road section
July 21 #1	16:10-17:20	Start: 547912 6978142 End: 547908 6977060	IL,JC,RH	No birds or nests observed	Construction not permitted on designated road section
July 21 #2	16:10-17:20	Start: 545708 6980897 End: 545657 6980844	IL,JC,RH	No birds or nests observed	Construction not permitted on designated road section
July 23	14:20-15:40	Start: 543839 6983233 End: 545458 6980812	IL,JC,RH	No birds or nests observed	Construction not permitted on designated road section
July 26	08:20-09:05	Start: 547898 6977035 End: 547894 6978124	JC,JS	No birds or nests observed	Construction not permitted on designated road section
July 27	07:30-07:50	Start: 545707 6980807 End: 545516 6981337	JC,JS	No birds or nests observed	Construction not permitted on designated road section
July 28	08:05-08:45	Start: 543858 6983238 End: 545467 6980830	JC,JS	No birds or nests observed	Construction not permitted on designated road section
July 29	10:30-11:00	Start: 547707 6980807 End: 545516 6981337	JS,SK	No birds or nests observed	Construction not permitted on designated road section

Appendix VI

Date (2023	Time	Coordinates (15W)	Observers	Pre-Clearance Nest Survey Results [1]	Mitigation Actions
July 30	07:22-07:30	Start: 541515 6987575 End: 541492 6987750	JC,JS	No birds or nests observed	Construction not permitted on designated road section
July 31	08:15-10:15	Start: 545466 6980802 End: 543849 6983237	JS,SG	No birds or nests observed	Construction not permitted on designated road section
August 01	08:15-09:15	Start: 547898 6977035 End: 547894 6978124	JS,SG	No birds or nests observed	Construction not permitted on designated road section
August 02	09:30-10:15	Start: 547894 6978124 End: 547533 6978265	JS,SG	No birds or nests observed	No nests found; no action taken
August 03	08:30-16:00	Start: 545466 6980802 End: 543840 6983237	DI,JS,SG	No birds or nests observed	No nests found; no action taken
August 04	09:00-10:00	Start: 543491 6984113 End: 542560 6984589	DI,SG	No birds or nests observed	No nests found; no action taken
August 05	14:00-16:00	Start: 546136 6980335 End: 546105 6980440	JS,SG	No birds or nests observed	No nests found; no action taken
August 06	14:00-15:30	Start: 546221 6979525 End: 546167 6979637	JS,SG	No birds or nests observed	No nests found; no action taken
August 07	10:14-10:42	Start: 547898 6977035 End: 547533 6978205	DI,JT	No birds or nests observed	No nests found; no action taken
August 09	09:45-12:00	Start: 545470 6980787 End: 543837 6983221	IL,MM	No birds or nests observed	Construction not permitted on designated road section
August 09	09:45-12:00	Start: 545470 6980787 End: 543837 6983221	IL,MM	No birds or nests observed	Construction not permitted on designated road section
August 11	09:15-10:00	Start: 546867 6979007 End: 546533 6979325	AT,IL	No birds or nests observed	Construction not permitted on designated road section
August 12	09:00-11:00	Start: 545470 6980787 End: 543837 6983221	DI,IL	No birds or nests observed	Construction not permitted on designated road section

[1] **Bird Codes**: AMPI (American Pipit), CANG (Canada Goose), DUNL (Dunlin), GWFG (Greater White-fronted Goose), HOLA (Horned Lark), LESA (Least Sandpiper), LALO (Lapland Longspur), HERG (Herring Gull), LALO (Lapland Longspur), LTDU (Long-tailed Duck), NOPI (Northern Pintail), SNBU (Snow Bunting), SACR (Sandhill Crane), SAND (Sandpiper sp.), SAVS (Savannah Sparrow), SEPL (Semipalmated Plover), TUSW (Tundra Swan), UNSO (Unidentified Songbird), WCSP (White-crowned Sparrow)

APPENDIX D

Arctic Raptors Research Program Report, 2023

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Background

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Mine, located approximately 25 km north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. In February 2015, Meliadine received Project Certificate No. 006 issued by the Nunavut Impact Review Board (NIRB) with Amendment No. 001 in February 2019 and Amendment No. 002 in March 2022. Terms and Conditions related to management and mitigation for birds and bird habitat (including raptorial species) are outlined in the NIRB Project Certificate for the Meliadine Gold Mine Project (NIRB 2022), as follows:

- *Term and Condition (T&C) 59; Species at Risk — If Species at Risk or their nests and eggs are encountered during Project activities or monitoring programs, the primary mitigation measure must be avoidance. The Proponent shall establish clear zones of avoidance based on the species-specific nest setback distances outlined in the Terrestrial Environment Management and Monitoring Plan.*
- *T&C 60;* Species at Risk *— The Proponent shall ensure that the mitigation and monitoring strategies developed for Species at Risk are updated as necessary to maintain consistency with any applicable status reports, recovery strategies, action plans and management plans that may become available during the duration of the Project.*
- *T&C 61; Construction/clearing activities — Prior to bird breeding season, the Proponent shall either conduct clearing activities or identify and install nesting deterrents (e.g., flagging) to discourage birds from nesting in areas likely to be disturbed by construction/clearing activities. If clearing is to take place during the nesting season, a nest survey should take place to identify nests and any identified nests must remain undisturbed until the young have fledged or left the nest. Any nests identified shall be included as part of the annual reporting for the Terrestrial Environmental Mitigation and Monitoring Plan (TEMMP).*
- *T&C 62; Construction/clearing activities — The Proponent shall protect any nests found (or indicated nests) with a buffer zone determined by the setback distances outlined in its Terrestrial Environment Mitigation and Monitoring Plan (TEMMP), until the young have fledged. If it is determined that observance of these setbacks is not feasible, the Proponent will develop nest-specific guidelines and procedures to ensure bird's nests and their young are protected.*
- *T&C 71; Monitoring — The Proponent shall develop detailed and robust mitigation and monitoring plans for migratory birds, reflecting input from relevant agencies, the Kivalliq Inuit Association and communities.*
- *T&C 72; Monitoring — The Proponent shall continue to develop and update relevant monitoring and management plans for migratory birds under the Proponent's Environmental Protection Plan and Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) prior to construction. The key indicators for follow up monitoring under this plan will include upland birds (including migratory birds), waterbirds, raptors, and seabirds including migration and wintering.*

Monitoring indicators for nesting raptors are outlined in the Agnico Eagle Meliadine Division Terrestrial Environment Management and Monitoring Plan (TEMMP; Agnico Eagle 2022) as follows:

- *Monitoring Indicator 1; Disturbance of nesting raptors — To be determined in consultation with GN and Alastair Franke, related to occupancy and productivity.*
- *Monitoring Indicator 2; Projected-related mortality — To be determined in consultation with GN and Alastair Franke.*

Species Descriptions

Peregrine Falcon (*Falco peregrinus tundrius*)

The Arctic peregrine falcon (Figure 1, PEFA) is medium- to large-sized falcon. It has a dark hood and face with distinct dark malar stripe, cream to white throat, slate-grey back, barred belly, legs, and tail. Long pointed wings, stocky body. Plumage of immature birds is brown rather than grey, and the breast is streaked rather than barred. In adults, the cere and orbital ring are yellow, and bluish in immature birds. Compared with gyrfalcons, the peregrine is smaller and less stocky. In flight, the wings of peregrines appear narrower and more pointed. In peregrine falcons, wing tips extend to bottom of the tail when perched, while in gyrfalcons, wing tips extend two-thirds down the length of tail.

F. p. tundrius breeds mainly north of the treeline from Alaska east throughout northern Canada to Greenland. It breeds throughout the taiga and tundra wherever suitable nesting habitat and sufficient prey are present. In Nunavut, peregrines appear to have their highest densities in the Kivalliq and Kitikmeot regions. Highest breeding density on record is on the western shores of Hudson Bay in the Kivalliq Region.

F. p. tundrius is a long-distance migrant, wintering mainly throughout South and Central America, but also in southern United States and Mexico. Northern-breeding American and Arctic peregrines are highly migratory (Yates et al. 1988, Schmutz et al. 1991, Fuller et al. 1998), and although fall migration occurs over a broad geographic range (Fuller et al. 1998), Yates et al. (1988) indicated that “separate and distinct autumn migratory populations pass through the east and Gulf coasts” of the United States.

Peregrine falcons usually nests on cliffs and rocky outcrops, but also nest on hilltops, river canyons, rock screes, and on occasion directly on the ground (Court et al. 1988, Ratcliffe 1993). They prefer nesting in locations close to water in south-facing, rugged terrain. Hunting habitat includes rugged coastline areas and rolling tundra that consists of raised beaches, dry tundra, sedge meadows, wetlands, and lakes that are inhabited by a diversity of breeding songbirds and shorebirds.

Peregrine Falcons do not build a nest but make a depression (called a scrape) in the substrate on a cliff ledge. Scrapes are usually approximately 20 cm in diameter and 4 cm deep. Females usually do the majority of incubation and brooding of small young. Males provision incubating females and provide most of the prey when nestlings are small. Thereafter, females do most of the feeding, beginning to hunt after young are large enough to thermoregulate on their own. Clutch size is typically 3 or 4 eggs in Nunavut. In Rankin Inlet and Igloolik, the median incubation period of the first egg was 36 days and decreased 1 day for each additional egg. The incubation period of the 4th egg (33 days) was similar to what has been reported elsewhere (Burnham 1983).

The Arctic peregrine falcon is a generalist predator with a diverse diet that includes passerines, shorebirds , ducks , gulls, terns, jaegers, black guillemots, and, when available, collared lemmings, brown lemmings, and Arctic ground squirrels. Bradley and Oliphant (1991) indicated that, around Rankin Inlet, small birds (64% of prey items) represented the greatest portion of prey items, followed by microtine rodents (25%), large birds (8%), and Arctic ground squirrels (4%). The most important prey measured by percent biomass were large birds (43%), followed by small birds (25%), microtine rodents (18%), and Arctic ground squirrels (15%).

In Nunavut, the earliest documented arrival for Peregrine Falcons is 10 May at a known breeding site near Rankin Inlet. Although arrival timing varies with spring conditions, the majority of sites are

occupied during the 3rd week of May. Median laying date in Rankin Inlet (9 June) is typically earlier than Igloolik (15 June) and northern Baffin Island (16 June). Median date of hatching ranges from 14 July at Rankin Inlet to 18 July on northern Baffin Island and 20 July at Igloolik (Jaffre et al. 2015). Birds depart the breeding grounds from mid-September through early October, arriving on the wintering grounds throughout Central and South America in November.

Gyrfalcon (*Falco rusticolus*)

The gyrfalcon (Figure 2, GYRF) is large with pointed wings, but more rounded and broader than the wings of other falcon species. The tail is relatively long. When perched, wings extend 2/3 down the tail. The body is thick and powerful, particularly in females. Adults have yellow ceres, eye-rings and legs. As in all falcons, the eyes appear black. Three main color morphs occur: black, grey and white. White adults have almost pure white breasts and bellies, with dark wingtips (dipped-in-ink appearance). Grey adults have slate-colored back, with white underparts mottled with gray arrowhead-shaped markings. Dark adults are dark-grey overall above and dark-streaked breasts and belly. There is extreme reverse sex dimorphism, with males being approximately 2/3 the size of females (Ferguson-Lees et al. 2001).

Gyrfalcons distribution extends throughout the circumpolar Arctic. Most of the breeding range occurs north of 60°N, but breeding pairs are known to exist as far south as 55°N, mainly along sea-coasts in eastern Canada. Many adults remain within the breeding range throughout the year, but some disperse southwards in winter, small numbers reaching the norther. United States (Cade 1982, Poole 1987). Immature birds are much more likely to winter to south of breeding range, and females are thought to disperse more widely, with many males remaining relatively close to breeding territories throughout the year.

Ptarmigan are often cited as the most important prey species by biomass, but Arctic ground squirrel and Arctic hare are also important, as well as small mammals (mice and voles) and other birds (ducks, sparrows, buntings). In central Nunavut, Poole and Boag (1988) identified eleven species of birds and five species of mammals among the prey. Birds accounted for three quarters of the diet, and adult rock ptarmigan were the most common. Arctic ground squirrel and arctic hare made up the bulk of mammalian prey.

Males occupy and defend nesting territories as early as the end of January, with females arriving in mid-March. In Nunavut, laying typically begin in the first week of May with most pairs laying by the end of the second week in May. Nestlings typically hatch in mid-June, but hatching can occur throughout June. Nestlings fledge in late July or early August after 7 weeks in the nest. In Nunavut, gyrfalcon usually nest on cliff ledges, ideally beneath sheltering overhang; sometimes nests in trees or on man-made structures. Nests are generally on rock ledges or abandoned rough-legged hawk or common raven nests. Use of alternate nest sites is not uncommon. Pairs do not necessarily attempt breeding every year, depending on food supply. Typical clutch size is 3-4 eggs (Booms et al. 2008) that are incubated for 34-36 days mostly by the female (ca. 80%). The North American population including Nunavut is considered to be stable (Clum and Cade 1994, Kirk and Hyslop 1998). Although low spring temperatures are associated with later arrival at nesting territories in Nunavut (Poole and Bromley 1988), there was no effect on laying dates. However, (Poole and Bromley 1988) indicated that increased spring precipitation (snow) reduced reproductive success.

Rough-legged Hawk (*Buteo lagopus)*

The rough-legged hawk (Figure 3, RLHA) is a medium-large bird of prey, with a fairly small beak, predominantly brown in colour and often mottled. Plumage is highly variable with recognized light and dark morphs. Extensive field experience is required to distinguish between males and females, and between adults and juveniles based on plumage alone. A broad chest band is evident in most plumage variations, and in flight, a dark carpal patch is characteristic in light morph individuals. One or more dark terminal bands appear on the tail. The wing tips are long enough to reach or extend past the tail when the animal is perched. Legs are feathered to feet (Ferguson-Lees et al. 2005).

Widespread throughout North America, breeding from the Aleutian Islands, the interior of Alaska, Yukon, northern Mackenzie, and across Nunavut to northern Labrador and Newfoundland and south to Manitoba and southeastern Quebec. In Nunavut, rough-legged hawks are present over most of the territory except for islands without lemmings (Bechard and Swem 2002).

Regularly hovers, or “kites” while facing into the wind scanning for prey. Soars with wings raised in a slight dihedral (V-shape). It is a diurnal raptor that still-hunts from prominent perching structure on both breeding and wintering grounds. Prey is captured on the ground. Courtship involves soaring and calling, with the male engaged in a flight display of repeated undulating stoops rising upward to mid-air stall. It is gregarious on migration, often travelling in large flocks, but small groups or individuals are not uncommon.

During the summer, breeding pairs prefer rugged terrain areas with steeper slopes in areas associated with primary production (i.e., vegetation), and were most likely to nest in large, productive valleys surrounded by high-elevation plateaus (Galipeau et al. 2016). It is widely distributed in winter, usually found in open habitat resembling the tundra such as prairies, plains, coastal marshes, agricultural fields, and airports (Johnsgard and Johnsgard 1990). More common in wintering areas typified by short growing seasons and low precipitation, with highest densities in the northern United States, Great Basin area, and the western shortgrass prairies (Bock and Lepthien 1976, Bock et al. 1977).

The rough-legged hawk is a small mammal specialist; thus, its breeding activity is generally associated with local abundance of ground squirrels, voles, or lemmings (Hanski 1991, Potapov 1997). It will prey on birds when small mammals are scarce, particularly juvenile passerines and shorebirds, and will resort to consuming carrion opportunistically (Watson 1986). Usually reproductively mature at 2 years of age. Stick-nests are built soon after arrival on territory, typically on cliffs, on bluffs, or on the ground. Clutch sizes are variable (1-7 eggs), depending on food availability, but 3-5 eggs are usual and laid in May. Incubation 31-33 days, provided almost entirely by the female. Nestling period is 35-40 days, and fledglings remain dependent on adults for another 2 weeks. The male provisions the young and the female, which feeds the young. Pairs show nest site fidelity, and in locations where ground squirrels are entirely absent, they may forgo breeding or have small broods when lemmings are low, in contrast to Snowy Owls, which are truly nomadic (Bechard and Swem 2002). Bechard and Swem (2002) indicated that egg-laying date was associated with spring temperatures and snow-free ledges, but Potapov (1997) reported no effect of snow melting date or spring/summer temperatures on number of nesting pairs.

Methods

Terminology

The terminology used throughout this report follows (Franke et al. 2017). The following terms are highlighted in an effort to clarify terminology used in this report, and/or to distinguish terms used from similar terms that have distinct meaning:

nest — The structure made or the place used by birds for laying their eggs and sheltering their young (Steenhof and Newton 2007) regardless of whether eggs are laid in the nest in a given year or in any year (Millsap et al. 2015, Steenhof et al. 2017), see Scrape for Gyrfalcons.

nesting site — The substrate which supports the nest or the specific location of the nest on the landscape (Ritchie and Curatolo 1982, Millsap et al. 2015, Steenhof et al. 2017).

alternative nesting site — One of potentially several nests within a nesting territory that is not a used nest in the current year (Millsap et al. 2015).

nesting territory — An area that contains, or historically contained, one or more nests within the home range of a mated pair: a confined locality where nests are found, usually in successive years, and where no more than one pair is known to have bred at one time (Newton and Marquiss 1984, Steenhoff and Newton 2007). Note that a nesting territory may or may not be defended (Postupalsky 1974), and probably does not include all of a pair's foraging habitat (Newton and Marquiss 1984, Steenhoff and Newton 2007).

occupancy — A point estimate of the probability that a nesting territory is occupied in a given breeding season; ideally this estimate should include an estimate of uncertainty around the point. The most simple point estimate is the observed proportion calculated as the quotient of the count of occupied nesting territories and the count of known nesting territories that were fully surveyed in a given breeding season (Franke et al. 2017).

Data Exploration

Distance to disturbance

Spatial objects (lines and polygons) describing the project footprint and road were acquired from Agnico Eagle. Euclidean distances from nesting sites to the nearest spatial object were calculated in R (R Development Core Team 2017) using the `sp`, `rgeos`, and `geosphere` packages. Summary data were generated using the `summary` function in R.

Assigning Nesting Sites to Nesting Territories

In the absence of marked individuals, it can be challenging to definitively identify alternative nesting sites. Failure to account for alternative nesting sites can lead to underestimating demographic parameters such as annual productivity. To address this problem, a rule-based approach was used to estimate the number of alternative nesting sites within the study area (Figure 4):

- If two species-specific nesting sites were separated by a distance of ≤ 1 km they were considered alternative nesting sites in a single nesting territory.
- If two nesting sites within 1 km of each other were occupied by the same species in a given year, they were considered separate territories.

- If multiple species-specific nesting sites were within 1 km of one another, discrete geographic landforms or discontinuities in cliff structure were used to separate or combine sites into territories.

Temporal patterns of multi-species occupancy were used to assess the plausibility of decisions based on the application of the three rules listed above. For example, if two nesting sites were located within 1 km of each other and were occupied by two different species in alternating years, these nesting sites were identified as distinct alternative nesting sites for each species.

Assigning Identification Numbers (ID) to Nesting Territories was conducted according to the following rule set:

- Nesting Territory IDs were assigned within species only (e.g., Nesting Territory IDs for Peregrine Falcon and Rough-legged hawk were never shared).
- Nesting Territory IDs were assigned using the Identification Number of one of the Nesting Sites in the cluster according to the following rule set, in order of priority:
    i. Length of tenure (i.e., nesting sites with the longest tenure)
    ii. First tenure (i.e., nesting sites with the first tenure in the event length of tenure was equal).

Field Surveys

Two structured surveys were conducted in 2023. The focus of these surveys was to search known nesting sites for the presence of cliff-nesting raptors. In addition to the structured surveys, favorable habitat was searched opportunistically when ferrying between known sites, camps, or other mine infrastructure and when raptors or signs of site use (e.g., whitewash, orange-colored lichen, and unused nests) were observed. Sites were considered occupied if one or more adults displayed territorial or reproductive behavior (e.g., vocalization and/or flight behavior associated with defense of breeding territory or presence of nest building, nest, or eggs). Locations with partially built or unused nests without detection of breeding aged adults were noted as such (e.g., old stick nest; no birds detected). Raptor monitoring in 2023 involved two helicopter surveys (25 - 29 May, 15 – 18 August), and ground - monitoring of potential nesting habitat (natural cliffs, quarries and borrow pits) in coastal areas using snowmobile in May and boat in August.

Mapping

Shapefiles for the Road, and project footprints were read into R using the `readOGR` function in the `rddal` package and converted to a data frame for `ggplot2` using the `fortify` function. The spatial extent for the mapping exercise was set using the `get_map` function in the `ggmap` package. Maps portraying species-specific nesting sites were plotted using `ggmap`.

Occupancy

Although estimation of nesting site occupancy can serve as a metric of population status (MacKenzie et al. 2002, 2003), detection of nesting pairs is imperfect, and estimating the proportion of occupied sites without accounting for detection error can lead to underestimation of true occupancy (Kéry and Schmidt 2008). Occupancy modeling estimates parameters that influence occupancy, and simultaneously accounts for imperfect detection (Marsh and Trenham 2008). In any given year, the

status of a nesting site is limited to one of only two outcomes: occupied or not occupied. Occupancy modelling estimates the following parameters:

1. initial colonization – the probability that a nesting site is occupied in the first survey year (ψ),
2. colonization – the probability that an unoccupied site becomes occupied between years (ε),
3. extinction – the probability that occupied site becomes unoccupied between years (γ); and,
4. detection – the probability that PEFA are detected given that the nesting site is occupied (*p*).

Nesting site survival is estimated as the reciprocal of extinction (i.e., the probability an occupied site remains occupied between years; 1-γ). In addition, environmental covariates can be added to an occupancy model to test whether they influence the above parameters using a logit link function. Multi-year occupancy was calculated in R (R Development Core Team 2019) using the 'unmarked' package. When appropriate, data were standardized (e.g., distance to disturbance was standardized by subtracting the mean from each distance value and dividing by the standard deviation), and then formatted specifically for 'unmarked' using the *unmarkedMultFrame* function.

Occupancy between years was analyzed separately for peregrine falcons and rough-legged hawks. To do so, the total number of nesting sites was filtered to include only those nesting sites that were occupied at least once from 2022 to 2023 for both species. Model fitting of candidate models (Table 1) was performed using the *colext* function. Akaike Information Criterion (AIC) was used for model selection.

Two candidate models were selected *a priori* to estimate a potential effect of anthropogenic disturbance (Table 1) when contrasted against the null model. The aim of this analysis was two-fold: 1) to estimate the proportion of occupied nesting sites annually, and; 2) to estimate the trend in nesting site occupancy from 2022 to 2023. Trend in occupancy was estimated using annual occupancy probabilities to calculate average rate of change (λ) at the population level (MacKenzie et al. 2003) where a value <1 indicates population decline and >1 indicates an increase. For both candidate models (Table 1), initial occupancy (ψ) and detection (*p*) probabilities were set to 1 (i.e., constant between years) and time varying (i.e., year), respectively, to allow for a test of an effect of distance to disturbance (i.e., model structure for extinction and colonization varied according to the test for effects). Insufficient years (N=2) of study precluded contrasting a model for the effect of time alone against a model containing disturbance metrics.

Table 1. Candidate models

Model structure	Model #	Tests for effect of:
ψ(1) + ε(1) + γ(1) + *p*(year)	m0	Null (contrast to m1)
ψ(1) + ε(d2d) + γ(d2d) + *p*(year)	m1	Distance to disturbance (d2d) (project infrastructure)

Results

Throughout the region, nesting raptors have been detected at 247 nesting sites (Figure 5). Of these, 119 have been occupied by only rough legged hawks, 84 by only peregrine falcons (24 additional nesting sites have been occupied by either peregrine falcons or rough legged hawks). Six (6) nesting sites have been occupied by common ravens, two (2) by snowy owls and one (1) each by gyrfalcons and short-eared owls.

Within the Regional Study Area (RSA), nesting raptors have been detected at 203 nesting sites. Of these, 105 have been occupied by only rough legged hawks and 60 by only peregrine falcons. Twenty (20) additional nesting sites have been occupied by either peregrine falcons or rough legged hawks resulting in a total of 80 known peregrine falcon nesting sites and 125 rough legged hawk nesting sites. Five (5) nesting sites have been occupied by common ravens, and one (1) each by gyrfalcons, snowy owls, and short-eared owl.

Table 2. Count of known nesting sites for common raven (CORA), gyrfalcon (GYRF), peregrine falcon (PEFA/PERL), rough legged hawk (RLHA/PERL), short eared owl (SEOW), snowy owl (SNOW), and unknown raptor species (SPP) in the Rankin Inlet region and within the regional study area.

	CORA	GYRF	PEFA	PERL	RLHA	SEOW	SNOW	SPP
Region	6	1	84	24	119	1	2	10
RSA	5	1	60	20	105	1	1	10

Fourteen (14) peregrine falcon nesting sites were deemed alternates, resulting in a total of 66 known peregrine falcon nesting territories. All peregrine falcon nesting territories were fully surveyed, for which, evidence of breeding was detected at 34 nesting territories (observed proportion = 0.52). Twenty-five (25) rough legged hawk nesting site were deemed to be alternative nesting sites, resulting in a total of 100 known rough legged hawk nesting territories. Ninety four rough legged hawk (94) territories were fully surveyed, of which, evidence of breeding was detected at 21 nesting territories (observed proportion = 0.22).

Table 3 Distance to disturbance metrics for peregrine falcons (PEFA) and rough-legged hawks (RLHA) nesting sites in the vicinity of the Agnico Eagle Meliadine Mine.

Species	Mean	SD	Minimum	Maximum
PEFA	5.52	5.05	0.00	23.19
RLHA	5.56	5.02	0.00	22.72

Peregrine Falcon Occupancy

The null model (m0; Table 5) best explained probability of occupancy among peregrine falcons (0.58±0.07; Table 7). The null model had the fewest parameters (i.e., most simple explanation of occupancy), and inclusion of distance to anthropogenic disturbance (m1) did not improve model fit (Delta AICc<2.0). Population trend over the two survey years was 0.80, which indicates a decline from 2022 to 2023 (Figure 6; left panel).

Table 4 Count of nesting territories sampled, count of nesting territories where evidence of breeding was detected, count of nesting territories that were colonized (i.e., occupied in 2023 that were not occupied in 2022), count of nesting territories that were not occupied in 2023 that were occupied in 2022 (i.e., extinct), count of nesting territories for which occupancy status remain the same from 2022 to 2023, and count of nesting territories that were common to both years, for peregrine falcons nesting territories in the vicinity of the Agnico Eagle Meliadine Mine.

	Sampled	Detected	Colonized	Extinct	Static	Common
2022	58	33	NA	NA	NA	NA
2023	66	35	5	10	43	58

Table 5. Model selection based on AIC score peregrine falcons (PEFA)nesting sites in the vicinity of the Agnico Eagle Meliadine Mine.

Model	K	AICc	Delta AICc	AICcWt	Cum.Wt
m1	7	306.90	0.00	0.55	0.55
m0	5	307.34	0.44	0.45	1

Table 6. Parameter estimates (null model; log odds scale) for peregrine falcon occupancy (psi) and detection (rho).

	psi (intercept)	*p* (intercept)
Estimate	0.98	0.29
SE	0.35	0.26

Table 7. Predicted occupancy and detection (probability scale), SE, and 95% CI for peregrine falcons.

	Predicted	SE	Lower 95% CI	Upper 95% CI
PEFA occupancy	0.58	0.07	0.43	0.73
PEFA detection	0.70	0.07	0.55	0.82

Rough legged Hawk Occupancy

The null model (m0; Table 9) best explained probability of occupancy among rough legged hawks (0.39±0.62; Table 11. Including distance to anthropogenic disturbance did not improve model fit. Population trend over the two survey years was 0.0.32, which indicates a decline from 2022 to 2023 (Figure 6; right panel).

Table 8 Count of nesting territories sampled, count of nesting territories where evidence of breeding was detected, count of nesting territories that were colonized (i.e., occupied in 2023 that were not occupied in 2022), count of nesting territories that were not occupied in 2023 that were occupied in 2022 (i.e., extinct), count of nesting territories for which occupancy status remain the same from 2022 to 2023, and count of nesting territories that were common to both years, for rough legged hawk nesting territories in the vicinity of the Agnico Eagle Meliadine Mine.

	Sampled	Detected	Colonized	Extinct	Static	Common
2022	58	33	NA	NA	NA	NA
2023	66	35	5	10	43	58

Table 9. Model selection based on AIC score for rough legged hawks.

Model	K	AICc	Delta AICc	AICcWt	Cum.Wt
m0	5	228.20	0.00	0.84	0.84
m1	7	231.54	3.34	0.16	1.00

Table 10. Parameter estimates (null model; log odds scale) for rough legged hawk occupancy (psi) and detection (rho).

	psi (intercept)	*p* (intercept)
Estimate	-0.46	-0.41
SE	0.49	0.52

Table 11. Predicted occupancy and detection (probability scale), SE, and 95% CI for rough legged hawks.

	Predicted	SE	Lower 95% CI	Upper 95% CI
RLHA occupancy	0.39	0.62	0.01	0.23
RLHA detection	0.66	0.14	0.37	0.87

Discussion

Monitoring for breeding raptors has occurred consistently in the area associated with Meliadine Project infrastructure for decades. Conducted by Arctic Raptors Inc., surveys have focused on searching for, documenting, and mapping nesting sites for three raptor species (peregrine falcons, rough-legged hawks, and gyrfalcons). Study design included at two surveys – one to assess the location of occupied territories during the pre-incubation and incubation periods, and one to assess site productivity during the late brood rearing period.

Mitigation and management measures outlined in the TEMMP require the protection of species at risk during the breeding season (T&C 59), and requires that disturbance to birds is minimized through consistent monitoring (T&C 59), including nest-specific mitigation where necessary (T&C 61, 62, and 75). Peregrine falcons were assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in November of 2017, and were ranked "Not at Risk". The responsible Minister rendered a decision on the recommendation made by COSEWIC, and peregrine falcons are no longer considered to be threatened. This report meets the T&C outlined by NIRB by documenting and mapping raptor nesting sites within 1.5km of the project infrastructure, including minimum "no disturbance" buffers.

This analysis found no evidence of an effect of distance to disturbance on occupancy. Regardless of this finding, the potential for detecting mine-related anthropogenic disturbance will be challenging in light of the presence of roads, trails, cabins, travel routes and activities on the sea/sea-ice and lake ice associated with the community of Rankin Inlet. Conducting multi-year surveys at the scale of the RSA was recommended in 2022, and this report satisfies that recommendation. In addition, further survey effort in northern portion of the RSA where no survey effort had previously been done was also recommended; Agnico Eagle undertook additional hours of survey time and searched the northwestern quadrant of the RSA, finding several previously unknown nesting sites which will be surveyed on an on-going basis.

Population trend between years for both species suggests that occupancy declined from 2022 to 2023, however, this finding should be interpreted with caution until additional years have been considered. Given that no evidence of a distance effect was found, and assuming that the apparent decline is real, other causes should be considered; one potential mechanism is Highly Pathogenic Avian Influenza, which spiked in 2022. It is recommended that any found-dead raptors are submitted for disease testing.

Common ravens were reported flying over TIRI-01Pit (SP4 area) in early May, and a stick nest was discovered in TIRI-02 Pit during the same time. Because use of the pit is currently limited solely to ground water storage, the area was deemed unlikely to be disturbed by construction/clearing activities over the course of the breeding season (i.e., it remained undisturbed)" and no further monitoring was conducted. Further, it is possible that the stick nest was a known nesting site that had been used previously by rough-legged hawks, and was recorded as unoccupied in 2023.

Terms and Conditions

T&C 59 - 60: Do not apply to raptors.

T&C 61: Nesting deterrents to discourage birds from nesting in areas likely to be disturbed by construction/clearing activities were not required. Surveys of known nesting sites identified those at which breeding attempts were detected, and are reported here.

T&C 62: 40 known nesting sites are within 1.5km of project infrastructure. Nine (9) peregrine falcon nesting sites are within 1.5 km of the haul road and 1 is with 1.5 km of the site footprint. Twenty-three (23) rough legged hawk nesting sites are within 1.5 km of the haul road and two (2) are within 1.5 km of the site footprint. Of the 40 known nesting sites within 1.5 km of project infrastructure, 19 nesting sites are within 0.6 Km of project infrastructure. Four (4) known peregrine falcon nesting sites are within 0.6 km of the haul road and 1 is within 0.6 km of the site footprint. Nine (9) rough legged hawk nesting sites are within 0.6 km of the haul road and two are within 0.6 km of the site footprint.

T&C 71: This report and the results herein represent detailed monitoring for raptors.

T&C 72: Comprehensive field surveys conducted from 2022 to 2023 represent the ongoing efforts to develop and update relevant monitoring for raptors.

Table 12 Geographic coordinates (decimal degrees), distance to project footprint (Km2FP), and distance to haul road (Km2HR) and minimum distance to disturbance (minD2D) for 177 occupied nesting sites in the RSA. Territories within 600 m of infrastructure (road, or footprint) are highlighted in dark yellow, while territories that are within 1500 m are highlighted in light yellow require a management plan. Species column indicates historical occupancy; PEFA = peregrine falcon, RLHA = rough legged hawk, PERL = peregrine falcon or rough legged hawk, SPP = unknown, CORA = common raven, GYRF = gyrfalcon, SNOW = snowy owl, SEOW = short eared owl. Not all nesting sites are occupied in any given year.

NSID	Latitude	Longitude	Species	Km2FP	Km2HR	minD2D
1	62.86834	-92.256	PEFA	17.1	4.8	4.8
2	62.79479	-92.197	SPP	25.2	3.3	3.3
3	62.82665	-91.9332	PEFA	25.3	7.9	7.9
4	62.84473	-92.2999	PERL	20.0	7.3	7.3
5	62.85239	-92.3225	PEFA	19.5	8.4	8.4
6	62.84279	-92.2903	RLHA	20.2	6.8	6.8
8	62.78951	-92.1052	PEFA	26.4	1.2	1.2
10	62.79271	-92.1033	RLHA	26.0	0.9	0.9
11	62.78963	-92.1341	RLHA	26.1	2.1	2.1
14	62.97506	-92.1297	RLHA	6.0	0.2	0.2
15	62.79058	-92.2085	RLHA	25.7	4.0	4.0
18	62.85466	-92.1714	PERL	18.7	0.8	0.8
20	62.85597	-92.1616	PERL	18.6	0.3	0.3
26	62.78538	-92.296	RLHA	26.5	8.0	8.0
28	62.79558	-92.3236	PEFA	25.7	8.9	8.9
29	62.80025	-92.3213	PERL	25.1	8.7	8.7
30	62.78494	-92.1894	PEFA	26.3	3.9	3.9
31	62.81911	-92.2592	PEFA	22.6	5.2	5.2
32	62.82817	-92.2409	CORA	21.5	4.2	4.2
33	62.82787	-92.2401	PEFA	21.5	4.2	4.2
34	62.83007	-92.2424	RLHA	21.3	4.3	4.3
35	62.85095	-91.9668	RLHA	22.1	7.0	7.0
36	62.80346	-92.1986	RLHA	24.2	2.7	2.7
37	62.85816	-92.175	PEFA	18.3	0.9	0.9
38	62.79128	-92.1889	PEFA	25.6	3.3	3.3
39	62.82981	-91.9809	PEFA	23.9	5.6	5.6
40	62.82948	-91.9526	PEFA	24.5	7.0	7.0
41	62.83114	-91.9692	PEFA	24.0	6.2	6.2
42	62.82765	-91.967	PEFA	24.4	6.2	6.2
43	62.82485	-91.941	RLHA	25.3	7.4	7.4
44	62.82068	-91.9016	RLHA	26.6	9.4	9.4
45	62.82539	-91.9235	RLHA	25.6	8.3	8.3
46	63.07264	-92.3604	PEFA	5.7	5.8	5.7
47	62.8155	-92.1894	PERL	22.9	1.7	1.7
48	62.80494	-92.1694	RLHA	24.2	1.5	1.5

NSID	Latitude	Longitude	Species	Km2FP	Km2HR	minD2D
49	62.78624	-92.1509	RLHA	26.4	2.8	2.8
50	62.79457	-92.1446	PERL	25.5	1.9	1.9
51	62.7874	-92.1265	PEFA	26.4	2.0	2.0
52	62.78586	-92.1623	PERL	26.3	3.2	3.2
53	62.80257	-92.2139	PEFA	24.3	3.4	3.4
54	62.81046	-92.2196	RLHA	23.4	3.4	3.4
55	62.7919	-92.1642	RLHA	25.7	2.7	2.7
56	62.79558	-92.1716	RLHA	25.2	2.5	2.5
57	62.82254	-92.2573	PERL	22.2	5.1	5.1
58	62.83214	-92.3117	PEFA	21.5	7.8	7.8
59	62.84242	-92.344	PERL	20.9	9.5	9.5
60	62.80968	-92.3184	SPP	24.1	8.3	8.3
61	62.91406	-92.1407	PEFA	12.4	1.2	1.2
63	62.86624	-92.0784	PEFA	18.3	1.4	1.4
66	62.84227	-92.3251	PERL	20.6	8.6	8.6
67	62.92744	-92.0521	PERL	12.5	0.2	0.2
69	62.81746	-92.2377	PERL	22.7	4.2	4.2
71	62.85398	-92.2971	PERL	19.0	7.1	7.1
72	62.81276	-92.3133	RLHA	23.7	8.0	8.0
74	62.80017	-92.1794	PEFA	24.7	2.2	2.2
76	62.81964	-91.9757	PERL	25.0	5.6	5.6
77	62.86439	-92.0117	PEFA	19.7	4.3	4.3
78	62.79712	-92.1625	PEFA	25.1	2.1	2.1
79	62.87996	-92.2303	RLHA	15.7	3.3	3.3
81	62.86605	-92.2023	PEFA	17.3	2.1	2.1
83	62.79965	-92.3192	RLHA	25.2	8.6	8.6
84	63.02948	-92.3451	PEFA	4.3	4.4	4.3
85	62.85595	-91.8748	PEFA	24.2	10.8	10.8
86	62.8657	-92.2816	RLHA	17.6	6.1	6.1
87	62.85592	-92.3578	RLHA	19.7	10.1	10.1
88	62.88853	-92.1497	PERL	15.1	0.5	0.5
89	62.92978	-92.2217	PEFA	10.1	1.8	1.8
90	63.03822	-92.6421	PEFA	19.1	19.1	19.1
95	62.96931	-92.0023	PEFA	10.6	0.6	0.6
96	62.94216	-92.2926	RLHA	9.5	5.1	5.1
98	62.94722	-92.3012	PEFA	9.2	5.5	5.5
99	62.8501	-92.3931	PEFA	20.9	12.0	12.0
100	62.83075	-92.4026	PEFA	23.1	12.4	12.4
102	62.82212	-91.9067	CORA	26.4	9.1	9.1
103	63.08382	-92.3789	RLHA	7.2	7.2	7.2
104	62.79592	-92.15	RLHA	25.3	2.0	2.0
105	62.78568	-92.1218	CORA	26.7	2.0	2.0

NSID	Latitude	Longitude	Species	Km2FP	Km2HR	minD2D
106	62.84457	-92.3425	RLHA	20.6	9.5	9.5
107	62.86341	-92.031	RLHA	19.4	3.5	3.5
108	62.79659	-92.1612	RLHA	25.2	2.2	2.2
109	63.02752	-92.3336	RLHA	3.9	3.9	3.9
110	62.93445	-92.0572	PEFA	11.7	0.4	0.4
111	62.79798	-92.1971	RLHA	24.9	3.0	3.0
112	62.87769	-92.2388	RLHA	16.0	3.7	3.7
113	62.8969	-92.1489	RLHA	14.2	0.6	0.6
114	62.97403	-91.993	RLHA	10.7	1.2	1.2
115	62.9717	-92.196	RLHA	5.6	0.2	0.2
116	62.94254	-92.3071	RLHA	9.8	5.9	5.9
117	63.05057	-92.1764	RLHA	2.2	2.3	2.2
118	62.83578	-92.253	RLHA	20.7	4.8	4.8
119	62.84214	-92.2616	RLHA	20.0	5.3	5.3
120	62.84616	-92.2754	RLHA	19.7	6.1	6.1
121	62.89437	-92.1321	RLHA	14.6	1.4	1.4
123	62.79734	-92.1471	RLHA	25.2	1.7	1.7
124	62.95798	-91.9294	RLHA	14.4	0.2	0.2
125	62.79715	-92.0836	PEFA	25.7	0.6	0.6
127	62.89143	-91.9793	RLHA	17.8	4.4	4.4
129	63.04116	-92.0721	PEFA	5.0	4.8	4.8
130	62.83242	-91.9027	PERL	25.5	9.5	9.5
133	62.80613	-92.1544	RLHA	24.1	1.1	1.1
134	63.09531	-92.3174	PEFA	6.2	6.2	6.2
135	63.05417	-92.1866	PEFA	2.1	2.1	2.1
136	63.03012	-92.0563	RLHA	5.6	5.0	5.0
137	62.81346	-92.1951	PEFA	23.1	2.1	2.1
138	62.9659	-92.0441	RLHA	9.3	0.2	0.2
144	62.80004	-92.1784	CORA	24.7	2.2	2.2
145	62.83627	-92.2642	PEFA	20.7	5.4	5.4
146	62.87033	-92.5553	RLHA	23.8	19.7	19.7
147	62.80685	-92.3081	PEFA	24.3	7.9	7.9
148	62.82506	-92.3099	RLHA	22.3	7.7	7.7
149	62.80023	-92.2094	RLHA	24.6	3.4	3.4
150	62.95695	-92.2896	SNOW	7.9	4.7	4.7
151	62.78581	-92.0772	PEFA	27.0	1.8	1.8
152	62.81447	-92.2139	PEFA	23.0	3.0	3.0
153	62.84943	-92.0299	RLHA	20.9	4.4	4.4
154	62.80647	-92.2032	PEFA	23.9	2.7	2.7
156	62.80737	-92.1787	RLHA	23.9	1.6	1.6
158	62.85388	-92.1727	RLHA	18.7	0.9	0.9
159	62.78857	-92.0958	RLHA	26.5	1.3	1.3

NSID	Latitude	Longitude	Species	Km2FP	Km2HR	minD2D
160	62.91917	-92.2816	RLHA	11.8	5.0	5.0
161	62.80963	-92.2183	PEFA	23.5	3.3	3.3
162	62.84466	-92.269	PEFA	19.8	5.8	5.8
163	62.8836	-92.0106	RLHA	17.8	3.3	3.3
164	62.94757	-92.3572	RLHA	10.6	8.3	8.3
165	62.8288	-92.2157	RLHA	21.4	2.9	2.9
166	62.92743	-92.0064	RLHA	13.8	2.5	2.5
168	62.8306	-92.3111	RLHA	21.7	7.8	7.8
169	62.86323	-92.2318	RLHA	17.6	3.7	3.7
172	62.94105	-92.2174	RLHA	8.9	1.4	1.4
173	62.94207	-92.0525	RLHA	11.1	1.2	1.2
174	62.96577	-91.9864	PERL	11.5	0.3	0.3
175	62.95735	-92.0185	RLHA	10.8	0.2	0.2
176	62.94125	-92.2573	RLHA	9.1	3.4	3.4
177	62.93968	-92.156	RLHA	9.4	0.8	0.8
178	62.85229	-91.8249	RLHA	26.1	13.0	13.0
179	62.97345	-92.3191	RLHA	7.2	5.8	5.8
180	62.94993	-92.557	RLHA	18.1	18.1	18.1
181	63.02383	-92.5777	RLHA	16.0	16.0	16.0
183	62.82779	-92.2247	RLHA	21.5	3.4	3.4
184	63.04296	-92.2276	RLHA	0.2	0.2	0.2
185	63.05146	-92.181	RLHA	2.1	2.2	2.1
186	63.04966	-92.1714	RLHA	2.2	2.2	2.2
187	63.067	-92.2223	PEFA	2.9	2.7	2.7
188	63.03066	-92.0476	RLHA	6.0	5.3	5.3
189	63.03964	-92.0867	SPP	4.2	4.0	4.0
190	63.04117	-92.0664	PEFA	5.3	5.0	5.0
191	63.00545	-92.2249	SEOW	1.7	0.5	0.5
192	62.98811	-92.1543	RLHA	4.2	0.1	0.1
193	62.81945	-92.238	CORA	22.5	4.1	4.1
194	63.04227	-92.396	RLHA	6.6	6.7	6.6
195	63.02049	-92.3421	RLHA	4.6	4.7	4.6
196	63.05507	-92.1899	PEFA	2.1	2.1	2.1
197	63.0555	-92.2533	GYRF	1.2	1.2	1.2
198	62.87525	-92.2811	RLHA	16.5	5.9	5.9
199	63.03459	-92.0633	PERL	5.3	5.1	5.1
200	63.05908	-92.2401	PEFA	1.7	1.7	1.7
201	62.8897	-92.1586	PERL	14.9	0.1	0.1
202	62.89697	-92.1409	RLHA	14.3	1.0	1.0
203	62.93973	-92.5616	RLHA	18.9	18.6	18.6
204	62.98325	-92.5598	RLHA	16.4	16.4	16.4
205	62.98913	-92.5595	RLHA	16.1	16.1	16.1

NSID	Latitude	Longitude	Species	Km2FP	Km2HR	minD2D
206	62.98951	-92.5519	RLHA	15.7	15.8	15.7
207	63.03754	-92.6441	RLHA	19.2	19.2	19.2
209	63.09079	-92.3244	RLHA	5.9	5.9	5.9
210	62.85975	-91.8865	PEFA	23.5	10.1	10.1
211	62.78424	-92.3093	RLHA	26.8	8.7	8.7
212	62.86443	-92.0153	PERL	19.6	4.1	4.1
213	62.89279	-92.1511	RLHA	14.6	0.5	0.5
214	62.87168	-92.2862	RLHA	17.0	6.2	6.2
215	63.02298	-92.1999	PEFA	0.1	0.2	0.1
216	63.02323	-92.1999	RLHA	0.1	0.2	0.1
217	63.02948	-92.2839	SPP	1.7	1.8	1.7
218	62.94964	-92.301	PEFA	8.9	5.4	5.4
219	62.94549	-92.319	RLHA	9.7	6.4	6.4
220	62.94755	-92.1185	PEFA	9.1	1.0	1.0
221	63.02948	-92.2839	SPP	1.7	1.8	1.7
222	62.90241	-91.78	PEFA	24.1	10.0	10.0
224	62.97502	-92.4037	RLHA	10.3	10.0	10.0
225	63.03358	-92.6285	SPP	18.4	18.5	18.4
226	63.04958	-91.7734	PEFA	20.0	12.9	12.9
227	63.07924	-91.8715	RLHA	15.9	13.7	13.7
228	63.10543	-91.9151	PEFA	15.3	15.1	15.1
229	63.10565	-91.7149	SPP	24.4	19.6	19.6
230	63.1425	-91.7342	SPP	25.2	22.7	22.7
231	63.14867	-91.7643	RLHA	24.3	22.7	22.7
232	63.14907	-91.7736	PEFA	23.9	22.6	22.6
233	63.15709	-91.7882	PEFA	23.8	23.2	23.2
234	63.14742	-91.8165	PEFA	22.0	21.7	21.7
235	63.14853	-91.8186	RLHA	22.0	21.8	21.8
236	62.80675	-92.1722	RLHA	24.0	1.4	1.4
237	62.82458	-92.2533	RLHA	21.9	4.9	4.9
238	62.82969	-92.3039	RLHA	21.7	7.4	7.4
239	63.07238	-92.3581	PEFA	5.6	5.7	5.6
240	62.9143	-91.9367	SPP	17.2	4.4	4.4
241	62.99313	-92.5325	RLHA	14.7	14.7	14.7
242	62.97437	-92.1555	RLHA	5.6	0.9	0.9
243	63.02988	-92.0557	RLHA	5.6	5.0	5.0
244	63.0302	-92.0479	RLHA	6.0	5.2	5.2
245	63.04134	-92.5261	RLHA	13.2	13.2	13.2
246	63.07397	-92.3682	RLHA	6.2	6.2	6.2
247	63.0857	-92.3925	RLHA	7.9	7.9	7.9
248	63.10112	-92.3241	RLHA	6.9	6.9	6.9
249	63.13407	-91.8855	SPP	18.4	18.2	18.2

Figure 1

Figure 1. Adult male peregrine falcon. Note the dark hood and face with distinct dark malar stripe, white throat, slate-grey back, and barred belly, legs, and tail. Wings are long and pointed. Note the yellow legs, cere and eye ring.

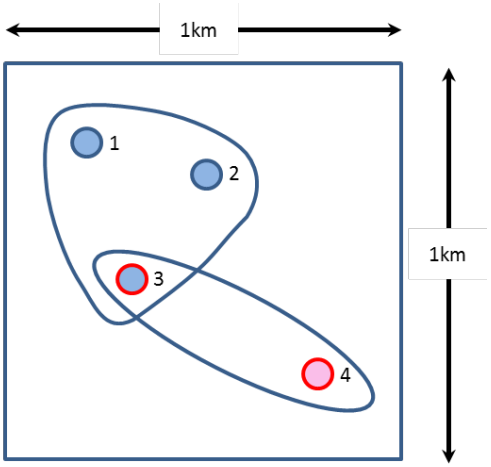
Figure 2

Figure 2. Adult female gyrfalcon. Note that wings are more rounded and broader than the peregrine falcon. The tail is relatively long. When perched, wings extend 2/3 down the tail. The body is thick and powerful, particularly in females. Adults have a yellow cere

Figure3

Figure 3. Adult male rough-legged hawk. Note predominantly brown in colour and mottled. A broad chest band is evident, and dark carpal patches (not evident here) are characteristic in light morph individuals. One or more dark terminal bands appear on the tail. T

Figure 4



NS ID	PEFA NT ID	RLHA NT ID	2011	2012	2103	2014	2015	2016	2017
1	**1**	**-**	PEFA	PEFA	NBD	NBD	NBD	PEFA	PEFA
2	1	-	NBD	NBD	PEFA	NBD	PEFA	NBD	NBD
3	1	4	NBD	NBD	NBD	PEFA	RLHA	RLHA	NBD
4	-	4	RLHA	RLHA	NBD	RLHA	NBD	NBD	RLHA

Figure 4. Rule-based approach used to assign nesting sites to nesting territories. A cluster of four nesting sites within 1 km of one another that exhibit a site occupancy history among seven years for two species (PEFA and RLHA). Nesting Sites 1 and 2 (blue circles with blue borders) have been occupied solely by PEFA. Nesting Site 4 (red circle with red border) has been occupied solely by RLHA. Nesting Site 3 (blue circle with red border) has been occupied by both PEFA and RLHA. In this example, Nesting Sites 1, 2 and 3 are grouped into a single PEFA Nesting Territory and assigned Nesting Territory ID 1 based on PEFA–specific tenure length (Nesting Site 1 has the longest tenure) and first tenure. Nesting Sites 3 and 4 are grouped into a single RLHA Territory and assigned Nesting Territory ID 4 based on RLHA–specific tenure length (Nesting Site 4 has the longest tenure) and first tenure. Unique nesting locations are ultimately defined by a Nesting Territory ID and a Nesting Site ID (E.g., NT ID 1, NS ID 2). NBD = no birds detected.

Figure 5

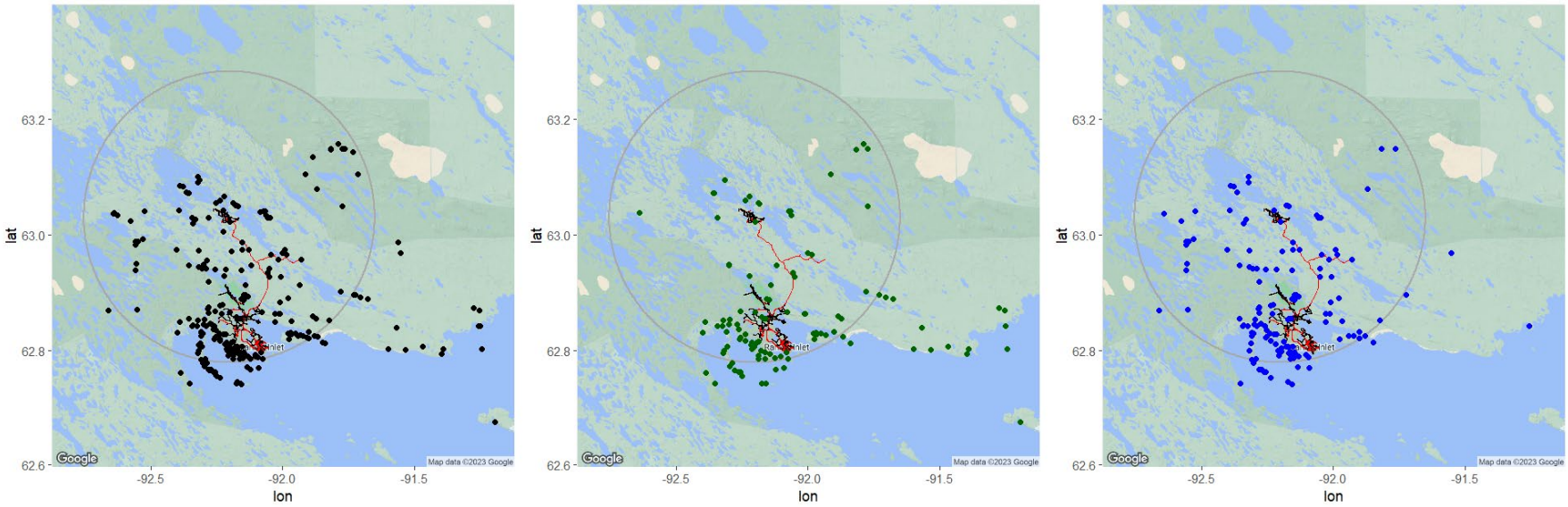


Figure 5. All known nesting sites in the Rankin Inlet region surveyed (n= 247 left), known peregrine falcon nesting sites (n= 108; middle), and known rough legged hawk nesting sites (n= 143; right). Count of nesting sites for other raptor species and common raven are reported in in Table 2. Also shown are roads (red lines) and trails (black lines), the project footprint (grey polygon), and the boundary of the regional study area (grey).

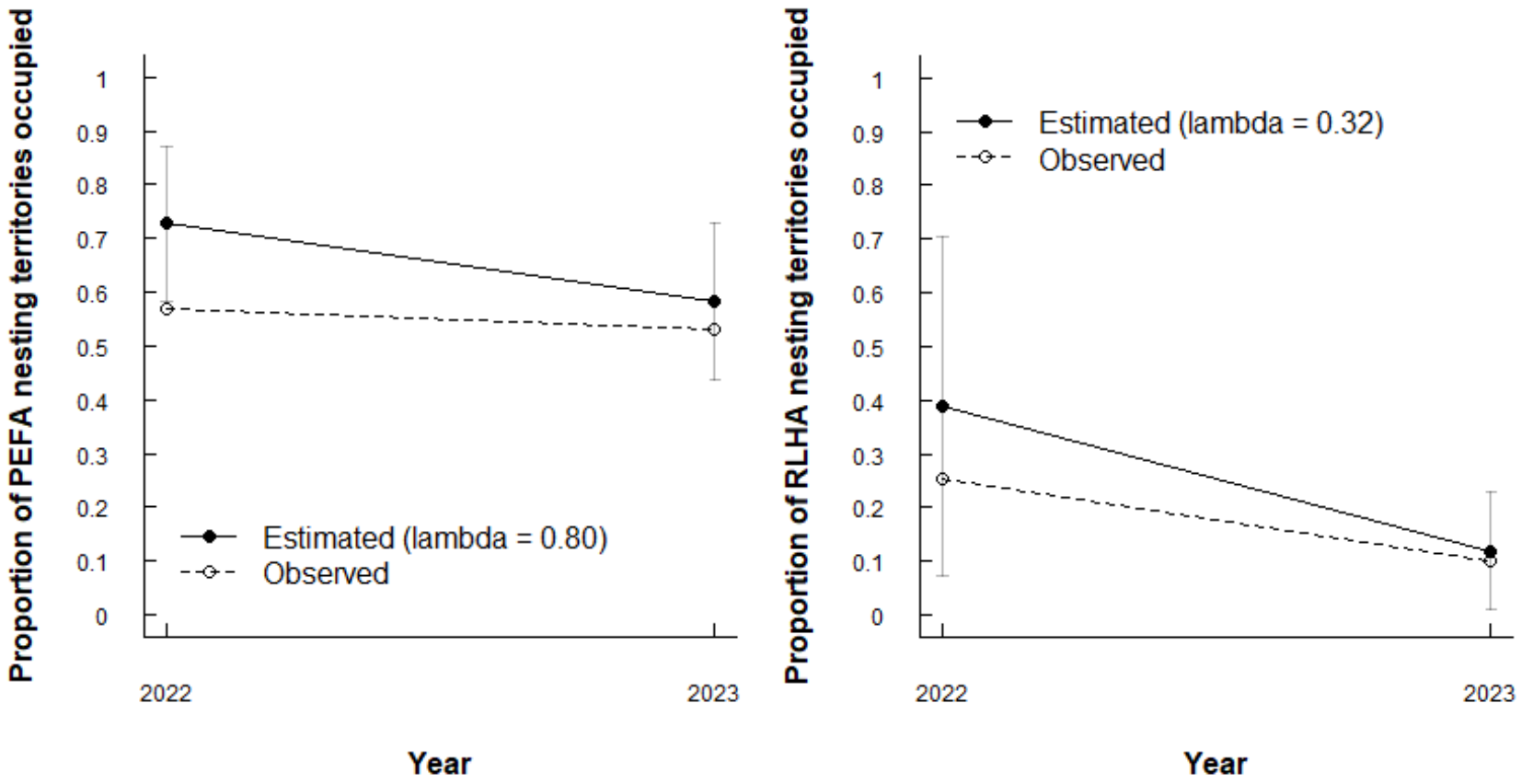


Figure 6 Estimated trend in occupancy for peregrine falcons (L) and rough-legged hawks (R) using annual occupancy probabilities to calculate average rate of change (λ) at the population level, where λ<1.0 . indicates population decline and λ>1.0 indicates an increase.

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APPENDIX E

Den Survey, 2023

AGNICO EAGLE

MELIADINE GOLD MINE

2023 Den Survey

Prepared for:
Nunavut Impact Review Board

Prepared by:
Agnico Eagle Mines Limited – Meliadine Division

FEBRUARY 2024

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Comment
R0				Initial report

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND UNITS

Agnico Eagle	Agnico Eagle Mines Limited
AWAR	All-Weather Access Road
CK	Community Knowledge
cm	centimeter
InK	Indigenous Knowledge
IQ	Inuit Qaujimajatuqangit
IQn	Inuit Qaujimaningit
km	kilometer
ha	hectare
m	meter
NIRB	Nunavut Impact Review Board
RIBR	Rankin Inlet Bypass Road
TEMMP	Terrestrial Environment Management and Monitoring Plan
TK	Traditional Knowledge

1 INTRODUCTION

1.1 BACKGROUND

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Mine, located approximately 25 km north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. In February 2015, Meliadine was issued the Project Certificate No. 006 from the Nunavut Impact Review Board (NIRB) with Amendment No. 001 in February 2019 and Amendment No. 002 in March 2022 to reflect modifications to the Meliadine Gold Mine as proposed in the Saline Effluent Discharge to Marine Environment Proposal (Waterlines Proposal).

The Waterlines Proposal included the installation of dual waterlines along the All-weather Access Road (AWAR) and the Rankin Inlet Bypass Road (RIBR) for the conveyance of treated saline effluent from the Meliadine Mine site to Itivia Harbour in Rankin Inlet. Construction of the waterlines began in 2023.

In accordance with Term and Condition 53 of the NIRB Project Certificate No. 006 (Amendment No. 002):

> *"Prior to construction of Project infrastructure including the waterlines and Phase 2 of the all-weather access road, the Proponent shall conduct a survey that is sufficient to locate any dens of foxes, bears or wolverines that could be damaged or destroyed during construction or operation of the Project."*

In addition, the Terrestrial Environment Management and Monitoring Plan (TEMMP) also specifies that den surveys for fox, bears, and wolverines should be undertaken prior to construction of Project infrastructure and Phase 2 of the AWAR.

Carnivore species around the Project site include the following:

- Arctic fox (*Alopex lagopus*);
- Grey wolf (*Canis lupus*);
- Polar bear (*Ursus maritimus*);
- Barren ground grizzly (*Ursus arctos*); and
- Wolverine (*Gulo gulo*).

1.2 INUIT QAUJIMAJATUQANGIT

Agnico Eagle aims to incorporate Inuit Qaujimaningit (IQn), Inuit Qaujimajatuqangit (IQ), Traditional Knowledge (TK), Community Knowledge (CK), Indigenous Knowledge (InK) in wildlife mitigation and monitoring. Agnico Eagle acknowledges that IQn, IQ, TK, CK, InK is continually learnt and continues to be gathered through various engagements related to the Meliadine Mine. This section highlights IQ, TK and others for better understanding the importance of furbearers for the local communities since time immemorial.

According to the Final Environmental Impact Statement (FEIS; Golder 2014), between 1900 and 1950, trapping foxes was a predominant winter occupation for the Inuit of Rankin Inlet, Whale Cove, and Chesterfield Inlet (Riewe 1992; Freeman 1976). Traplines located near food caches could stretch as long as 160 km. The Meliadine valley area was extensively harvested back then for that purpose (Nanuk Enterprises 2011). Foxes were trapped for their fur. Wolves and wolverines were hunted when encountered due to their interference with food caches and traps, but also due to their high pelt value (Nanuk Enterprises 2011; Riewe 1992; Freeman 1976). Trapping furbearer species provided local Inuit with skins for trade at the small posts along the coast during spring and summer months (Nanuk Enterprises 2011).

Since 1950, trapping has declined but is still taking place by few people in the communities (Nanuk Enterprises 2011). Baseline studies from 1999 indicated that Arctic foxes remain abundant in the area and represent the main species harvested by trappers (Golder 2014).

Polar bears are the most important marine mammals to the people of Rankin Inlet, Whale Cove, and Chesterfield Inlet, in particular for the Inuit hunters (Burt and Hickes 2012). Even if polar bears are rarely seen, polar bears represent an importance to Inuit culture, identity, a strong connection with the land, and Inuit traditional ways of life (Tomaselli et al 2022). A small quota of polar bears is allowed to be hunted reaching a fine balance between the polar bear population concerns and community safety. They were traditionally hunted using harpoons then carried by dogs for their skins, meat and fat (Burt and Hickes 2012). Today, polar bears still a source of country food to local Inuit Elders that is shared in the communities. Polar bears sustain traditional lifestyle and constitute an important community income for locals associated with the tourism and hunting outfitters industries (Burt and Hickes 2012, Nanuk Enterprises 2011). The hide can be sold or used for clothing, as blankets or as mattresses. Skulls, teeth and claws can be carved and sold as jewelry (Tomaselli et al 2022). The area most suitable for polar bears is along the coast. Specifically in the vicinity of the Mine site, the lower Meliadine valley and the lowlands areas were identified to potentially being more suitable for polar bears (Nanuk Enterprises 2011).

In the FEIS, Elders mentioned that grizzly observations were increasing along the coast of Hudson Bay (Golder 2014). Elders also mentioned that they were commonly seen between the Diana River and Meliadine River area and therefore considered as a safety threat to humans and cabins. Grizzlies are consequently hunted if they are seen as a precaution instead of being purposefully hunted for food (Golder 2014).

1.3 PURPOSE OF THIS DOCUMENT

This document was prepared to address the above referenced Term and Condition 53, and aims to:

- Summarize den survey methodology;
- Locate carnivore dens that could be impacted by the mining activities or mining-related activities;
- Present the results from the den survey conducted around the Mine site, AWAR, RIBR, proposed Discovery Road, and along the waterline proposed routing; and
- Summarize the mitigation measures to be implemented when dens are found in and around construction site(s).

2 METHODS

The den survey consisted of visual observations of den openings generally located on sandy and/or vegetated mound or ridges with a gentle south-facing slope, which are indicators of suitable ground for a den (Macpherson 1996; Lai and Berteaux 2013). Signs of wildlife such as animal observations, tracks, scats, bones, trail conditions, fresh digging were also used to determine the species using the den and if the den was active in 2023 (Elbroch 2003; Murie 1989). When a den was found:

- Location was recorded using a GARMIN map 78s;
- Pictures of the den and the surrounding habitat were taken;
- Den openings were measured; and
- Signs of wildlife were documented.

Appendix A further describes the den characteristics for furbearer species targeted. However, the emphasis of this report is on the Arctic fox as it is the only known species to den in the area during the survey period.

The circumstance under which den surveys were conducted varies. Most of the surveys occurred opportunistically while conducting other tasks in the vicinity. In other occasion, they were conducted prior to the construction of project infrastructure to verify den presence and if it was active. In a few instances, den locations were reported from other departments.

Depending on the locations, the distances, or the areas to cover, surveys were conducted by environmental technicians and/or biologists walking or driving all-terrain vehicles (ATV). When mining-related activities were planned within the setback distance of known dens, the locations were revisited to assess if the den was active. In that situation, the use of drone, binoculars, or trail cameras were used to limit disturbance. Table 1 summarizes the various tundra sections surveyed between May 2023 and August 2023 with their approximative locations.

Table 1: Tundra Areas Surveyed specifically for dens at the Mine Site, along the Roads and the Waterline in 2023.

Location	Sections	Area Surveyed (ha)	Total Area Surveyed (ha)
Mine Site	Northeast	0	**30.2**
	North	0	
	Northwest	2.2	
	Southwest	27.6	
	Southeast	0.4	
Access Roads	Discovery	26.0	**26.0**
Waterline	AWAR	80.0	**85.4**
	RIBR	0.0	
	Apache Bypass	5.4	
		Total 2023	**141.6**

3 RESULTS

During the 2023 den survey, 7 dens were revisited as identified in Table 2. Figure 1 shows the den locations. Before the start of the waterline construction, the dens Fox-2022-1 and Fox-2022-2 were visited using a drone and binoculars on May 27th to see if the dens were active. At the time of the survey, no sign of activity was observed.

Throughout the summer of 2023, a total of 4 new fox den locations were found; 3 of them were reported to be active in 2023. An active den was found along the proposed Discovery Road, two dens were found along the Apache Bypass area and the last one was found west of the Mine site (Table 2, Figure 1). The pictures of the dens can be found in Appendix B.

It should be noted that during revisiting of 2022 dens in 2023, it was determined that 3 of the dens initially identified as fox dens are most likely siksik burrows, as indicated in Table 2. These dens will not be revisited in future surveys as they did not present carnivore den characteristics.

Table 2: List of Fox Dens Visited in 2023

Fox Den Number	Location	UTM Zone 15 NAD 83		Den Area (m^2)	Active in 2023
		Easting	Northing		
Known dens revisited in 2023					
Fox-2022-1	AWAR	541443	6987064	25	No
Fox-2022-2	AWAR	541562	6987030	300	No
Fox-2022-4	Site	536995	6990914	30	Unknown
Fox-2022-5	Site	537301	6990794	30	No – Most likely siksik burrow
Fox-2022-6	Site	538991	6988119	60	No
Fox-2022-8	Site	541971	6988814	25	No – Most likely siksik burrow
Fox-2022-9	Site	542139	6989139	40	Unknown – Most likely siksik burrow
New dens in 2023					
Fox-2023-1	Site	537655	6988311	300	Yes-Fox
Fox-2023-2	Discovery Road	547534	6981527	150	Yes-Fox
Fox-2023-3	Apache Bypass	543315	6968010	30	Yes-Fox
Fox-2023-4	Apache Bypass	543395	6968750	40	Yes-Siksik observed at time of assessment

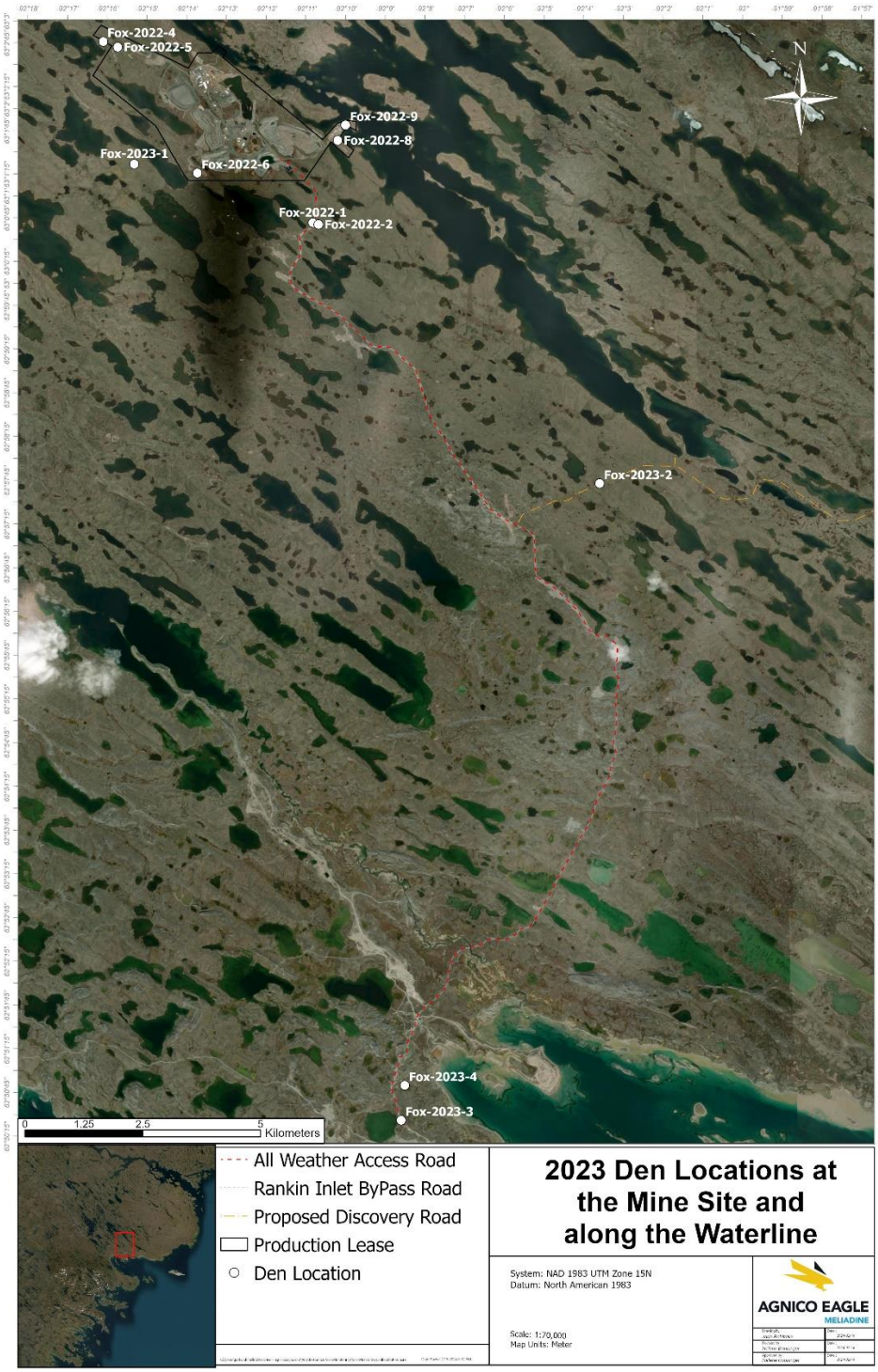

Figure 1: 2023 Den Locations at the Mine Site and along the Waterline

4 MITIGATION MEASURES

This section presents the recommendations in the situation where construction activities are within the recommended setback distances of an active den. The recommended construction setbacks are a protection buffer zone around a den where further mitigation measures will be implemented as described below. The setback distances depend on the species, the time of the year and the type of construction activities. The relevant recommended construction setbacks are presented in Table 3.

Table 3: Recommended Construction Setbacks per Species.

Species	Construction Setbacks	Sensitive period	Type of activity
Fox dens	150 m	May 1-Sept 15	General industrial activity
Wolf dens	800 m	May 1-Sept 15	General industrial activity
Bear dens polar bear, grizzly	800 m	Sept 30-Mar 30	General industrial activity
Bear dens polar bear, grizzly	1500 m	Sept 30-Mar 30	Blasting
Wolverine dens	2000 m	Oct 15-July 15	General industrial activity

Source: GNWT 2016

Precautions will be taken to not damage or destroy dens. In the situation where a new den is discovered, the Environment Department will be contacted to implement mitigation measures. Otherwise, the mitigation measures of known den locations will consist of:

- Incorporating known den locations and setback distances on the construction plans (drawings and engineering specifications);
- Delineating protective areas clearly at the working site;
- Minimizing the footprint to what is necessary for construction;
- Informing the workers in the area when work is performed at proximity of the dens;
- Keeping the working site clean and free of garbage that could impact or attract wildlife;
- Avoiding harassing wildlife; and
- Implementing the Wildlife Encounter and Deterrence found as an appendix in the TEMMP.

5 CONCLUSION

In conclusion, den surveys were completed in summer of 2023 at the Meliadine Mine Site, along a section of the proposed waterlines alignment and proposed Discovery Road. The focus was on Arctic fox as the survey was conducted during their denning period. A total of 4 new den locations were found and 7 dens were revisited. Four (4) dens have been identified as active in 2023, of which 3 were used by foxes and 1 by siksiks. The recommended construction setback of 150 m was applied at active fox dens and mitigation measures as described in Section 4 were implemented in the situation where construction activities were closer than the setback distance. The fox den habitat was protected even when inactive.

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APPENDIX A. DEN CHARACTERISTICS PER SPECIES

Table A-1: Den Characteristics per Species

Species	Den Characteristics
Arctic fox	• Locate on mounds, ridges, slopes, or riverbanks. • Excavate from sandy soil or other well-drained substrate where active layer over permafrost is deeper. • Situate on south facing or early thawed areas. • Can be found under large rocks and boulders. • Dens openings are 15-20 cm in diameter. (Lai and Berteaux 2013; Hendrickson et al 2005)
Grey wolf	• Excavate in eskers, ridges of gravel and sand formed by melting glaciers. • Can take over dens of other animals (foxes, ground squirrel). • Close access to caribou. (Hendrickson et al 2005; Cluff et al 2002)
Polar bear	• Excavate soil on land along the slopes of fiords, on peninsulas or islands with sufficient snow cover in early winter for the construction of the dens or on moving multi-year ice and areas of annual rough ice. • Maternity dens in hilly or mountainous coastal areas with good snow coverage (including in proximity of glacier complex), landscape features facilitating snowdrift formation, and abundant preys. • Females typically give birth to cubs in maternity dens in December and January, and leave their dens around March or April at the time of year when ringed seal pups are born. (Nirlungayuk et al. 2016; Tomaselli et al 2022)
Barren ground grizzly	• Excavate in soil. • Rock cavity dens are either caves or cavities in boulder piles. • Locate mid to upper slope positions. (Hodder et al 2014)
Wolverine	• Rocky scree slopes, along eskers, within hard packed snowdrifts or under snow-covered boulders. • Snow greater than 1 m deep, distributed uniformly or accumulated in drifts. • Long, complex snow tunnels in hardened snowdrifts characterize den sites in tundra and alpine areas, and in some cases, the tunnels lead down to entrances under boulders. • Denning period (February-May). (Wolverine Foundation online; Awan et al. 2020)

APPENDIX B. DEN SURVEY PHOTOS

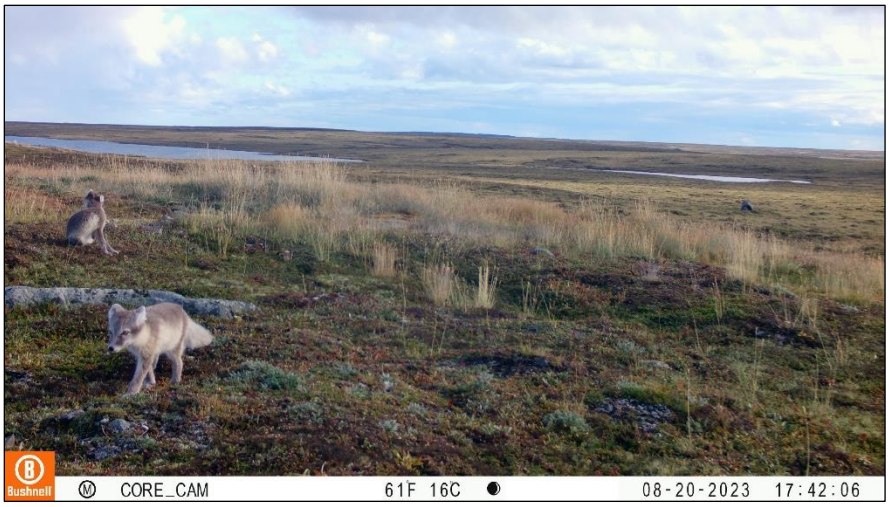

Photo 1: Fox-2023-1 West of Site on August 20th, 2023.

Photo 2: Fox-2023-1 West of Site on August 14th, 2023.

Photo 3: Fox-2023-2 along proposed Discovery Road on August 10th, 2023.

Photo 4: Fox-2023-3 at Apache Bypass on July 19th, 2023.

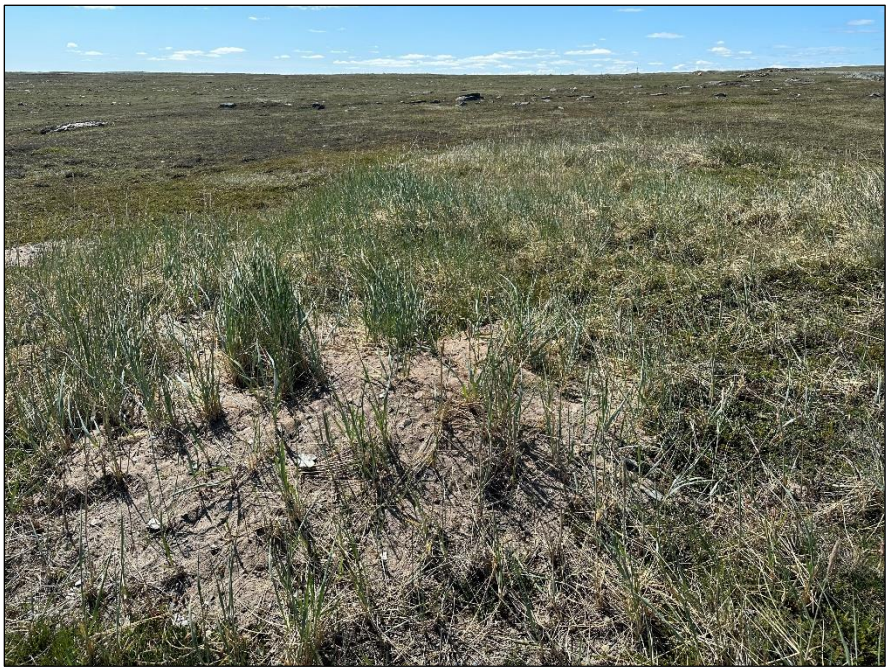

Photo 5: Fox-2023-4 at Apache Bypass on July 19th, 2023.

Photo 6: Fox-2022-1 on May 27th, 2023.

Photo 7: Fox-2022-2 on May 27th, 2023.

Photo 8: Fox-2022-4 on August 12th, 2023.

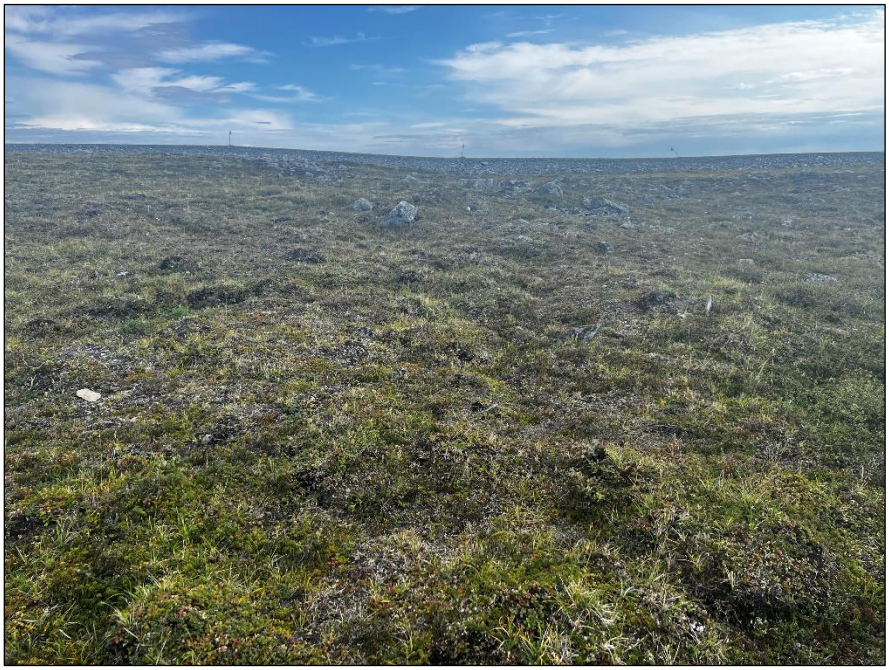

Photo 9: Fox-2022-5 on August 12th, 2023.

Photo 10: Fox-2022-6 on May 27th, 2023.

Photo 10: Fox-2022-8 on August 12th, 2023.

Photo 11: Fox-2022-9 on August 12th, 2023.