

Appendix D: Compliance Monitoring Reports

**APPENDIX D.2: HOPE BAY PROJECT: 2023 WILDLIFE MITIGATION AND MONITORING
PROGRAM COMPLIANCE REPORT**



Hope Bay Project

2023 Wildlife Mitigation and Monitoring Program Compliance Report

PREPARED FOR



AGNICO EAGLE

Agnico Eagle Mines Limited

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Hope Bay Project

2023 Wildlife Mitigation and Monitoring Program Compliance Report

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EXECUTIVE SUMMARY

Wildlife mitigation and monitoring requirements for the Hope Bay Project, which is currently in care and maintenance, are included in the Doris Project Certificate No. 003 (NIRB 2016), the Madrid-Boston Project Certificate No. 009 (NIRB 2018) and the Framework Agreement with the Kitikmeot Inuit Association (KIA) (the Framework Agreement, 2015). Monitoring activities are summarized in the Wildlife Mitigation and Monitoring Program Plan (WMMP), which is revised regularly. In 2023, monitoring data were collected as outlined in the WMMP (Agnico Eagle Mines Limited 2023). Results from the 2023 Wildlife Mitigation and Monitoring Program (hereafter referred to as the Program) are summarized in Table 1.

TABLE 1 SUMMARY OF 2023 WILDLIFE MITIGATION AND MONITORING PLAN (WMMP) COMPLIANCE REPORT RESULTS

Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Habitat Loss	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023)	<ul style="list-style-type: none"> There was no habitat loss in 2023. The cumulative total of habitat loss remains at 141.15 ha overall. No additions to the project footprint were completed in 2023. 	<ul style="list-style-type: none"> The Madrid-Boston Final Environmental Impact Statement (FEIS) predicted a negligible magnitude effect of habitat loss for caribou, grizzly bear, and wolverine and a low magnitude effect for upland breeding birds, waterbirds, and raptors. The magnitude of habitat loss in 2023 remains at 3% of the Madrid-Boston FEIS predictions. Hence, the conclusions of the Madrid-Boston FEIS remain valid. 	2.1
Road Traffic Monitoring	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023) and Project Term and Condition 20 (NIRB 2018)	<ul style="list-style-type: none"> The daily and monthly road traffic in 2023 was summarized between Roberts Bay and Doris/Madrid North and between Doris and Madrid North. Hauling traffic including trips in the Madrid area. Average daily traffic from wildlife camera 18 (monitoring Roberts Bay to Doris) and camera 35 (between Doris and Madrid North) was summarized during the period of highest caribou activity across years (December/January, May, and July). Traffic leaving Roberts Bay averaged 32% of predicted maximum levels. Traffic between Doris and Madrid averaged 23% of predicted maximum levels. 	<ul style="list-style-type: none"> Traffic levels between Roberts Bay, Doris, Madrid North, and Windy Lake were 23-32% of the predicted maximum levels in the Madrid-Boston FEIS. Therefore, the conclusions of the Madrid-Boston FEIS remain valid. 	2.2



Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Helicopter and Fixed-wing Flight Monitoring	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023) and Project Commitment #GN-60 from Project Certificate No. 009 (NIRB 2018)	<ul style="list-style-type: none"> Helicopter trips around Boston, Doris, and between Boston and Doris were summarized from 2023 flight records. Helicopters logs were summarized from June through September 2023. Fixed-wing aircraft flights were active in all months from the Doris airstrip. Helicopter trips between Boston and Doris and around Boston occurred at an average of 15% - 29% of the daily predicted maximum frequencies predicted in the Madrid-Boston FEIS. Daily maximum activity in the Doris area was only marginally higher than predicted in the Madrid-Boston FEIS. Fixed-wing aircraft flights occurred on average at 12% of the frequencies modelled for noise disturbance in the Madrid-Boston FEIS. 	<ul style="list-style-type: none"> The majority of helicopter and fixed-wing aircraft flight traffic levels were below levels predicted in the Madrid-Boston FEIS. Helicopter traffic in the Doris area matched daily predicted maximums. Current levels of potential noise disturbance from helicopters and fixed wing aircraft are generally within modelled predictions from the FEIS. A drilling program in the Madrid area resulted in higher helicopter activity, however this program is outside of the operations included in the Madrid-Boston FEIS. 	2.3
Snowbank Height Monitoring	Addresses Project Commitment #GN-49 from Project Certificate No. 009 (NIRB 2018)	<ul style="list-style-type: none"> Snowbank heights along the All Weather Road (AWR) were monitored monthly in the winter (January through May, and October to December). Snowbank heights averaged 12.6 cm across all monitoring stations and periods. Snowbank heights were generally < 20 cm. Although some snowbank measurements were higher (i.e., > 75 cm), photos indicate that banks were bladed back from the roadway and were at low inclines rather than steep banks. Areas with higher snowbanks were isolated to small portions of the road, i.e., across a few meters. These areas would therefore not pose a crossing barrier to caribou or other wildlife at the roadway. 	<ul style="list-style-type: none"> Snowbank heights were monitored along the AWR in 2023. Snowbank height along the road was measured at an overall average of 12.6 cm. The measured levels do not pose a barrier to wildlife crossing the road. Snowbank heights across all years of monitoring (2020-2023) indicate that the AWR has been consistently well managed for wildlife passage across all years of monitoring. 	2.4

Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Snowbank Height Monitoring (cont'd)		<ul style="list-style-type: none"> Snowbank height was compiled and compared across all monitoring years (2020-2023). The average height across years was 9.8 cm with a range in average height between 0.0 – 25.3 cm. 		
Caribou Kernel Density Analysis of Beverly/Ahiak Calving Range	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023)	<ul style="list-style-type: none"> Collar data from the Beverly and Ahiak sub-populations were analysed for their core calving range (50% kernel density) and the 95% kernel density calving range. Neither the Beverly or Ahiak core calving ranges or 95% calving ranges overlapped with the Study Area in 2023. Generally, the calving ranges were consistent with previous years (2001-2022), with some portions of both calving areas varying in their spatial extent. 	<ul style="list-style-type: none"> The Beverly and Ahiak populations calving grounds have shown variation between years, but the core areas remain consistent and do not overlap the Project Study Area. 	3.4
Caribou Kernel Density Analysis of Dolphin and Union Winter Range	Addresses comments on 2016 Compliance Report (ERM 2017)	<ul style="list-style-type: none"> Collar data from the Dolphin Union herd was analyzed for their core (50% kernel density) and 95% kernel density winter range. Neither the core winter range nor 95% winter ranges overlapped with the Study Area in 2023. The core winter range was largely similar to the long-term range in 2023, while the 95% range occurred almost exclusively on the west side of Bathurst Inlet and into the Coronation Gulf. 	<ul style="list-style-type: none"> The Dolphin Union herd winter range has shown some variability in 2023 but the core areas remain consistent and do not overlap the Project Study Area. 	3.4



Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Caribou Collar Power Analysis	Addresses Project Commitment #GN-45 from Project Certificate No. 009 (NIRB 2018)	<ul style="list-style-type: none"> This work was completed in the 2019 WMMP and the condition is considered fulfilled (ERM 2020). This analysis is not being re-conducted because results indicated that a ZOI cannot be detected without overlap between the caribou calving ranges and the Project. 	<ul style="list-style-type: none"> Commitment #GN-45 requires an estimate on the number of collared caribou necessary to detect a ZOI around Phase 2 infrastructure. These analyses were conducted in 2019 and the condition is considered fulfilled. 	3.4
Wildlife Camera Monitoring – Caribou	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023)	<ul style="list-style-type: none"> Caribou observations at cameras occurred at moderate frequencies (compared to previous years) across the monitoring period from September 2022 to September 2023. Caribou occupancy increased in the Treatment Zone starting in 2019. Statistical analysis indicated that there was not a significant difference in caribou events between the Treatment and Control zones. Caribou modelling looked at caribou events as opposed to occupancy in 2023 to account for the influx of caribou events in the Treatment zone. In recent years, caribou events have become more common at some specific cameras in the Treatment zone near site roads and camp facilities, where caribou have been frequenting since roughly 2019 during peak biting insect season. 	<ul style="list-style-type: none"> The Madrid-Boston FEIS predicted potential minor effects on caribou due to change in movement and behaviour from avoidance of infrastructure within < 1 to 10 km² of the Project, and possible avoidance of the Hope Bay Belt, a 3-4 km wide band of low lying sedge meadows and rocky dykes. Camera data suggest that caribou are not avoiding the Project. In order to account for increased caribou events on specific treatment cameras caribou were modelled by the number of events as opposed to occupancy. 	3.4
Wildlife Camera Monitoring - Muskox	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023)	<ul style="list-style-type: none"> Detections of muskox by wildlife cameras continue to be rare. Eight muskox events were recorded during the recent monitoring period from September 2022 to September 2023. Two events occurred in the Treatment zone while the ZOI had five events and Control zone cameras had one. 	<ul style="list-style-type: none"> The Madrid-Boston FEIS predicted potential minor effects on muskox due to change in movement and behaviour from avoidance of infrastructure around the Project areas. 	3.5



Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
			<ul style="list-style-type: none"> Muskox are rarely recorded in the Project Study Area. 	
Wildlife Camera Monitoring – Muskox (cont’d)		<ul style="list-style-type: none"> The small sample size across years prevented statistical analysis; however, the raw data indicate that muskox are more common closer to the Project (in the Treatment zone) than farther away (in the Control zone) in all years. This indicates that muskox are likely not avoiding the Project. 	<ul style="list-style-type: none"> The muskox camera data do not indicate avoidance of the Project. The conclusions of the Madrid-Boston FEIS remain valid. 	
Wildlife Camera Monitoring – Grizzly Bear	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023)	<ul style="list-style-type: none"> Statistical analyses indicated that the chance of detecting a grizzly bear at Treatment cameras was no different than at Control cameras, suggesting that the Project is not influencing the distribution of grizzly bears by either attraction to or by avoidance of the Project. Current management practices, such as waste management practices and responses to grizzly bear interactions and incidents, appear to be effective at reducing potential Project effects to grizzly bears. Given that there were no differences in the predicted number of grizzly bear events between Treatment and Control cameras, a secondary analysis for a potential ZOI was not necessary. 	<ul style="list-style-type: none"> The Madrid-Boston FEIS predicted a potential minor effect due to grizzly bear altering their movement and behaviour to avoid the Project site. Statistical analyses of camera data suggest that grizzly bear are neither avoiding nor being attracted to the Project. Hence, the conclusions of the Madrid-Boston FEIS remain valid based on this monitoring method. 	3.6



Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Wildlife Camera Monitoring – Wolverine	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023)	<ul style="list-style-type: none"> Wolverine were recorded in low numbers throughout the Study Area (i.e., across all camera zones) during the recent monitoring period (September 2022 – September 2023). Events were recorded in similar numbers to previous monitoring years, with 11 wolverine events recorded during the recent monitoring period. All wolverine camera events recorded were of one individual. Statistical analysis of wolverine occupancy indicated that wolverine occupancy differed in the Treatment zone compared both the Control zone and the potential ZOI (2 to 10 km from infrastructure). The follow up analysis for a ZOI does not indicate a distinct ZOI cut off. These results suggest that wolverine may avoid infrastructure within close distances (~2 km). This result is consistent with analysis from 2022, however this is only the second year with sufficient wolverine occurrence data to conduct a full analysis. 	<ul style="list-style-type: none"> The Madrid-Boston FEIS predicted potential minor effects on movement and behaviour of wolverine, including potential disruption of movement at the scale of the PDA or attraction to Project infrastructure. The wolverine data analysed to date indicate potential avoidance of Project infrastructure within 2 km. This is greater avoidance than predicted in the Madrid-Boston FEIS; predictions in the FEIS were uncertain due to sparse data and available research on wolverines in the area. However, using the criteria for residual effects ratings from the FEIS, the residual impact on wolverines remains the same (categorized as a low magnitude, medium duration, and reversible not significant effect). 	3.7
Wildlife Camera Monitoring – Nest Predators	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023)	<ul style="list-style-type: none"> Red fox, unspecified fox, and common raven were recorded in 18 events on wildlife cameras during the bird nesting season from May 15 to August 15 in 2023. Events were generally consistent across months, but were more common in the ZOI ($n = 10$) than the Treatment or Control zones ($n = 5$ and 4 respectively). There is no evidence that nest predators are more common closer to the Project area. 	<ul style="list-style-type: none"> The Madrid-Boston FEIS did not predict a residual effect for attraction of nest predators to Project infrastructure. Based on the camera monitoring program, there is no evidence that nest predators are more common closer to the Project area. 	3.8

Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Wildlife surveys – Upland Breeding Birds	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023) and Project Term and Condition 26 (NIRB 2016)	<ul style="list-style-type: none"> No pre-clearing surveys for nesting birds were conducted in 2023 because no new areas were cleared during the bird breeding season. Ground-based surveys following the Program for Regional and International Shorebird Monitoring (PRISM) protocol were not completed in 2023 due to logistical constraints created by the Project being in care and maintenance. The second round of surveys will be completed in 2024. 	<ul style="list-style-type: none"> Pre-clearing surveys are conducted between May 15 and August 15 to avoid construction in areas with migratory bird nesting or the presence of young. No construction was completed in 2023 so no pre-clearing surveys were conducted. Upland breeding bird monitoring is scheduled to occur in two of every five years to contribute to a regional Arctic monitoring initiative by CWS. These surveys occurred for the first year in 2022 and will be completed again in 2024. 	3.9
Wildlife surveys – Waterbirds (Ground Monitoring)	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023) and Project Term and Condition 26 (NIRB 2016)	<ul style="list-style-type: none"> Waterbird monitoring was conducted in 2022, and therefore was not repeated in 2023. Ground surveys for monitoring waterbirds and shorebirds will be continued in 2024. 	<ul style="list-style-type: none"> Waterbird monitoring is scheduled to occur via ground surveys at varying distances from the Project every two years. These surveys were conducted for the first time in 2022 and will be completed again in 2024. Multiple years of monitoring are necessary to establish trends in waterbird activity, so none are presented at this time. 	3.10
Waterbirds (TIA Monitoring)	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023) and Project Term and Condition 26 (NIRB 2018)	<ul style="list-style-type: none"> Water quality at the Tailings Impoundment Area (TIA) was monitored weekly and did not exceed relevant CCME guidelines, so no ecological risk assessment was conducted. 	<ul style="list-style-type: none"> Water quality was monitored at the TIA to examine if it was safe for waterbirds; water did not exceed quality guidelines. 	3.10

Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Wildlife surveys – Raptors	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023) and Project Term and Condition 27 (NIRB 2018)	<ul style="list-style-type: none"> No construction of the Madrid North area occurred in 2023 and as such no pre construction surveys were conducted. Peregrine falcon was the only raptor species of conservation concern recorded at the Project in 2023 from incidental wildlife sightings reports. 	<ul style="list-style-type: none"> Pre-construction monitoring in Madrid North was not necessary in 2023. 	3.11
Marine Mammals	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023) and Project Terms and Conditions 31, 32, and 33 (NIRB 2018)	<ul style="list-style-type: none"> In 2023, the monitoring program from the 2023 Shipping Management Plan started. In total, 15 surveys in September recorded 4 seals exhibiting normal behaviour during shipping activity in the Bay. No marine wildlife incidents were reported along shipping routes. Vessel tracks from 2023 were summarized to confirm that mitigations for setbacks and designated routes were followed. Incidental sightings were reported from the Qamutik: five seals (two hooded, one harbour and two bearded), and a whale observed diving at sea. In 2023, incidental sightings were recorded for two seals were observed in Roberts Bay from the shore. 	<ul style="list-style-type: none"> The monitoring program for marine mammals in Roberts Bay was conducted in accordance with the procedures detailed in the 2023 Shipping Management Plan. 	3.12
Plants	Addresses commitments in WMMP (Agnico Eagle Mines Limited 2023) and Project Terms and Conditions 17 and Commitment #GN-04 (NIRB 2018)	<ul style="list-style-type: none"> Invasive plant surveys were conducted July 26 to August 1, 2023 across existing Project infrastructure and disturbed areas. No invasive or non-native plant species were observed in 2023; however, two native species which closely resemble invasive species were identified: seaside chamomile (<i>Tripleurospermum maritimum</i> subsp. <i>phaeocephalum</i>) and horned dandelion (<i>Taraxacum ceratophorum</i>). 	<ul style="list-style-type: none"> No specific predictions around effects on plants were included in the Madrid-Boston FEIS. Monitoring for invasive plants occurs every 5 years and will occur again 2029. 	3.13

Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Facilities Camera Monitoring	Addresses Project Term and Condition 25 (NIRB 2016)	<ul style="list-style-type: none"> Ten grizzly bear events were recorded at facility cameras. Nine of the ten events were at the ERM fish fence. A grizzly bear sow with a cub was recorded at camera 51 moving across the TIA. They appeared to be moving across the TIA without stopping or directly interacting with the ground. There were 21 events of caribou detections at specific monitoring cameras. All events were recorded on camera 51 on the TIA. One event showed an individual stopping on the TIA with its head down to the ground. Otherwise, all events were of caribou walking or trotting. However, caribou do not appear attracted to the TIA, as indicated by the low number of caribou events relative to the rest of the Project. 	<ul style="list-style-type: none"> The FEIS predicted bears and wolverine would be attracted to the site at a 'low' magnitude. No wolverines or bears were observed on the Waste Management Facility cameras in 2023, indicating bears are not generally attracted to the waste site; therefore current mitigation is effective and the FEIS prediction is valid. One of the two cameras installed at the TIA recorded 21 caribou events, one red fox, and one grizzly bear event. Events do not appear to indicate an attraction to the TIA specifically. No wolverine or muskox were recorded on cameras at the TIA. The overall low levels of wildlife recorded indicates that wildlife are not frequently using the TIA area. 	3.4 to 3.8 (Results within each Section)
Wildlife Interactions	Addresses Project Term and Condition 25 (NIRB 2016), Framework Agreement Schedule 3.1, J. Wildlife, Items 2, 7.	<ul style="list-style-type: none"> There were six grizzly bear interactions recorded in 2023. Five involved diverting of bears away from the site using drones or helicopters. There was one interaction where a grizzly bear entered a waste sorting facility and accessed food and hygiene waste. The site reviewed their waste separation procedures as a result. In all interactions, the bears left the site without incident. There was one interaction to divert a caribou from the runway of the airport. One interaction involved an unspecified ptarmigan species being flushed from their nest accidentally by site personnel. The ptarmigan and its nest was not harmed during the interaction. 	<ul style="list-style-type: none"> Attraction to the Project was predicted as low in the Madrid-Boston FEIS for grizzly bear and wolverine due to smells associated with the camp. There were six grizzly bear interactions and no wolverine interactions in 2023. Grizzly bears were successfully deterred. The conclusions of the Madrid-Boston FEIS regarding attraction to infrastructure remain valid for the valued components assessed i.e. grizzly bear and wolverine. 	3.4 to 3.11 (Results within each Section)



Program Component	Reason for Program	Results	Comparison to Terms and Conditions, Predictions, and Program Objectives	Report Section
Wildlife Incidents	Addresses Project Term and Condition 25 (NIRB 2016), Framework Agreement Schedule 3.1, J. Wildlife, Items 2, 7	<ul style="list-style-type: none"> There were no wildlife incidents in 2023. 	<ul style="list-style-type: none"> Direct mortality of raptors and upland birds was predicted as a low magnitude effect at the extent of the PDA. 	3.4 to 3.11 (Results within each Section)
Wildlife Mortalities	Addresses Project Term and Condition 25 (NIRB 2016), Framework Agreement Schedule 3.1, J. Wildlife, Items 2, 7	<ul style="list-style-type: none"> There were three wildlife mortalities recorded in 2023. None of the mortalities can be attributed to Project activity, all were due to natural causes. 	<ul style="list-style-type: none"> Wildlife mortalities were predicted to be negligible for all Valued Ecosystem Components (VECs). The conclusions of the Madrid-Boston FEIS remain valid. 	3.4 to 3.11 (Results within each Section)
Federal or Territorial Species at Risk		<ul style="list-style-type: none"> There were six federal or territorial species at risk observed during 2023 including: <ul style="list-style-type: none"> Beverly/Ahiak herd caribou, which are barren ground caribou (Threatened by COSEWIC and Vulnerable in Nunavut); Dolphin Union herd caribou (Endangered by COSEWIC, Special Concern Schedule 1 of SARA and Vulnerable in Nunavut); Wolverine (Special Concern by COSEWIC, Special Concern Schedule 1 of SARA and Vulnerable in Nunavut); Grizzly bear (Special Concern by COSEWIC, Special Concern Schedule 1 of SARA and Vulnerable in Nunavut); Snow Bunting (Vulnerable in Nunavut); Golden eagle (Vulnerable in Nunavut). 	<ul style="list-style-type: none"> Results of monitoring activities for these species are summarized in other sections. 	Caribou – 3.4 Grizzly bear – 3.6 Upland breeding birds – 3.9 Raptors – 3.11



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GLOSSARY, ACRONYMS, AND ABBREVIATIONS

Agnico Eagle	Agnico Eagle Mines Limited
AWR	All-Weather-Road
COSEWIC	Committee on the Status of Endangered Wildlife in Canada – A federal committee of experts that assesses and designates the level of threat to wildlife and vegetation species in Canada
CWS	Canadian Wildlife Service
ECCC	Environment and Climate Change Canada
ELC	Ecosystem Land Classification
Environment Personnel	On-site environment technicians, wildlife biologists and environment contractors
ERM	ERM Consultants Canada Ltd.
FEIS	Final Environmental Impact Statement
Framework Agreement, the	The Framework Agreement between the Kitikmeot Inuit Association and Agnico Eagle
GIS	Geographical Information System
GN	Government of Nunavut
GN DOE	Government of Nunavut Department of Environment
Hectare (ha)	10,000 m ² or 0.01 km ² or 2.47 acres
Home Range	The area used by a wildlife species for living and moving. Home ranges can represent annual ranges (e.g., for animals such as caribou and grizzly bear) or seasonal ranges (e.g., for birds).
IEAC	Inuit Environment Advisory Group
KIA	Kitikmeot Inuit Association
LSA	Local Study Area. The permitted Madrid-Boston footprint of the Project plus a buffer averaging 1,000 m radius around infrastructure and roads.
Migration	The regular seasonal or daily movement of animal populations to and from different areas, often considerable distances apart. Migration often occurs in corridors between preferred habitat types.
<i>Migratory Birds Convention Act (1994)</i>	A federal government commitment established in 1917 to protect most migrating birds found in Canada. The Act fulfilled the terms of the Migratory Birds Convention of 1916 between Canada and the US. The Canadian government has the authority to pass and enforce regulations to protect those species of migratory birds that are included in the Convention.
Miramar	Miramar Mining Corporation
MOU	Memorandum of Understanding
NIRB	Nunavut Impact Review Board
PDA	Project Development Area. The permitted Madrid-Boston footprint of the Project plus a buffer averaging 250 m radius around infrastructure and 100 m radius around roads.
PRISM	Program for Regional and International Shorebird Monitoring, used to monitor Arctic shorebird populations
Program, the	The Wildlife Mitigation and Monitoring Program. Refers to the current WMMP, the monitoring that occurs, and the associated report for any given year.
Project, the	The Hope Bay Project, including the Doris North Project and the Phase 2 expansion of Madrid and Boston

Project Certificate, the	Phase 2 Hope Bay Belt Project Certificate Nunavut Impact Review Board No. 009, issued November 18, 2018.
Phase 2 Project, the	Phase 2 development of the Madrid and Boston deposits.
Raptor	Birds of prey including hawks, eagles, falcons, and owls. Common raven is considered a functional raptor based on similar nesting preferences to other true raptor species in the Arctic.
Report, the	The Wildlife Mitigation and Monitoring Plan Compliance Report
RSA	Regional Study Area. This is the largest study area around the Madrid-Boston permitted infrastructure. The wildlife RSA encompasses an area large enough to characterize potential effects to species which may come into contact with the Hope Bay Project or Project-related activities, approximately 30 km from Project infrastructure.
SARA	<i>Species at Risk Act</i> (2002) – A Canadian federal statute which is designed to meet one of Canada’s commitments under the International Convention on Biological Diversity. The goal of the Act is to protect endangered or threatened organisms and their habitats. It also manages species which are not yet threatened, but whose existence or habitat is in jeopardy.
Shorebird	Any bird that lives, breeds, or forages on or near the shores of coastal or inland waters; also known as waders of the order Charadriiformes, such as a sandpiper or a plover. It excludes gull species.
Standard Deviation (SD)	A statistical measure of the spread or variability of a set of data
Standard Error (SE)	A statistical measure of the spread or variability of a set of data
Study Area	The Wildlife Mitigation and Monitoring Program Study Area.
T	Time-triggered photos from wildlife cameras
TIA	Tailings Impoundment Area. A lake that has been dammed and is the location of the tailings deposition.
TLR	Tail Lake road. The access road to the TIA.
TMAC	TMAC Resources Inc.
Upland Breeding Bird	Passerines (with the exception of common raven, which is included as a functional raptor), shorebirds, and ptarmigan
UD	Utilization distribution
VECs	Valued Ecosystem Components
WMMP	Wildlife Mitigation and Monitoring Plan. The WMMP is the official document that outlines the program to be conducted to mitigate and monitor wildlife for the Doris Project.
Waterbird	Umbrella term used to encompass all birds that exclusively use water habitat for foraging, breeding, or staging during the year.
ZOI	Zone of Influence

1. INTRODUCTION

This document presents the results of wildlife monitoring activities for the Hope Bay Project (the Project) conducted by Agnico Eagle Mines Limited (Agnico Eagle) in 2023. The wildlife monitoring program for the Project is described in the Wildlife Mitigation and Monitoring Plan (Agnico Eagle Mines Limited 2023) which is discussed with the Inuit Environmental Advisory Committee (IEAC) and circulated to the Kitikmeot Inuit Association (KIA) and various stakeholders for discussion before implementation. The WMMP identifies the activities to be undertaken in the WMMP Compliance Program (the Program). The results of monitoring activities are described in the WMMP Compliance Report (the Report), this document, which is required to be submitted annually.

The introduction of the Report provides a description of:

- The Project Certificate No. 003 and No. 009 requirements, the Framework Agreement, and the objectives for the WMMP (Agnico Eagle Mines Limited 2023) (Section 1.1);
- The 2023 Program components (Section 1.2); and
- The 2023 Program Study Area (Section 1.3).

The WMMP is designed to assess potential Project-related effects on Valued Ecosystem Components (VECs) as predicted in the Madrid-Boston Project Final Environmental Impact Statement (FEIS; TMAC Resources 2017) and to meet the commitments of Nunavut Impact Review Board (NIRB) Project Certificates No. 003, Amendment No. 2 (NIRB 2016) and No. 009 (NIRB 2018), and the Framework Agreement (2015) with the KIA.

The Report describes the results of the monitoring activities designed to test these predictions including:

- Habitat loss due to the Project (Section 2);
- VEC-specific monitoring (Section 3);
- Wildlife use of the Project site, including any interactions, incidents and mortalities (Section 3); and
- Traffic, helicopter and aircraft, and noise monitoring to confirm estimates used in the FEIS (Section 2).

The Report also describes monitoring conducted to guide adaptive management, such as:

- Incidental observations (within VEC subsections, Section 3), and
- Snowbank monitoring on roadways (Section 2).

1.1 PROJECT REQUIREMENTS AND MONITORING OBJECTIVES

1.1.1 PROJECT REQUIREMENTS

The wildlife mitigation and monitoring requirements for the Project were set out in the Doris Project Certificate No. 003 (NIRB 2006, 2013, 2016), the Madrid-Boston Project Certificate No. 009 (NIRB 2018) and the Framework Agreement (2015) and commitments made during the review of each Environmental Impact Statement.



The Madrid-Boston FEIS identified seven terrestrial wildlife VECs, including caribou (*Rangifer tarandus*), muskox (*Ovibos moschatus*), grizzly bear (*Ursus arctos*), wolverine (*Gulo gulo*), upland breeding birds, waterbirds, and raptors. The 2017 Phase 2 FEIS predicted five residual Project effects on wildlife VECs, none of which were predicted to be significant and all with negligible or low magnitude (Table 2):

- Habitat loss;
- Disturbance;
- Disruption of movement;
- Attraction to the Project; and
- Direct mortality.

TABLE 2 MAGNITUDE OF MADRID-BOSTON PROJECT 2017 FEIS RESIDUAL IMPACT PREDICTIONS

VEC	Habitat Loss	Disturbance	Disruption of Movement	Attraction	Direct Mortality
Caribou	Negligible	Low	Low	Not residual	Not residual
Muskox	Low	Low	Low	Not residual	Not residual
Grizzly Bear	Negligible	Not residual	Low	Low	Not residual
Wolverine	Negligible	Not residual	Low	Low	Not residual
Upland Breeding Birds	Low	Negligible	Not residual	Not residual	Low
Waterbirds	Low	Negligible	Not residual	Not residual	Low
Raptors	Low	Low	Not residual	Not residual	Low
Marine Mammals	Not residual	Not residual	Not residual	Not residual	Not residual
Rare Plants	Low	NA	NA	NA	NA

The Program also includes input from the NIRB, Environment and Climate Change Canada (ECCC), the Government of Nunavut Department of the Environment (GN DOE), the Canadian Wildlife Service (CWS), the KIA, and the IEAC. The annual reports are also provided to the NIRB who distributes them to stakeholders for review and comments. The WMMP is updated as needed during the life of the Project, in part based on these review comments.

1.1.2 INCLUSION OF INUIT QAUAJIMAJATUQANGIT

Agnico Eagle is committed to considering and incorporating Inuit Qauajimajatuqangit, or Traditional Knowledge into all stages of the WMMP, including identification of mitigation measures, monitoring study design, data collection, and follow-up programs to obtain feedback. Agnico Eagle includes Traditional Knowledge through several mechanisms:

- The IEAC was formed under the Hope Bay Project's Inuit Impact and Benefit Agreement (IIBA) with the KIA. The IEAC is comprised of Inuit who are Elders and/or active land users with extensive knowledge of wildlife and the environment, and with experience in the Hope Bay study area. Typically, two meetings are held annually with the IEAC to review existing and proposed mitigation and monitoring for wildlife, describe monitoring results to date, discuss adaptive management for wildlife and fish, and gain Inuit perspectives and local knowledge on the Project site.
- A series of workshops was held with Elders and harvesters familiar with the Project area prior to the Madrid-Boston FEIS application. Further detail on the caribou workshops is provided below.
- The Inuit Traditional Knowledge report (Banci and Spicker 2016) has also been reviewed and information regarding trends in VEC species or group populations have been included in Sections 3.4 to 3.11.
- The KIA presents perspectives of Inuit and scientific review when they comment on WMMP Plans and Reports and FEIS documents, and during their regular site visits. Examples include the construction and monitoring of road crossing structures on the Doris-Windy All-Weather-Road (AWR), using incinerators for food waste management to mitigate the attraction of bears, and assistance by land users in selecting the locations for site monitoring cameras. The WMMP and the Report are circulated to the KIA and IEAC for review and comment.

A site visit and workshop with the IEAC was held in March 2023. One day of meetings was held in Cambridge Bay to review and discuss Project updates and annual compliance results from 2022. A site visit was conducted the following day which focused on reviewing the methods for Height of Land (HOL) monitoring. An HOL survey was conducted by the IEAC, site environment team members, and a wildlife biologist. A second IEAC meeting was held in Cambridge Bay in August 2023. The wildlife portion of the program focused on follow-up discussion from action items that came out of the March 2023 meeting, and included a caribou ID workshop which aimed at identifying Dolphin Union and Beverly-Ahiak caribou based on remote camera photos at Hope Bay site. The IEAC noted interest in determining whether Dolphin-Union caribou are remaining on the main land during summer months, rather than return to Victoria Island for calving. The IEAC requested that herd identification be included in camera data reporting. The caribou ID workshop presented many photos of caribou from the remote camera program, and the IEAC worked to help develop an ID guide that could be used to categorize future caribou data by herd ID (see Section 3.4 for details and results).

Three workshops were held with Elders and harvesters in September 2016, and April and August 2017 in Cambridge Bay. Elders and harvesters visited the Doris site and reviewed the mitigations used at Doris for caribou. Participants were able to see the application of many of the caribou protection measures during the site visit to Doris. For example, workshop participants viewed markers at 250 m from the airstrip and at 2.8 km from a quarry. Caribou cannot be present within these distances for aircraft to land or take-off and blasting to occur. Participants also stopped repeatedly along the Doris to Madrid Windy Lake Road to determine how far away a person can hear the Project.



Workshop participants agreed with established protection measures and suggested additional protection measures to aid in the protection of caribou during the construction and operation of the Project. For example, participants reiterated that workers should stay in their vehicles when wildlife are observed, as getting out of the vehicle will cause animals to feel as though they are being pursued. Participants also noted that caribou are only disturbed by noise if they can see the source of the noise. Additionally, workshop participants indicated that caribou are more likely to be disturbed by a sudden, loud, and irregular noise as opposed to a constant regular noise that is not in view. The August 2017 workshop was brought to a close with a facilitated activity through which participants decided whether they were able to support and confirm the caribou protection measures proposed for the Phase 2 Project. The group reached consensus on the workshop conclusions, with participants agreeing that caribou protection measures would keep caribou safe.

1.1.3 PROGRAM AUDIT PROCESS

Project Certificate No. 009 Term and Condition 19 requires an audit process for the WMMP to identify updates that may be required (NIRB 2018). Agnico Eagle fulfills this requirement through submission of annual reports and updated management to regulators and the IEAC, and through consultation and discussion at regular meetings with the IEAC and KIA. In 2023, Agnico Eagle held two in person IEAC meetings with relevant review as part of the audit process. The specific engagement for this audit process in 2023, the feedback provided, and updates to the WMMP are included in Table 3 below.

TABLE 3 WMMP PROGRAM AUDIT PROCESS RECORDS, 2023

Audit Process	Parties Included	Program Feedback	Program Updates
IEAC Meeting April 12 2023	IEAC, KIA, DFO	IEAC members had questions about caribou health at the Project	ERM to forward information of existing University of Alberta caribou health monitoring program to IEAC members. To be provided by April 30, 2023. (Completed)
	IEAC, KIA, DFO	IEAC members indicated concerns about noise disturbances at site in relation to temperature	ERM to review noise modelling at the airstrip and confirm whether different temperatures were considered. To be completed prior to next meeting. (Completed)
	IEAC, KIA, DFO	IEAC members indicated concern that Dolphin Union caribou are declining on the island	ERM and Agnico Eagle to host a caribou ID workshop with the IEAC to help determine whether reliable identification of Dolphin Union caribou is possible in photos. ID workshop hosted at next meeting. (Completed)

Audit Process	Parties Included	Program Feedback	Program Updates
IEAC Meeting August 9 2023	IEAC, KIA, DFO	IEAC members had questions about caribou health at the Project	ERM presented an overview of the Caribou Health Study led by the University of Calgary regarding observations from last IEAC meeting of an unhealthy caribou observed by a community member
		IEAC members indicated concerns about noise disturbances at site in relation to temperature	ERM presented findings of noise modelling procedures as a follow-up from the previous IEAC meeting where an inquiry by IEAC members was made about the noise study relevance in colder temperatures. ERM explained methodology of noise study and standardization of calculations which provide conservative estimates and account for many types of sound. ERM also provided summary of noise mitigations and recommendations.
		IEAC members indicated concern that Dolphin Union caribou are declining on the island	ERM led a caribou ID workshop aimed at seeking technical input from IEAC members to distinguish between Dolphin-Union (DU) and mainland (Beverly and Ahiak) caribou. ERM created caribou ID and included herd ID from photos in the 2023 WMMP Compliance Report (Section 3.4.3.2)
		IEAC indicated they would like to observe the dolphin Union collar data	DU collar data was not shared for several years but has resumed in 2023 and was included in the 2023 WMMP Compliance Report (Section 3.4.3.1)

1.2 PROGRAM COMPONENTS

The 2023 WMMP Plan (Agnico Eagle Mines Limited 2023) identifies the monitoring and mitigation programs. The Project went into Care and Maintenance for Doris processing and underground production in February 2022; however exploration activities have continued in the Madrid area. Construction at Madrid North did not occur in 2023 after it was paused in March 2020. Associated mitigation and monitoring that occurred are outlined in Table 4.

TABLE 4 WILDLIFE MONITORING IN 2023

Monitoring Objective and Method	2023 - Doris Care and Maintenance
<i>Project Infrastructure Development and Activities</i>	
a. Habitat Loss - No data in 2023	Section 2.1
b. Traffic Monitoring	Section 2.2
c. Helicopter and Fixed Wing Aircraft Monitoring	Section 2.3
d. Snowbank Monitoring	Section 2.4
e. Noise Monitoring	Section 2.5

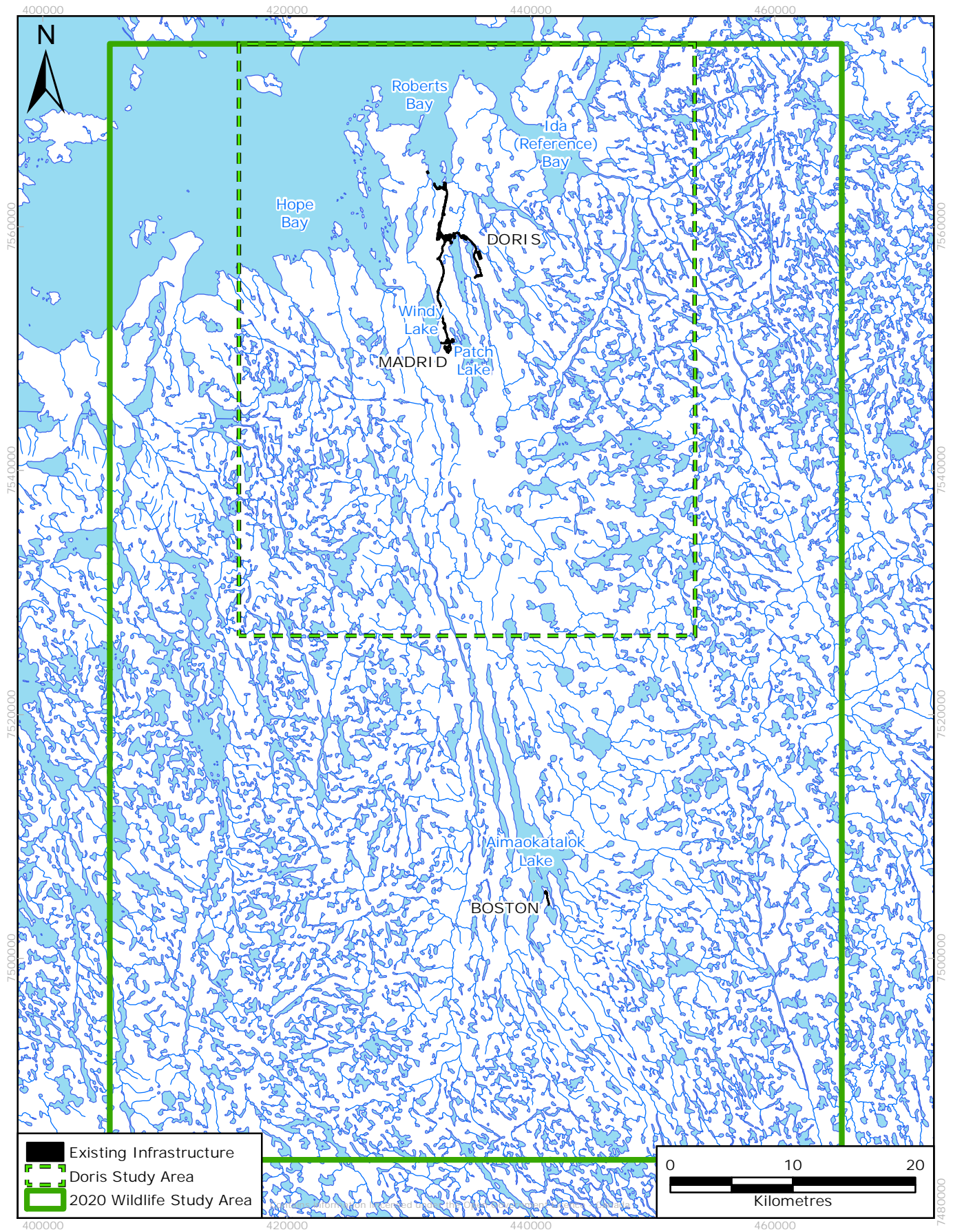


Monitoring Objective and Method	2023 - Doris Care and Maintenance
<i>VEC and Other Species Monitoring and Mitigation</i>	
a. Monitoring Methods and Results Common Across VECs	Section 3.2 and 3.3
b. Caribou	Section 3.4
<i>VEC and Other Species Monitoring and Mitigation (cont'd)</i>	
c. Muskox	Section 3.5
d. Grizzly Bear	Section 3.6
e. Wolverine	Section 3.7
f. Nest Predators	Section 3.8
g. Upland Breeding Birds	Section 3.9
h. Waterbirds	Section 3.10
i. Raptors	Section 3.11
j. Marine Mammals	Section 3.12
k. Plants	Section 3.13

1.3 PROGRAM STUDY AREA

The 2023 Wildlife Study Area (the Study Area) used a similar area as the Madrid-Boston Project Regional Study Area (RSA; Figure 1). The Doris Study Area used in previous years is also included on Figure 1 for comparative purposes. The camera program occurs within focal areas of the Study Area, as described in Section 3.2.1.

FIGURE 1 2023 WILDLIFE STUDY AREA



2. HABITAT LOSS AND SITE ACTIVITY MONITORING

2.1 HABITAT LOSS

Direct loss of wildlife habitat may occur through site clearing, infrastructure construction, and facility expansion. The amount of direct habitat loss due to the development and production phases of the Project has been monitored annually since 2006.

There were no changes to the Project footprint in 2023; therefore, habitat loss was not calculated for this report. Detailed results are available in the 2022 WMMP Report (ERM 2023a) for previous calculations. A summary of the monitoring requirements and discussion of the program to date is included here for the sake of completeness.

2.1.1 FEIS PREDICTIONS

In the Madrid-Boston FEIS (TMAC Resources 2017), wildlife habitat was predicted to be lost within a Project Development Area (PDA), which extended 500-1,500 m surrounding planned infrastructure. This larger PDA allowed for future development and operational flexibility. Infrastructure construction was predicted to result in the reduction of existing wildlife habitat. Habitat loss was predicted to not be a significant residual effect and the magnitude was classified as negligible for caribou, grizzly bear, and wolverine and low for muskox, upland breeding birds, waterbirds, and raptors. The geographic extent of habitat loss was the PDA for all wildlife VECs.

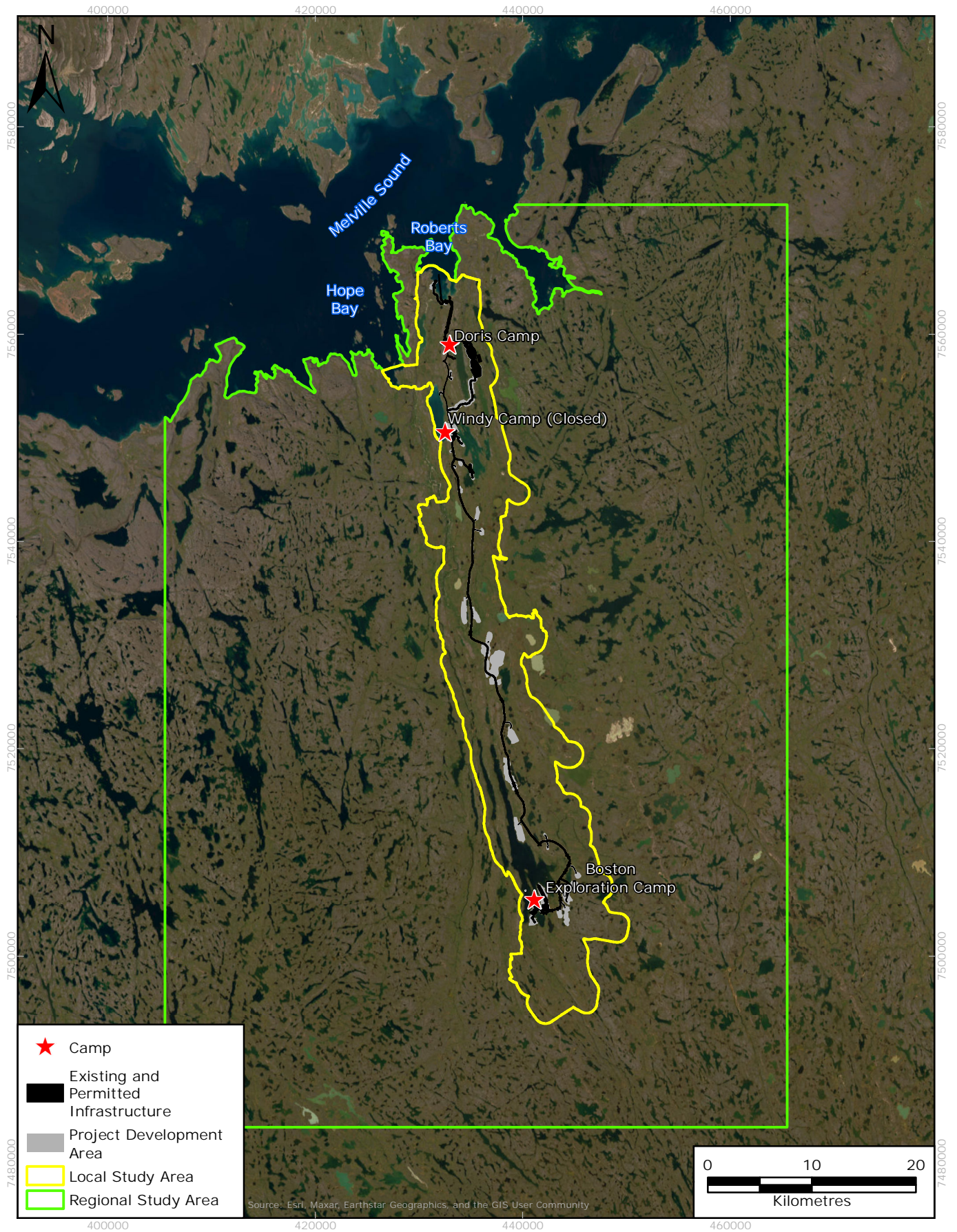
Habitat loss for rare plants was not assessed directly in the Madrid-Boston FEIS (TMAC Resources Inc. 2017) but instead was evaluated by determining the loss of special landscape features. Special landscape features include riparian ecosystems, rare or sensitive wetlands, ecosystems that can contain eskers, cliffs, bedrock lichen and outcrop ecosystems, and beaches and marine intertidal areas. Loss of special landscape features was predicated to be an effect with low magnitude that is not significant and at the geographic scale of the PDA.

2.1.2 METHODS

Habitat loss is evaluated as the direct loss of vegetation communities due to the Project footprint. Habitat loss is evaluated annually and is compared to the amount of habitat available within the relevant study area using Ecological Land Classification (ELC) for the Slave Geological Province and Terrestrial Ecosystem Mapping (TEM) ecosystem units (Figure 2).

To evaluate the loss of suitable habitat for VEC species or groups, the loss is expressed as a proportion of available suitable habitat within the relevant study area as determined in the FEIS. Any loss of special landscape features designated as potential rare plant habitat (i.e., riparian areas, rare wetlands, eskers, cliffs, or marine beaches) is reported directly as number of hectares lost. Further details on methodology for this monitoring program, including how suitable habitat for each VEC species or group is identified, can be found in Appendix A.

FIGURE 2 WILDLIFE REGIONAL AND LOCAL STUDY AREAS FOR THE PHASE 2 PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT



2.1.3 DISCUSSION

There were no changes to the Project footprint in 2023 (Figure 3). Collectively, the Project footprint covers 141.15 ha to date, which is 3% of the area predicted to be lost in the Madrid-Boston FEIS (4,177 ha). Current levels of disturbed suitable habitat for mammalian VECs are < 0.1% of the suitable habitat within the RSA, and for bird VECs, are 0.33% or less of the Local Study Area (LSA). These percentages are considered minimal, and well below critical threshold levels.

The magnitude of predicted habitat loss was classified as negligible for caribou, grizzly bear, and wolverine and low for muskox, upland breeding birds, waterbirds, and raptors (TMAC Resources 2017). The predictions of the Madrid-Boston FEIS on the VECs remain valid with respect to the constructed Project footprint.

2.2 TRAFFIC MONITORING

Road traffic is monitored as part of the Madrid-Boston FEIS. Traffic was evaluated in the FEIS for its potential to pose a hazard to wildlife crossing roads or due to noise. Mitigation includes: conservative speed limits, road signage, and employee training for wildlife avoidance. The WMMP also includes a Road Management Plan, which describes road safety, design, and monitoring practices (Agnico Eagle Mines Limited 2023).

2.2.1 FEIS PREDICTIONS

Peak vehicle traffic between Project areas (Roberts Bay, Doris, Madrid, Windy Lake, and Boston in future years) was predicted in the FEIS and is summarized in Table 5. Estimates of Peak Years were based on planned Project development starting in 2019. However, Madrid and Boston development has been paused, delaying the date estimates presented in the FEIS. This means traffic is currently at a rate lower than what was predicted in the FEIS for the first 5 years of development.

Traffic levels are reported in accordance with Project Certificate No. 009 commitment 20 and Final Hearing Commitment 52 (NIRB 2018).

TABLE 5 PREDICTED MAXIMUM PROJECT VEHICLE TRAFFIC IN YEARS 1 TO 5

Transport Areas ¹	Peak Years ²	No. of Daily Return Trips	Transport Categories	Vehicle Type
Roberts Bay to Doris/Madrid North	Year 1 to Year 13 (2019 to 2030)	10	Fuel, supplies, service vehicles	60 m ³ tanker, Flatbed trucks, Misc. vehicles
Doris to Madrid North	Year 1 to Year 13 (2019 to 2030)	51	Supplies, explosives, employees, service vehicles	Flatbed trucks, 40 person bus, Misc. vehicles
Windy Lake to Doris	Year 1 to Year 13 (2019 to 2030)	8	Transport of water	20 m ³ tanker

Transport Areas ¹	Peak Years ²	No. of Daily Return Trips	Transport Categories	Vehicle Type
Roberts Bay to Boston ³	Year 4 to Year 12 (2022 to 2023)	2	Fuel, supplies	60 m ³ tanker, Flatbed trucks
Boston to Doris ³	Year 4 to Year 13 (2022 to 2024)	33	Hauling, fuel, supplies, service vehicles	55 t. haul truck, 60 m ³ tanker, Flatbed trucks, Misc. vehicles

¹ Traffic volume estimates relevant to Year 1 through 5 provided. Multiply return trips by 2 for number of transits. Volume taken from the Madrid-Boston FEIS (Vol. 3, Section 4.5, Table 4.5-1; TMAC Resources 2017).

² Peak Years and Dates are from the Madrid-Boston FEIS and do not represent current Project progress.

³ Indicates portions of road which have not been constructed as of the current reporting year.

2.2.2 METHODS

In 2023 traffic data was summarized for daily average traffic volumes from two wildlife cameras stationed along transit routes. For each month, one week of motion-triggered photos were summarized by total daily traffic volume at camera 18 (route from Roberts Bay to Doris) and 35 (Doris to Madrid North; see Section 3.2 for camera placement information and methods). Data are not available after September due to the timing of camera checks. The traffic logs from 2023 were summarized for the maximum, minimum, and average monthly traffic levels between each transport area: Roberts Bay to Doris/Madrid North and Doris to Madrid North.

The site is currently in care and maintenance with exploration activities. The traffic observed on the cameras is not attributed or differentiated if it is for the care and maintenance or exploration. There were no notes provided in 2023 indicating what the vehicles or equipment observed were for which activity.

2.2.3 RESULTS

Based on vehicle traffic captured on wildlife cameras 18 (between Roberts Bay and Doris) and 35 (between Doris and Madrid North), overall traffic levels were well below predictions from the FEIS (Table 6). Traffic between Roberts Bay and Doris averaged 6.5 daily transits, compared to a predicted peak of 20 transits (Table 6). Traffic levels were highest in January at an average of 11 transits per day. Camera data were not available along the Roberts Bay to Doris/Madrid North route (camera 18) in February-April and September due to snow occlusion and camera card malfunctions.

Traffic between Doris and Madrid North was well below the predicted levels, with the overall average at 23.4 daily transits, compared to a predicted peak of 102 transits (Table 6). The highest monthly average was in March with 35 transits per day (Table 6). Camera data were not available along the Doris to Madrid route (camera 35) in September 2023 due to a camera card malfunction.

FIGURE 3 INFRASTRUCTURE DEVELOPMENT OF THE PHASE 2 PROJECT AS OF 2023

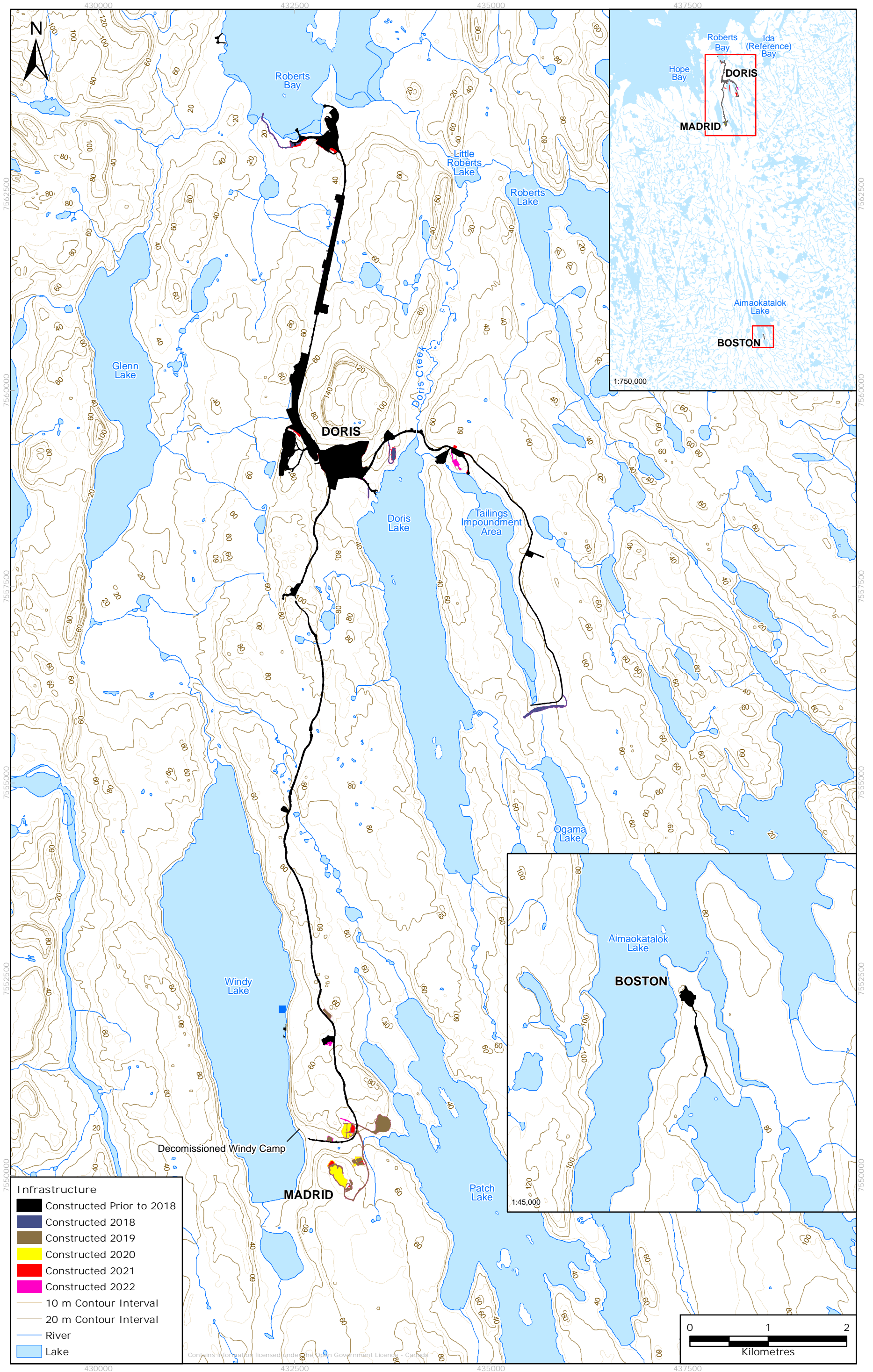


TABLE 6 DAILY VEHICLE TRAFFIC FROM WILDLIFE CAMERAS IN 2023

Transport Areas	Peak Daily Predicted Transits ¹	2023 Daily Avg	Daily Avg Jan-Mar 2023*	Daily Avg Apr-Jun 2023*	Daily Avg Jul-Sep 2023*
Roberts Bay to Doris/Madrid North	20	6.3	10.6	6.1	4.3
Doris to Madrid North	102	23.4	25.7	No Data	5.5

¹ Maximum predicted daily transits were calculated from 2 x maximum daily return trips.

* Vehicle traffic data unavailable for Roberts Bay to Doris in February-April and September, and for Doris to Madrid North in July

2.2.4 DISCUSSION

Traffic levels were compiled from the vehicles recorded on wildlife cameras 18 between Roberts Bay and Doris and 35 between Doris and Madrid North. The portion of the proposed AWR from Madrid North to Boston have not yet been constructed, therefore there is no traffic to Boston.

Transits between Roberts Bay and Doris moved supplies from the sealift to the mine site. Traffic recorded on wildlife camera 18 indicated average activity between Roberts Bay and Doris was well below (32%) predicated peak levels throughout the year. Traffic between Doris and Madrid North included daily vehicle traffic recorded on wildlife camera 35. Daily vehicle traffic between Doris and Madrid in 2023 averaged 23% of predicted levels.

Final Hearing Commitment 52 establishes the need to compare current traffic levels to predictions in the FEIS; *"if the annual or season traffic rates estimated from Project monitoring exceed the established thresholds by greater than 25% in two (2) consecutive monitoring periods, the Proponent shall conduct a revised assessment of the potential impacts of this excess traffic on wildlife"*. Term and Condition 20 indicates that wildlife protection measures will be enhanced if traffic levels exceed the FEIS predictions. Traffic levels have been consistently lower than predicted since reporting began.

The Road Management Plan was followed throughout 2023. No wildlife mortalities, incidents or interactions occurred along the road in 2023.

2.3 HELICOPTER AND FIXED-WING AIRCRAFT MONITORING

Helicopters and fixed-wing aircraft currently operate from Doris and Boston areas. Helicopters make trips between Doris and Boston areas as well as taking supplies (e.g., drilling gear) and crews to other areas. Fixed-wing aircraft service crew and supplies movement in and out of the regional area. Aircraft noise can pose a disturbance risk to wildlife (Manci et al. 1988), but the level of disturbance depends on both the frequency and altitude of aircraft (e.g., more noise during take-off and landing).

2.3.1 FEIS PREDICTIONS

Helicopter flight traffic levels were modelled in the Madrid-Boston FEIS according to predicted frequency of routes, noise levels based on altitude, and flight duration (TMAC Resources 2017).



Helicopter traffic is monitored and reported annually in accordance with Project Certificate No. 009 Commitment #GN-45 (NIRB 2018). Helicopter flight frequencies were predicted and modelled by area; travel between Doris and Boston helipads were predicted at eight daily one-way trips (four round-trips), as well as eight daily trips of general activity in the area of each Doris and Boston helipad (four round trips each). Since the site is in care and maintenance, predictions of helicopter activity are no longer aligned with the FEIS predictions which were made based on the year of Project development, assuming ongoing construction and operation of Madrid and Boston. However, helicopter activity at site is ongoing for general site maintenance and monitoring activities, as well as for exploration (outside of Project compliance). Exploration activities such as drill support and movement were excluded from the 2023 helicopter monitoring where possible.

The wildlife chapter of the FEIS (Volume 4, Chapter 9, Section 9.8.3.2) evaluated the potential effects of noise from fixed wing aircraft using a standard noise model estimating if a 737-200 and a Dash 8 took off and landed at both Doris and Boston airstrips in both directions for a total of four take-offs and four landings per day at each airstrip. The modeling concluded that noise levels due to aircraft would reach a level of annoyance and disruption of sleep for humans at 300-600 m from the runways (Health Canada 2016). The predicted Zone of Influence (ZOI) for other Project effects on caribou was 4 km, which is much wider than the estimated effects of aircraft noise.

2.3.2 METHODS

Helicopter flight logs were summarized by the origin and destination from Doris and Boston helipads. No helipad is currently in use at Windy Camp. All trips were summarized by the total flight distance and duration while the engine was running. Trips starting and ending in the same location are considered one round trip (two one-way trips) for activity in the area. Trips between a helipad and other destination are considered a one-way trip for activity in the area. Helicopter data was analyzed from machines associated with site maintenance and monitoring programs (i.e., not machines dedicated to exploration and drill support). However, some flights may have been made as part of exploration and drilling scopes.

Trip distances and duration were summarized monthly during months when helicopters were active on site, then averaged to daily values for the period.

Fixed-wing aircraft flights were summarized by the number of take-offs and landings each day. Values were summarized for 2023 and compared to the predicted levels in the Madrid-Boston FEIS.

2.3.3 RESULTS

2.3.3.1 HELICOPTER FLIGHTS

In 2023, data from 1,049 one-way helicopter trips were logged around the Hope Bay Project. Activity was logged on one helicopter from June 02 through September 26, 2023. Helicopter trips between Boston and Doris and around Boston occurred at an average of 29% and 15% of the daily predicted maximum frequency, respectively (Table 7). Trips around Doris occurred at the level predicted in the FEIS. The FEIS predictions no longer align with Project development progress given that the site was in care and maintenance in 2023 (Table 7).



TABLE 7 DAILY HELICOPTER TRAFFIC IN 2023

Transport Areas	Max Predicted One-way trips ¹	Average Daily Trips	Average Distance per Trip (km)	Average Duration per Trip (HH:MM)
Between Doris and Boston	8	2.3	75.57	00:40
Around Boston ²	8	1.2	76.77	00:46
Around Doris ²	8	8.4	49.40	00:44

¹ Maximum predicted daily transits based on the Madrid-Boston FEIS, see Section 2.3.1.

² The base scenario predicted 8 one-way trips each in the vicinity of Doris and Boston

2.3.3.2 FIXED-WING AIRCRAFT FLIGHTS

Fixed-wing aircraft flights were active throughout 2023, with an overall frequency of 0.47 one-way flights (i.e., take-off or landing) per day. Daily flights were overall around 12% of predicted levels in the FEIS (Table 8). Flight frequency was very consistent throughout the year, ranging from 0.42 – 0.52 one-way flights per day (Table 8).

TABLE 8 DAILY FIXED-WING AIRCRAFT TRAFFIC IN 2023

Airstrip	Predicted One-way Trips ¹	Average Daily Trips	Average Daily Trips Jan-Mar	Average Daily Trips Apr-Jun	Average Daily Trips Jul-Sept	Average Daily Trips Oct-Dec
Doris	4	0.47	0.52	0.45	0.49	0.42
Boston	4	0	0	0	0	0

¹Maximum predicted daily take-offs and landings, based on the Madrid-Boston FEIS. See Section 2.3.1.

2.3.4 DISCUSSION

Helicopter and fixed-wing aircraft traffic levels were monitored in 2023 to confirm that flight activity around the Project was within predicted levels. Fixed-wing flights occurred year-round into the Doris airstrip, while helicopter activity occurred only in June through September in both the Doris and Boston areas. Aircraft activity levels were lower in 2023 than predicted in the Madrid-Boston FEIS, except for helicopter trips around Doris which matched the predicted level of 8 one-way flights per day (TMAC Resources 2017). Fixed-wing aircraft flights occurred throughout the year, but daily activity was on average 0% - 12% of the level predicted in the FEIS. Since the Project is in care and maintenance, aircraft activity is lower than predicted in the FEIS, which was based on active construction and operations years. Helicopter activity around the Doris/Madrid area is difficult to distinguish between site maintenance and monitoring activities compared to exploration activities, which are not included in Project compliance. Therefore, reported helicopter activity levels are likely higher than the specific activity for care and maintenance.

Under all circumstances, helicopters avoid caribou by 300 m vertically and 600 m horizontally, following the WMMP Plan (Agnico Eagle 2023). Should caribou not be present, helicopters are allowed to fly lower than 300 m above ground. Fixed-wing aircraft have standard flight altitudes



and are only expected to pose a potential noise disturbance during take-off and landing. Therefore, this report does not examine average or daily flight elevations above ground.

2.4 SNOWBANK MONITORING

Road maintenance includes plowing and then blading snowbanks down to reduce snow drifting across the road. This procedure minimizes snowbank height along the roadway and allows accessible crossing for caribou and other wildlife along the entire length of the roadway.

Monitoring snowbank heights along Project roads is conducted to fulfill commitment #GN-49 in Project Certificate No. 009. The commitment states that the snowbank monitoring program “will continue until operational snow management is characterized”. In 2023, all four years of snowbank monitoring data (2020-2023) were compiled to assess whether snow management has been sufficiently characterized, and if so, to allow completion of the monitoring program.

2.4.1 FEIS PREDICTIONS

No specific predications were included in the FEIS for potential risks to wildlife related to snowbanks. The FEIS described plowing procedures which are designed to prevent snowbank accumulation which may pose a barrier to wildlife crossing the road.

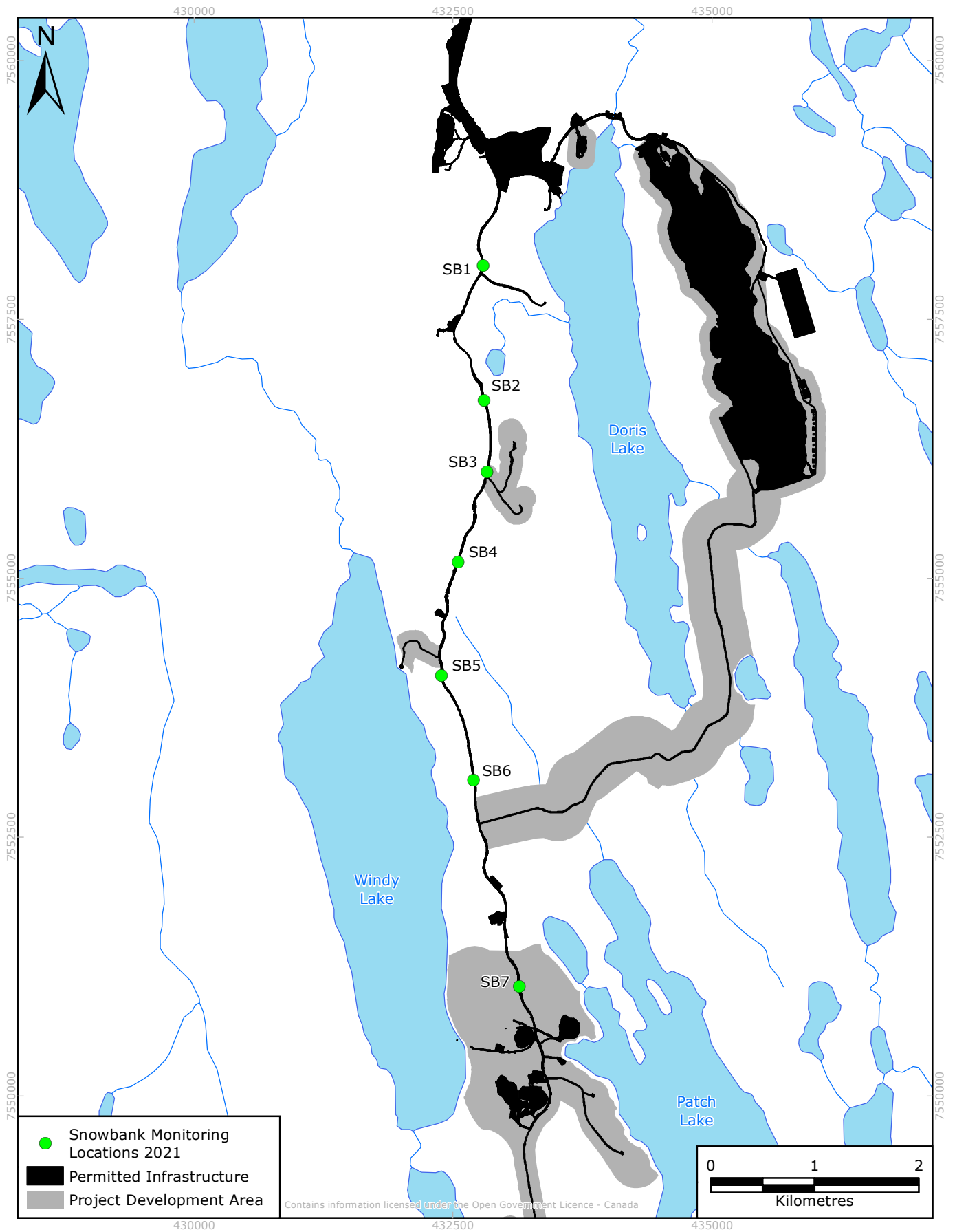
2.4.2 METHODS

Snowbank height was monitored monthly from January through early May and October through December 2023. Monitoring locations were consistent with those from previous years; locations were selected to produce a representative sample of snowbank conditions and took into account ease of access and crew safety (Figure 4).

All monitoring locations were surveyed within a single day. Crews drove to the site locations by road. Data collection included temperature and weather conditions, number of days since last snow, photo numbers, comments, and measurement data (Appendix B). At each site, crews measured the snowbanks in five places, spread 5 m apart, and on both sides of the road. Measurements were taken across a 20 m tag line laid parallel to the snowbank with one end at the monitoring station location. Crews measure the snowbank in 5 m intervals along the tag line, using a measuring stick or tape. Snowbank height was measured from the road surface to the top of the snowbank. Measurements were recorded as “0 cm” in locations with no snowbank. The same process was repeated on the opposite side of the road.

Therefore, each monitoring site had 10 measurements (five on each side of the road) for a given survey. The multiple measurements were averaged into a single measurement for data summary, and all measurements were plotted as boxplots for each month to show the variability of measurements.

FIGURE 4 SNOWBANK MONITORING LOCATIONS



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2.4.2.1 COMPILED SNOWBANK PROGRAM DATA

All four years (2020-2023) of snowbank monitoring data were compiled and assessed for broad-scale trends and consistency in snowbank management at Hope Bay site. The first monitoring period (January-March 2020) was excluded, because the monitoring locations changed after this period. The initial monitoring locations were chosen to occur at road signs (e.g., km markers), which accumulate snow drifts within 1-2 meters of the sign and artificially inflated the snowbank height measurements (see ERM 2021 for details). The compiled data represents all monitoring from October 2020 – December 2023.

2.4.3 RESULTS

2.4.3.1 2023 SNOWBANK MONITORING

Measured snowbank height averaged 12.6 cm across the survey period (Table 9; Figure 5; Photo 1). Several snowbank height measurements in 2023 included monitoring locations where roadside signage prevented blading and allowed snow to accumulate for small distances (see Photo 1). Therefore, some sites had sections with higher snowbank measurements, despite the surrounding areas maintaining very low banks; for example, the highest average snowbank height was 74.2 cm on February 28th at station SB3. Photo 1 shows the accumulation of snow near the roadside flag, and the accessible roadway immediately adjacent. This affect only occurred during the first monitoring period, from January – April, along the East side of the road.

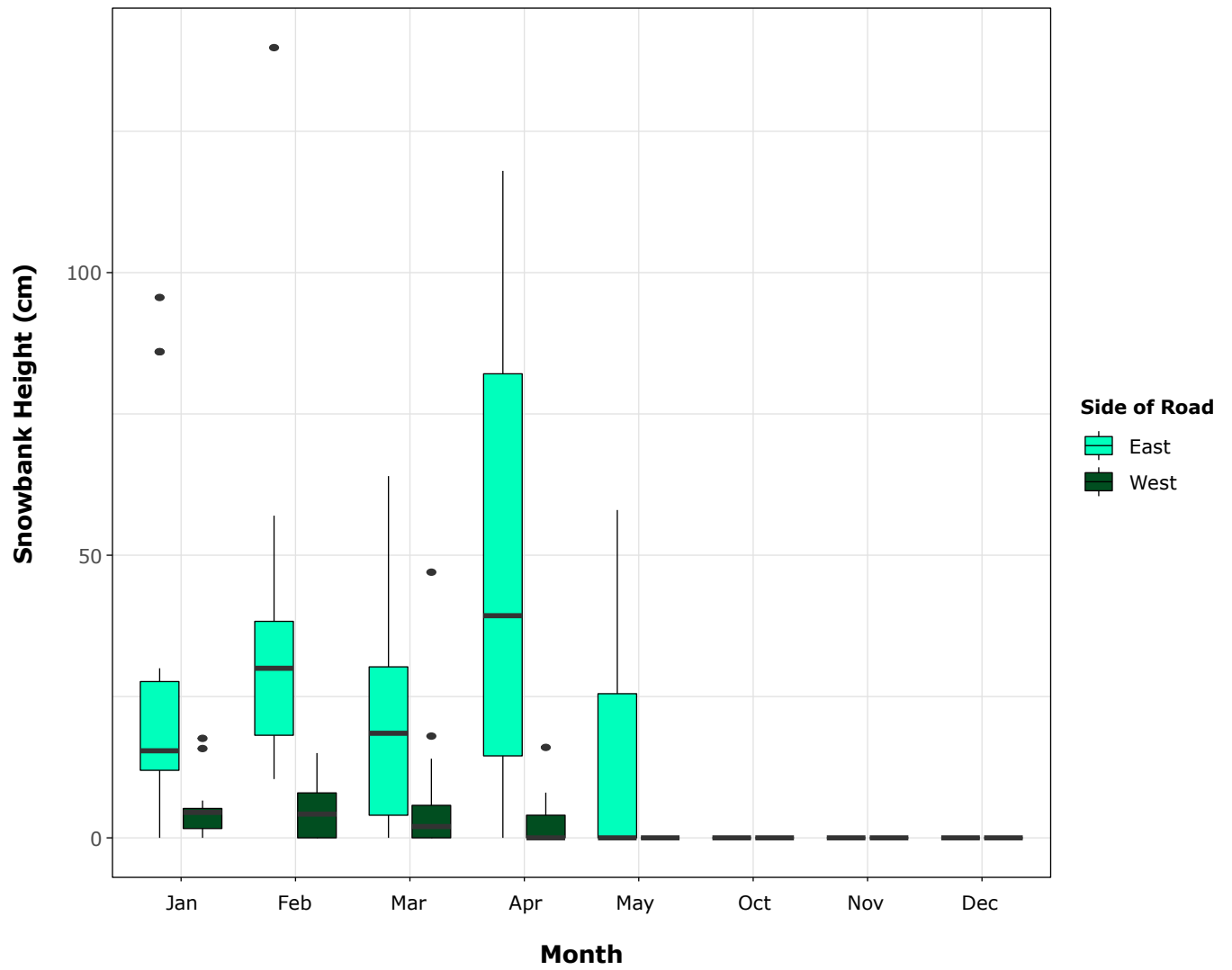
TABLE 9 2023 SNOWBANK HEIGHT SUMMARY

Location	Month								Total	
	Jan	Feb	Mar	Apr	May	Oct	Nov	Dec	Mean	St.Dev.
SB1	7.5	8.55	11	8.5	0	0	0	0	5.5	8.6
SB2	21.95	19.8	2.5	1	25.5	0	0	0	9.0	21.3
SB3	32.2	47.85	7.75	49	0	0	0	0	21.0	38.1
SB4	8.45	6.85	12.5	31.5	0	0	0	0	9.1	17.8
SB5	11.25	12.95	2.5	11.15	0	0	0	0	5.8	10.6
SB6	7.65	25.95	24.75	52.2	29	0	0	0	19.2	31.5
SB7	32.35	25.6	37.75	24	0	0	0	0	18.4	22.0
Mean	17.3	21.1	14.1	25.3	7.8	0	0	0	-	-
St. Dev	26.4	28.1	17.5	36.1	19.8	0	0	0	-	-

Notes:

All values are in cm. Values are averaged from multiple snowbank measurements on both sides of the road.

FIGURE 5 SNOWBANK HEIGHTS IN 2023



The measured variability in snowbank heights are indicated in Figure 5 by boxplots. The longer boxplots in January and in particular April indicate more variability among the measurements, with the bold horizontal line in the middle of each box indicating the median measurement for that month, and the outlier measurements from the distributions plotted as dots. Although some measurements in January, February, and April were recorded above 75 cm (Figure 5), site photo data were manually reviewed to confirm that higher snowbanks were isolated to small portions of the road, i.e., across a few meters (Photo 1).



Photo 1 Highest snowbanks measurements at Site SB3 indicating gentle slopes, February 28, 2023.

2.4.3.2 COMPILED SNOWBANK PROGRAM DATA

Snowbank heights were compiled across all years of monitoring from October 2020 – December 2023. The overall average snowbank height was 9.8 cm (Table 10). By year, snowbank height varied from 4.5 cm – 12.6 cm (Table 10). The average snowbank height for individual years were 4.5 cm (2020), 3.0 cm (2021), 12.4 cm (2022), and 12.6 cm (2023). The variability in snow height by month and year are indicated in Figure 6 boxplot; with the bold horizontal line in the middle of each box indicating the median measurement for that month, and the outlier measurements from the distributions plotted as dots. The range in average height of snowbanks from all years and months was 0.0 – 25.3 cm, indicating consistent management for wildlife passage across the AWR since 2020.

TABLE 10 SUMMARY OF SNOWBANK HEIGHT ACROSS MONITORING YEARS, 2020-2023

Year	Monitoring Period	Mean Height (cm)	St. Dev.
2020	Oct – Dec	4.5	6.9
2021	Jan - May	0.9	4.1
	Oct - Dec	5.8	11.2
	Compiled 2021	2.3	8.3

Year	Monitoring Period	Mean Height (cm)	St. Dev.
2022	Jan – Apr	14.1	19.7
	Oct - Dec	10.6	18.5
	Compiled 2022	12.4	19.2
2023	Jan – May	18.2	34.5
	Oct- Dec	0.0	0.0
	Compiled 2023	12.6	29.9
All Years Compiled		9.6	22.5

2.4.4 DISCUSSION

Snowbank heights along the Windy All Weather Road (AWR) were monitored monthly during winter months (January to May and October to December 2023). Monitoring locations were consistent with sites permanently established in October 2020.

Overall, snowbanks along the AWR were measured at an average of 12.6 cm height. Although some snowbank measurements exceeded 75 cm, photos indicate that banks were bladed back from the roadway and were at low inclines rather than steep banks (Photo 1). Additionally, areas with higher snowbanks were isolated to small portions of the road, i.e., across a few meters (Photo 1). These areas would therefore not pose a crossing barrier to caribou or other wildlife at the roadway.

The FEIS did not predict or establish measurement numbers for snowbank height. However, a caribou workshop for Elders and land users held as part of the FEIS assessment included road clearing and snowbank observations, after which the group concluded that snowbanks of “several cm” would not pose a barrier to caribou crossing roads (FEIS Vol. 4, Section 9.8.3.3; TMAC Resources 2017).

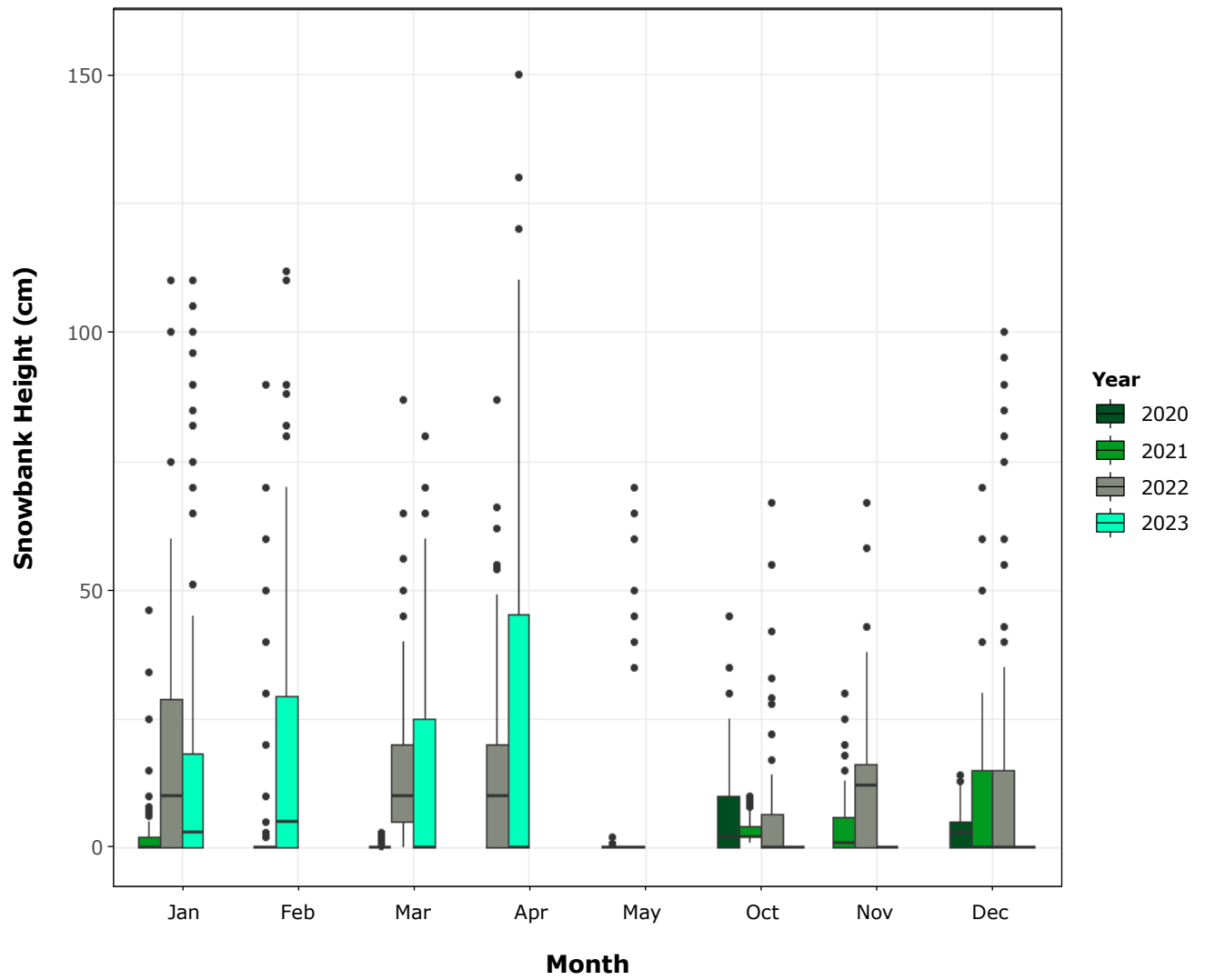
2.4.4.1 COMPILED SNOWBANK PROGRAM DATA

The snowbank height monitoring program was implemented as per commitment #GN-49 in Project Certificate No. 009. The commitment states that the snowbank monitoring program “will continue until operational snow management is characterized”.

Snowbank heights were summarized across years for the duration of standardized snowbank monitoring efforts (October 2020 through December 2023; Figure 6; Table 10). The average snowbank height across all years and months was 9.8 cm, and the range in average height was 0.0 – 18.2 cm across the monitoring periods (Oct – Dec and Jan – May) for all years of snowbank monitoring, 2020 through 2023. Often for a given monitoring event, snowbank heights are near 0 cm at all locations. The greatest variability in snowbank heights is due to roadside signage and poles, which create small areas of banks where the bladers cannot access. However, these higher banks are consistently recorded with photo data as only lasting a few meters along the road, and are often only present on one side of the road at a time. Taken as a whole, these results indicate that snowbank height has been consistently well managed for wildlife passage along the AWR across all years of monitoring.



FIGURE 6 SNOWBANK HEIGHT 2020-2023



Agnico Eagle proposes to discontinue the formal monthly snowbank height monitoring program in favour of passive incidental monitoring. Passive monitoring would be in the form of incidental reporting from site employees if snowbanks are seen higher than 20 cm and longer than 3 m. Incidental reporting would go to the Environment department for follow-up management. Incidental reports of snowbank heights and follow-up management actions will be recorded and reported in the annual WMMP compliance report. This update in the WMMP program will be included in an updated 2024 WMMP Plan, and discussed at the first IEAC meeting in 2024 prior to changes being implemented.

2.5 NOISE MONITORING

Noise monitoring during blasting may be conducted to refine the setback distances required for caribou presence near a blast, which was set at 2.8 km based on noise modelling conducted in the FEIS (NIRB 2018). The 2.8 km was deemed as extremely conservative as an estimate of the distance where a blast may produce 96 dB Lpeak noise with potential to produce a freeze or startle response in caribou. However, testing for the actual distance at which 96 dB Lpeak noise is produced will provide a more precise estimate of a setback distance from caribou during blasts. However, this monitoring is not required as a compliance activity.

A standard operating procedure (SOP) for noise measurement during quarry blasts has been in development and testing since 2018. The current draft of this SOP is provided in Appendix C. Noise monitoring testing was conducted on three occurrences of quarry blasting, October 5, 14 and 16, in 2023. Tests were conducted using a SoundAdvisor™ Model 831C.

On the dates of the blasting, the Lpeak that was recorded exceeded the predicted 96 dB. All three blasts occurred at 17:00 on each of the days. On October 5th, the Lpeak (111 dB) occurred at 16:58, it was noted on the field data sheet for that date the blast was not audible. On October 14th, the Lpeak (117 dB) occurred at 17:01. On October 16th, the Lpeak (120 dB) occurred at 17:00, and in the data sheet the blast noise was noted as audible. Based on the notes written about the conditions near the monitoring location and timings of the Lpeak recordings, the Lpeak recordings could have been from other noise sources noted at the time of the blasts (talking, footsteps, vehicle movement, doors closing, noise from the workshop, backup alarms, ravens and wind gusting). The location of the monitor on October 5th also had camp buildings between it and the blast location. Due to the data outputs from the noise monitoring device, it is not possible to tell the specific noise level at the time of each blast.

The 2023 results indicate that equipment is functional but additional work is required to obtain results sufficient for testing the sound level at the exact time of the blasts.

3. VEC AND OTHER SPECIES MONITORING AND MITIGATION

3.1 OBJECTIVES

The objective of this section is to test the FEIS predictions of Project effects on VECs (TMAC Resources 2017). The wildlife VECs identified in the FEIS included caribou, muskox, grizzly bear, wolverine, upland breeding birds, waterbirds, and raptors. Nest predators are not considered a VEC but are monitored in the Project area during the bird breeding season (May 15 – August 15) to detect possible attraction to the Project and indirect impact on upland breeding birds. Marine mammals and plants are also included in this section for conformity with Project Certificate No. 009 (NIRB 2018) commitments.

3.2 METHODS COMMON TO MULTIPLE VECs

3.2.1 WILDLIFE CAMERA MONITORING

A total of 60 Reconyx PC800 HyperFire Professional wildlife cameras are being used to monitor caribou, muskox, grizzly bear, wolverine, nest predators, and other wildlife in the Doris and Madrid areas. Cameras are currently placed in three primary zones, including a Treatment zone within 2 km of the Project, a ZOI zone from 2 to 10 km from the Project, and a Control zone beyond 10 km from the Project (Figure 7). There is also the Ladder area which is part of the ZOI zone and will be included in the Treatment zone once Madrid is developed. Some cameras also have site specific monitoring objectives and monitor specific Project facilities.

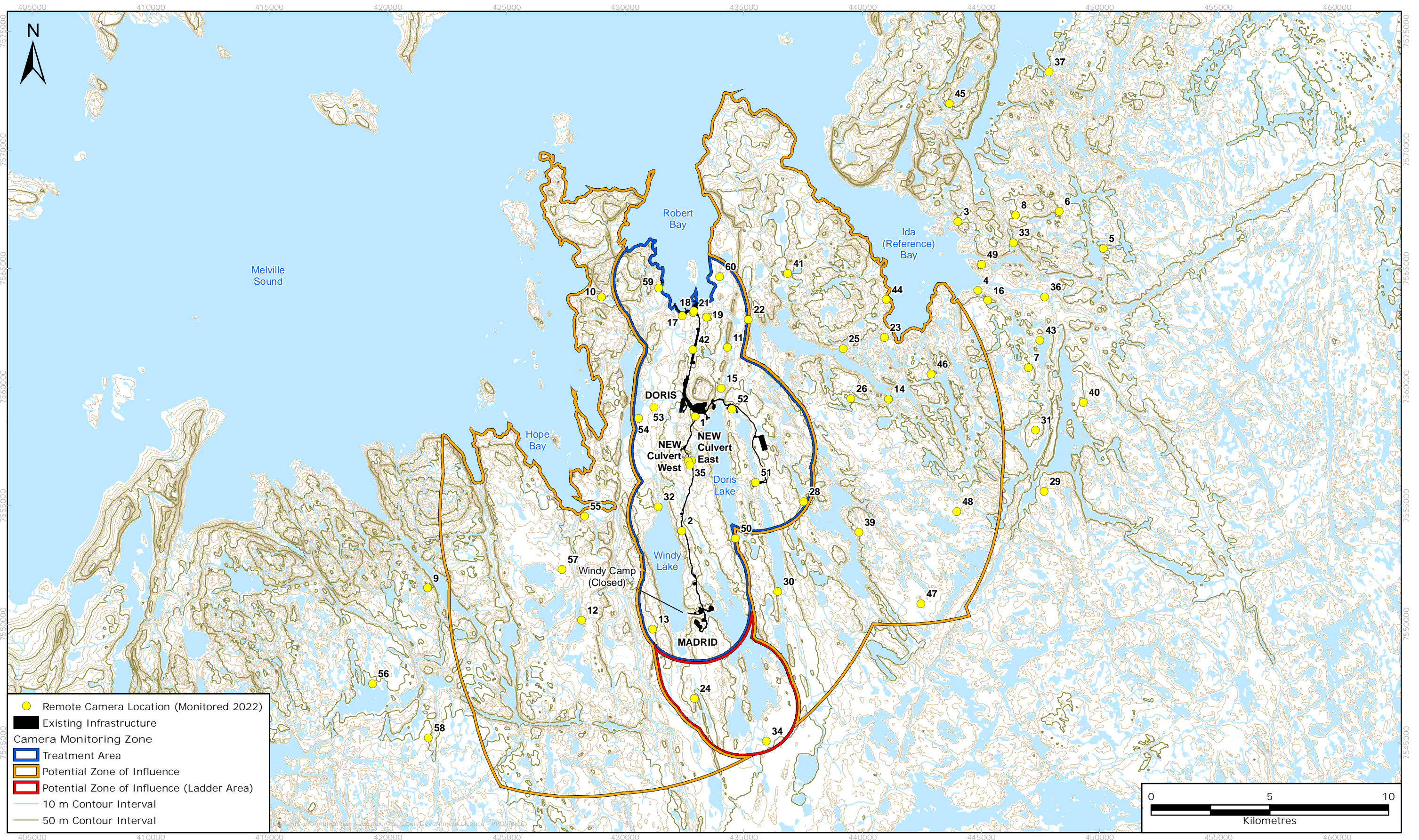
Camera monitoring has been conducted at the Project for over 12 years, with cameras first installed in September 2012. The camera program study design was revised in June 2016 in collaboration with representatives of the KIA and the GN at a workshop held in Vancouver, BC, following comments from these parties on the initial 2012 study design. The study design was updated to have three experimental areas; Treatment, ZOI, and Control zones. The camera study design was evaluated in 2016 for balance in terms of distances to water features for cameras in all zones (Treatment, ZOI, and Control) as well as spatial distance among cameras (ERM 2017b Appendix A2). Two additional wildlife cameras were deployed near a culvert on Windy Road to investigate potential caribou use (as an alternative road crossing) in August 2022.

Wildlife events (and the number of individuals recorded on events) were corrected for a monthly darkness factor supplied by the KIA (Table A-5; KIA 2017). This correction is used to make events and individuals recorded during the months with shorter day length more comparable to events recorded in the summer with long day length, as the reported detection radius of the Reconyx™ PC800 HyperFire camera is smaller in the dark relative to the daylight. This correction factor was used when qualitatively comparing between events and individuals recorded between cameras in the three monitoring zones.

Further details on methodology for this monitoring program, details on study design (including descriptions of cameras with site specific monitoring objectives) and data analyses, can be found in Appendix A. Further details on camera locations and effort, as well as detection event data, can be found in Appendices D to F.



FIGURE 7 WILDLIFE CAMERA LOCATIONS, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023



Twenty-six wildlife cameras were deployed in the Boston camera study area in September 2017. An additional three cameras were deployed in June of 2018. Five cameras were deployed in the Treatment zone, five in the ZOI, five in the Control zone, and 14 along the proposed AWR route (Figure 7). The data from these cameras are currently considered baseline data.

The Boston camera program (Figure 8) will be discontinued in spring 2024. There is currently no planned construction in the Boston area, so no monitoring will be required. The cameras will be redeployed prior to the onset of any construction in the Boston area. Summaries of the current Boston baseline data from September 2022 to September 2023 are provided in Section 3.3 below.

3.2.2 WILDLIFE INTERACTIONS, INCIDENTS, AND MORTALITIES

Wildlife interactions, incidents, and mortalities are recorded as part of the Wildlife Sightings/Reporting program by Agnico Eagle and are reported to the NIRB.

An **interaction** occurs when wildlife interacts with people or Project infrastructure (e.g., a bear being observed from a road); deterrents may be used, but direct harm, injury, damage, or wildlife mortality does not take place.

An **incident** is an interaction where there is active deterrent and direct harm, injury, damage, or wildlife mortality occurs.

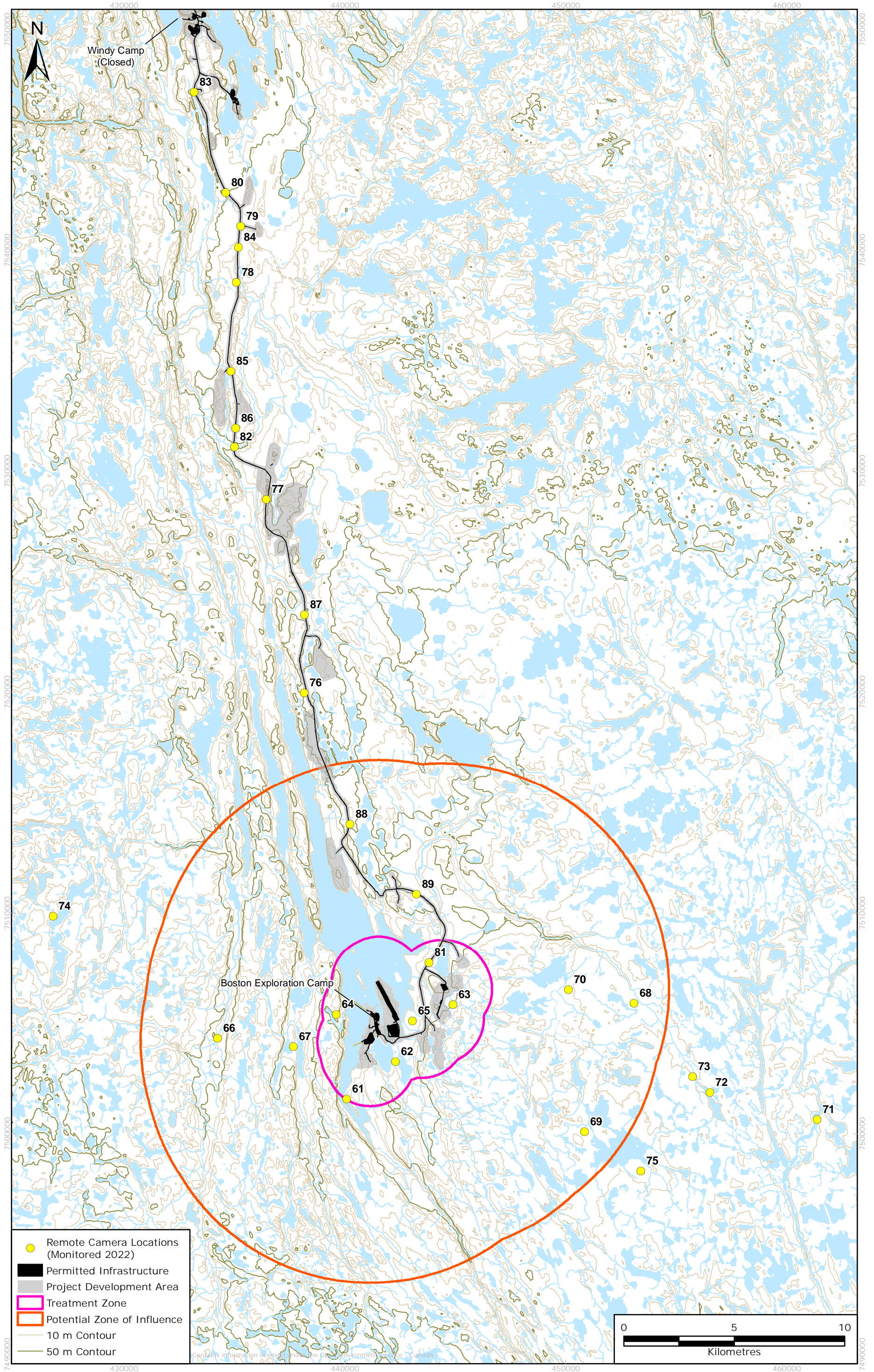
Various processes are in place and are undertaken by Agnico Eagle to mitigate for interactions, incidents, and mortalities. Information about interactions, incidents, and mortalities recorded in the 2023 calendar year are included with the relevant section for each VEC (Sections 3.4 to 3.11); data are summarized in Appendix G. Further details on methodology for this monitoring program, including lists of on-site mitigation and monitoring undertaken by Agnico Eagle, can be found in Appendix A.

3.2.3 INCIDENTAL WILDLIFE OBSERVATIONS

Incidental observations of wildlife are collected through various sources, which include the Agnico Eagle wildlife sightings log (as part of the Wildlife Sightings/Reporting process), and by environment personnel including wildlife biologists (Appendices H and I). Incidental observations collected by wildlife biologists have been collected since 1996 and the wildlife sightings log has been maintained since 2009 (Appendix J). Incidental observations recorded in the 2023 calendar year are summarized in the relevant VEC section.

Incidental wildlife observations are summarized and qualitative temporal trends are investigated. Agnico Eagle wildlife sightings log data are corrected for the average number of employees and contractors on site as a measure of standardization (Appendix K). However, incidental wildlife data cannot be used more quantitatively (e.g., to estimate population sizes or density). Further details on methodology for this monitoring program, including a full list of limitations on incidental data, can be found in Appendix A.

FIGURE 8 WILDLIFE CAMERA LOCATIONS, BOSTON PROJECT, SEPTEMBER 2018 TO SEPTEMBER 2023



3.2.4 SPECIES OF CONSERVATION CONCERN

Annual observations of species of conservation concern (i.e., species listed federally or territorially in Nunavut), are summarized in the relevant section of each VEC. Species of conservation concern are assessed through the use of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Species at Risk Act (SARA) and the report series *Wild Species: The General Status of Species in Canada* to identify the concern federally or territorially in Nunavut. The species of conservation concern at the Project are listed in Table 11. In 2023 these data were summarized from wildlife camera data, the incidental wildlife sightings log, and the interactions, incidents, and mortalities program as described in Sections 3.2.1 to 3.2.3. Records of species of conservation concern observed at the Project since 1996 are reported in Appendix J.

3.3 RESULTS COMMON TO MULTIPLE VECs

3.3.1 CAMERA EFFORT

Camera effort is determined to correct for periods when cameras are knocked down or obscured by snow/fog. Effort is summarized by the number of functional days for each camera in each month from September 2022 to September 2023.

The range and the average number of camera days (\pm standard deviation) for available cameras are presented in Table 12. The total number of camera days observed for individual cameras is provided in Appendix D, as well as summaries of the average camera days (\pm standard deviation) by individual camera.

Consistent with previous years of the camera program, effort was low during winter from December through February due to snow occluding the camera lenses, resulting in loss of effort for most days (Table 12). Effort was generally consistent across the three zones, with slightly higher effort in winter in the Treatment and ZOI zones. This typically occurs because some Treatment zone cameras are easily accessible from site facilities or roads, so the cameras can be cleared of snow more frequently.

Based on 2019 data, it was noted that an increasing number of cameras were knocked down each period, typically by grizzly bears. This issue was discussed with the IEAC in 2020 and 2021 along with plans to improve the camera tripod infrastructure to reduce the instances of grizzly bear damage. In 2023, four camera tripods were repaired and rebuilt as needed (based on visual assessment) during camera checks. Of the 60 Doris cameras, seven were found knocked down during camera checks in September 2023; this is a 12% knock-down rate, lower than the 30% knock-down rate noted in 2019. An additional two stands were found broken and subsequently repaired (Table 13). Camera tripod repairs will continue on an as-needed basis.

TABLE 11 SPECIES OF CONSERVATION CONCERN KNOWN TO OCCUR IN THE HOPE BAY STUDY AREA

Species Group	Common Name	Species Name	Federal (General Status)	Nunavut (General Status)	SARA	COSEWIC	Recorded in 2023?
Mammals	Caribou (Dolphin and Union)	<i>Rangifer tarandus</i>	Vulnerable (N3N4)	Vulnerable (S3S4)	Special Concern	Endangered	Y
	Caribou (Beverly/ Ahiak)	<i>Rangifer tarandus</i>	Vulnerable (N3N4)	Vulnerable (S3S4)	N/A	Threatened	Y
	Grizzly Bear	<i>Ursus arctos</i>	Vulnerable (N3)	Vulnerable (S3)	Special Concern	Special Concern	Y
	Wolverine	<i>Gulo gulo</i>	Vulnerable (N3N4)	Vulnerable (S3)	Special Concern	Special Concern	Y
Upland Birds	American Golden-plover	<i>Pluvialis dominica</i>	Vulnerable (N3N4B, N5M)	Vulnerable (S3S4B)	N/A	N/A	N
	Common Eider	<i>Somateria mollissima</i>	Secure (N5B, N5N)	Vulnerable (S3B, S3N)	N/A	N/A	N
	Harris's Sparrow	<i>Zonotrichia querula</i>	Apparently Secure (N4B, NUN, N5M)	Apparently Secure (S4B)	Special Concern	Special Concern	N
	Hoary Redpoll	<i>Acanthis hornemanni</i>	Apparently Secure (N4N5B, N5N)	Vulnerable (S3)	N/A	N/A	N
	King Eider	<i>Somateria spectabilis</i>	Apparently Secure (N4N5B, NUN, N5M)	Vulnerable (S3S4B,SUN)	N/A	N/A	N
	Red-necked Phalarope	<i>Phalaropus lobatus</i>	Apparently Secure (N4B, N3N4N)	Vulnerable (S3B)	Special Concern	Special Concern	N

Species Group	Common Name	Species Name	Federal (General Status)	Nunavut (General Status)	SARA	COSEWIC	Recorded in 2023?
Upland Birds (cont'd)	Semipalmated Sandpiper	<i>Calidris pusilla</i>	Apparently Secure (N3N5B, N4M)	Vulnerable (S3B)	N/A	N/A	N
	Snow Bunting	<i>Plectrophenax nivalis</i>	Secure (N5B, N5N)	Vulnerable (S3S4B)	N/A	N/A	Y
Raptors	Golden Eagle	<i>Aquila chrysaetos</i>	Apparently Secure (N4N5B, N4N5N)	Vulnerable (S3B)	N/A	Not at Risk	Y
	Short-eared Owl	<i>Asio flammeus</i>	Vulnerable (N3N4B, NUN, N4M)	Vulnerable (S3B)	Special Concern	Threatened	N
Marine Mammals	Beluga (Eastern High Arctic-Baffin)	<i>Delphinapterus leucas</i>	Secure (N5B, N4N)	Not Present	Under Consideration	Special Concern	N
	Bowhead Whale (Bering-Chukchi-Beaufort)	<i>Balaena mysticetus</i>	Vulnerable (N3B, N3N)	Not Present	Special Concern	Special Concern	N
	Bowhead Whale (Eastern Canada- West Greenland)	<i>Balaena mysticetus</i>	Vulnerable (N3B, N3N)	Not Present	Under Consideration	Special Concern	N
	Killer Whale	<i>Orcinus orca</i>	Vulnerable (N3B, N3N, NNRM)	Not Present	Under Consideration	Special Concern	N
	Narwhal	<i>Monodon monoceros</i>	Vulnerable (N3B)	Not Present	Under Consideration	Special Concern	N
	Ringed Seal	<i>Pusa hispida</i>	Apparently Secure (N4N5B, N5N)	Not Present	N/A	Special Concern	N
	Walrus (High Arctic)	<i>Odobenus rosmarus</i>	Vulnerable (N3)	Vulnerable (S3)	Under Consideration	Special Concern	N



TABLE 12 SUMMARY OF CAMERA EFFORT RECORDED AT TREATMENT, ZOI, AND CONTROL CAMERAS BY MONTH, SEPTEMBER 2022 TO SEPTEMBER 2023

Year	Month	Treatment					ZOI					Control				
		No. Cameras ¹		Camera Days			No. Cameras ¹		Camera Days			No. Cameras ¹		Camera Days		
		Active	Unobscured	Avg. ²	± SD ²	Range	Active	Unobscured	Avg. ²	± SD ²	Range	Active	Unobscured	Avg. ²	± SD ²	Range
2022	Sept	21	20	24.05	9.50	0-30	17	17	24.17	9.91	1-30	19	18	16.89	11.67	0-30
	Oct	21	18	23.29	10.90	0-31	17	17	26.51	5.36	16-31	19	14	13.68	12.32	0-31
	Nov	21	18	18.57	8.87	0-30	17	16	19.94	10.29	0-30	19	6	6.95	11.20	0-30
	Dec	21	10	2.67	3.90	0-13	17	7	2.71	5.86	0-23	18	3	1.55	5.44	0-23
2023	Jan	21	12	5.05	6.16	0-20	17	8	3.88	7.37	0-30	18	3	1.11	2.56	0-7
	Feb	21	10	4.57	7.57	0-27	17	8	6.06	9.07	0-28	18	3	2.39	5.75	0-20
	Mar	21	15	17.76	13.96	0-31	17	14	21.94	13.05	0-31	18	7	8.00	12.50	0-31
	Apr	21	13	17.86	14.54	0-30	17	15	24.47	10.36	0-30	18	12	14.72	12.44	0-30
	May	21	18	19.19	14.48	0-31	17	16	21.88	13.07	0-31	18	18	19.17	11.16	3-31
	Jun	21	18	20.00	11.41	0-30	17	16	21.88	9.09	0-30	18	18	24.11	6.08	13-30
	Jul	21	16	16.62	11.96	0-31	17	15	18.88	10.30	0-31	18	17	20.89	8.72	0-31
	Aug	21	19	18.19	11.48	0-31	17	13	17.65	11.87	0-31	18	17	19.11	11.21	0-31
	Sep	21	2	0.10	0.30	0-1	17	5	0.29	0.47	0-1	18	4	1.22	4.45	0-19

Notes:

¹ Represents the number of cameras within a month that were set out and recorded images (active) and were not knocked over or obscured by snow for the entire month.

² Averages and Standard Deviation (SD) are based on the number of cameras that are active in a given month.



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PROJECT NO: 0685812-03

DATE: 23 April 2024

VERSION: C.1

TABLE 13 CAMERA TRIPOD REPAIRS, DURING 2023 CAMERA CHECKS

Camera Number	Repair Notes
June 2023	
CM06	Found Broken and repaired
CM12	Partially broken but working
September 2023	
CM36	Found broken and repaired
CM41	Found broken and repaired

3.3.2 BASELINE RESULTS OF BOSTON CAMERA PROGRAM

Boston cameras were checked in September 2022 and June 2023. A total of 23 cameras were properly functioning after the fall 2022 check, and 16 cameras were functional at the June 2023 check (Table 14; Appendix L). Boston camera event and effort data are recorded in Appendix L.

Consistent with the Doris and Madrid camera program, camera effort was lowest in winter months, particularly from December 2022-March 2023 (Table 14). Across all VECs, caribou were recorded the most frequently in the Boston area (Appendix L). Caribou activity was highest in spring and summer, with the most active month being June and July 2023 during which 72 total caribou events were recorded (Appendix L). Grizzly bear were recorded in low numbers in late spring through early fall with 21 events in May 2023 through August 2023 (Table 14; Photo 2). Four new wolverine events were recorded, including one in September 2022, two in March 2023, and one in May 2023. Only four other wolverine events have been recorded since the beginning of the Boston baseline monitoring in 2018. Muskox were recorded for the third time on Boston cameras, with two events recorded in July 2023 (Table 14).

The baseline data collection will be discontinued in Spring 2024. The baseline program will resume once construction is planned in the Boston area; in-depth analyses of camera detections of each VEC in the Boston area will be conducted once data have been collected during both baseline and construction phases.

3.3.3 NON-VEC WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

Moose (*Alces alces*) were sighted in the Hope Bay area for the first time in 2021, with a single moose sighting recorded in 2021. Between September 2022 and September 2023, six moose were recorded in four separate events by Boston cameras. These events occurred in September 2022 and again June 2023 through October 2023 (Photo 2). An additional three moose events were captured on Doris cameras in this time period including two events with two adult moose each on June 25th, 2022 and one lone adult moose on July 11th, 2023.

In 2023, three incidental sightings of five moose were recorded in the wildlife sightings log in February, March and September, a single sighting in each month. Two of the sightings occurred in the Boston area and the other along the Windy Road.

TABLE 14 CAMERA EFFORT AND VEC SPECIES SUMMARIES FOR BOSTON CAMERAS SEPTEMBER 2022 – SEPTEMBER 2023

Year	Month	Camera Effort ¹	Caribou			Grizzly Bear			Wolverine			Muskox		
			Cameras with Events ²	No. Events	No. Images ²	Cameras with Events ²	No. Events	No. Images ²	Cameras with Events ²	No. Events	No. Images ²	Cameras with Events ²	No. Events	No. Images ²
2022	Sept	531 (21)	5	17	347	-	-	-	1	1	100	-	-	-
	Oct	572 (27)	2	3	21	-	-	-	-	-	-	-	-	-
	Nov	306 (16)	-	-	-	-	-	-	-	-	-	-	-	-
	Dec	192 (9)	-	-	-	-	-	-	-	-	-	-	-	-
2023	Jan	221 (11)	-	-	-	-	-	-	-	-	-	-	-	-
	Feb	153 (7)	-	-	-	-	-	-	-	-	-	-	-	-
	Mar	362 (17)	1	1	71	-	-	-	2	2	6	-	-	-
	Apr	549 (21)	-	-	-	-	-	-	-	-	-	-	-	-
	May	552 (19)	1	1	26	2	4	95	1	1	10	-	-	-
	Jun	587 (28)	13	17	344	2	2	43	-	-	-	-	-	-
	Jul	773 (27)	14	55	355	8	10	221	-	-	-	1	2	354
	Aug	659 (23)	5	8	206	5	5	49	-	-	-	-	-	-
	Sep	146 (18)	-	-	-	-	-	-	-	-	-	-	-	-
Total³		-	64	149	2522	24	30	568	5	14	137	3	356	96

Notes:

¹ Camera effort is presented as the total number of camera days by month; number of cameras with at least one camera day (i.e., unobscured) presented in parenthesis.

² Number of images represents the total number of images that are recorded from cameras that are upright and facing the detection area; images recorded when cameras are knocked over are not included.

³ Total number of cameras with events represents the number of unique cameras with events across the entire monitoring period. Total number of events is the cumulative total across the entire monitoring period.





Photo 2 Moose recorded on Boston camera 82. October 13, 2023.

3.4 CARIBOU

Two caribou herds use habitat near the Project area. The Project overlaps with the winter range of the Dolphin and Union herd and is near the summer, fall, and winter range of the Beverly/Ahiak herd.

The Dolphin and Union herd winters on the mainland near the coast, both east and west of Bathurst Inlet, and travels on the sea ice in spring to Victoria Island to calve and spend the summer and fall (Poole et al. 2010). They return across the sea ice following freeze-up in November. The Dolphin and Union herd are listed as Special Concern under Schedule 1 of the *Species at Risk Act* (SARA) and as Endangered by the Committee on the Status of Wildlife in Canada (COSEWIC; Government of Canada 2021b). Territorially, caribou are a vulnerable species (S3S4) suggesting they are at moderate risk of extirpation (CESCC 2022).

The Beverly/Ahiak herd calves to the east of the Project area in the Queen Maude Gulf Bird Sanctuary and the herd then spreads south and west from the Queen Maude Gulf for the late summer and fall (Gunn, Fournier, and Nishi 2000; Banci and Spicker 2016). The Beverly/Ahiak herd are barren ground caribou assessed as Threatened by COSEWIC (Government of Canada 2021b) but not yet listed under SARA. Caribou of the Beverly/Ahiak herd winter above the tree-line on the tundra and also below the tree-line in the Northwest Territories and northern Saskatchewan.

Currently there is some disagreement over whether Beverly/Ahiak herd should be referred to separately or together. The Government of Nunavut surveys the two herds separately and refers to them as two sub-populations in their population survey reports rather than a distinct herd or separate herds. This document refers to these caribou either separately (as sub-populations)

or together as the Beverly/Ahiak herd where relevant. Calving areas for these two sub-populations are calculated separately, in response to a request from the Government of Nunavut on a previous Report.

Traditional Knowledge and land users from the IEAC indicate that Dolphin and Union caribou now cross the sea-ice to the west of Cambridge Bay, near Wellington Bay. IEAC members also indicated that Dolphin and Union caribou are no longer wintering on the northern part of the Kent peninsula. Other than these shifts, which began before 2019, the Dolphin and Union caribou have maintained a consistent usage of the area surrounding the Hope Bay Project area for over 20 years, with some animals transiting the area during spring and fall migration and low numbers of caribou in the area during winter.

Agnico Eagle and the GN have signed a new Memorandum of Understanding (MOU) for collaborative monitoring for Dolphin and Union caribou as of March 2023, after the previous MOU with TMAC expired in 2019. Agnico Eagle has donated fuel for caribou work in 2020, directly donated to the muskox program in 2022, and provided in-kind support by shipping fuel and lumber to Hope Bay in 2023 to assist with the GN's DNA Hair Snagging barren Ground Grizzly Bear population survey.

3.4.1 FEIS PREDICTIONS

The Madrid-Boston FEIS predictions included not significant and low magnitude residual effects of disturbance and disruption of movement on caribou at a geographical extent of the RSA (TMAC Resources Inc. 2017).

3.4.2 METHODS

Monitoring for caribou is conducted using multiple approaches. The first approach is through analysis of collar data during specific seasonal periods for the two herds that use habitat near the Project. This approach is for the purpose of monitoring for shifts in the calving range for the Beverly/Ahiak herd, which may trigger additional mitigation measures for caribou should the calving grounds shift towards or overlap the Project. For Dolphin and Union caribou, winter range analyses are conducted to examine the amount of overlap between the Project and this seasonal range, following a request from the KIA to do so (KIA 2017). These collar data are analysed using kernel density analyses (ERM 2016b).

The second approach is using wildlife cameras (see general camera Methods in Section 3.2.1). Camera data are statistically analysed to investigate for potential ZOI-type effects on caribou.

Wildlife cameras are also used to better understand seasonal use of the Project area split by the Beverly/Ahiak and Dolphin and Union herds. Caribou camera detections were identified by herd for the first time in 2023, based on a request by the IEAC to understand potential changes in the presence of Dolphin Union caribou on the mainland year-round.

Height of Land (HOL) protocols were implemented for the first time in 2023 as a monitoring method for caribou. This monitoring protocol is triggered based on reported caribou activity on site. However, the monitoring was not triggered in 2023.

Lastly, the Wildlife Sightings/Reporting program documents caribou reported by personnel on site, including environmental technicians and wildlife biologists; these data are summarized and qualitatively assessed for trends (see Methods Sections 3.2.2, 3.2.3).

3.4.2.1 ANALYSIS OF CARIBOU COLLAR DATA

An analysis of the calving range of the Beverly and Ahiak sub-populations was performed using caribou collar data supplied by the Government of Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) for both the current year (2023) as well a compilation of historical years (2001 to 2022).

For the Dolphin and Union herd, an analysis of the winter range was performed using caribou collar data supplied by the Government of Nunavut (GN) Department of Environment (DOE) for the current year (December 8, 2022 to April 16, 2023) as well as a compilation of years (2001-2022). This analysis has resumed in 2023 after data were unavailable for the 2019-2022 reports. The data were compiled to provide a perspective on the overlap between the winter range and the Study Area in the most recent winter as well as the degree of overlap relative to the larger extent of the winter range by combining all available data. This analysis was guided by requests made by the KIA in 2017 (KIA 2017). Overlap in the winter grounds of the Dolphin and Union caribou herd with the Program Study Area/Project activities does not trigger any additional mitigation for caribou, as there are mitigation measures for caribou employed year-round (Agnico Eagle 2023).

The kernel density and utilization distribution (UD) methods assess caribou use of space through a bivariate probability function. This analysis generates UD surface for calving ranges for each sub-population. Kernel density estimates were created and the 50% UD, which represents the "core" range, as well as the 95% UD representing the overall range are presented. Further details on the methodology for this monitoring program can be found in Appendix A.

3.4.2.2 ANALYSIS OF WILDLIFE CAMERA DATA

An analysis was carried out to investigate differences between the number of caribou events at cameras located in the Treatment zone (< 2 km from existing infrastructure) and in the Control zone (> 10 km from existing infrastructure). There were a sufficient number of events per month to permit statistical analyses of the predicted number of events recorded rather than predicted occupancy (probability of at least one event per month). In the final model the number of events was log-transformed, and the model used a quasi-poisson distribution. A secondary analysis was completed to assess a potential ZOI should a significant difference in the number of events between Treatment zone and Control zone cameras be detected. The models accounted for spatiotemporal variation in the number of events by including smoothed terms for Northing and Easting as well as Month, and random variables for Camera ID and Year where these terms improved model fit to the data. In previous years, caribou modelling was conducted by camera occupancy (i.e., a binomial distribution) due to insufficient data for number of event models. However, with additional years of data and ongoing caribou occurrence across cameras, models have been updated to reflect the more robust abundance modelling.

Camera data were corrected for daily effort, where the camera was considered to have no effort during periods of more than 24 hours with snow obscuring the camera or if the camera was

knocked over. Camera effort in December and January was deemed to be too low across cameras for inclusion in the analysis, so these months were removed from the regression analyses in all years. Additionally, to account for variable effort per camera, data were removed for individual cameras during months with effort less than seven days. A sensitivity analysis conducted in 2017 did not indicate any difference when using lower effort cut points (i.e., effort ≥ 4 days or ≥ 1 day per month) because few caribou events were recorded on cameras when effort was less than seven days (ERM 2018b).

Further details on methodology for this monitoring program can be found in Appendix A and in Methods Section 3.2. Datasets of 2023 camera effort and detection events are presented in Appendices D to F. Compiled datasets of caribou detection events from June 2016 to September 2023 are presented in Appendix M.

Caribou Herd Identification

Caribou camera detections were classified by herd, which was determined based on the Project's Caribou ID Guide (Appendix AA) developed via a caribou ID workshop with the IEAC. Caribou from each herd in the Project area have distinct physical features and can be identified to herd level with clear photos of the whole animal. Identifications were made considering all consecutive images taken of each caribou event. Classification of caribou herd was conducted by ERM staff trained to identify Beverly/Ahiak and Dolphin and Union herd characteristics. Any caribou detections with uncertain herd characteristics will be provided to the IEAC for additional input.

3.4.2.3 HEIGHT OF LAND

HOL surveys were requested by the IEAC as a traditional Inuit way to identify caribou from a distance; surveyors stand at high points and search for caribou across the landscape. Surveys are triggered based on reported caribou sightings. If 25 or more individual caribou are observed within 5 km of Project infrastructure over a 24-hour time period, HOL surveys are completed for a one-week period (Appendix Z). Surveys are preferentially completed by an Inuit Monitor chosen by the Cambridge Bay Hunters and Trappers Organization. The monitoring SOP was developed during several workshops with the IEAC in 2021-2023, including determining the monitoring locations and conducting and onsite training in March 2023. The SOP was finalized in March 2023 and is provided in Appendix Z. However, caribou activity was never high enough to trigger monitoring in 2023.

3.4.3 RESULTS

3.4.3.1 CARIBOU COLLAR DATA

Calving Ground Locations

The results of the range analyses for the 2023 calving season show that the 50% UD of the Ahiak sub-population extends south of the long-term (2001 to 2022) 50% UD for the sub-population, with a region of overlap on the eastern side of the long-term 50% UD (Figure 9). The core calving range in 2023 occurs further south of the Queen Maud Gulf compared to the long-term range (Figure 9). The 95% UD for the Ahiak sub-population has contracted in 2023 but occurs primarily



within the boundaries of the long-term range from 2001 to 2022 (Figure 10). The 95% UD has expanded in recent years to overlap the long-term ranges of the Beverly herd. The long-term range of the Ahiaik sub-population also includes a portion northeast of the Queen Maud Gulf (Figure 10). Neither the 2023 core 50% nor the 95% UD for the Ahiaik sub-population overlap the Project Study Area.

For the Beverly sub-population, the 2023 calving season 50% UD expands further southeast than the long-term calving range (Figure 9). The 2023 50% UD shows extensive overlap between the Beverly and Ahiaik sub-populations (Figure 9). There is also a portion of the 2023 Beverly sub-population 50% UD that occurs to the west of the core range by roughly 120 km (Figure 9). The 2023 95% UD for the Beverly sub-population shows a broader south and eastern expansion outside of the long-term range, with extensive overlap in 2023 between the two sub-populations (Figure 10). Additionally, the long-term 95% Beverly UD shows some overlap with the Project Study Area, due to some westward presence of collared individuals in 2021 (Figure 10). The 2021 calving range was not consistent with previous years of analysis, however these changes do not appear to have carried into 2022 or 2023, given that no overlap with the Study Area is seen in either the 2022 or 2023 50% or 95% UDs (ERM. 2023a; Figures 9 and 10). Changes between years can represent relatively few females outside of the typical core calving range and does not necessarily indicate a permanent shift in the calving range.

Winter Range Locations

For the winter (December 8 to April 16) of 2022-2023 caribou collar data was available from 155 individuals belonging to the Dolphin Union herd. The long-term (2001-2022) 95% UD winter range of Dolphin and Union caribou is located across an area on both the east and west sides of Bathurst Inlet, with the winter range on the east side of Bathurst Inlet encompassing the Project site (Figure 11). In comparison, both the long-term and most recent 2022-2023 50% UDs are solely located on the westside of Bathurst Inlet (Figure 12). The 95% UD winter range based on 2001-2022 data included the entire Study Area while the 95% UD winter range for 2022-2023 did not overlap the Study Area and contracted to occur almost exclusively on the west side of Bathurst Inlet (Figure 12). An isolated area of 95% UD also occurred further north on Victoria Island in the 2023 winter season. The 50% UD core area for winter 2022-2023 primarily overlapped the 50% UD core area calculated from 2001-2022 data (Figure 11). The 95% UD range for winter 2022-2023 was mostly contained within the 95% UD range from 2001-2022 data but additionally expanded northwest of the main range on the Coronation Gulf (Figure 12).

The extent of the winter range for 2022-2023 is consistent with areas used in the long-term wintering range, as represented by the 50% UD (Figure 11). Prior Dolphin Union winter range analyses for 1999-2007 and 2015-2018 showed the wintering range occurring in a variety of locations on both sides of Bathurst Inlet (ERM 2019), however, the 50% UD for both long-term (2001-2022) and 2022-2023 wintering ranges are exclusively located on the westside of the Bathurst Inlet. This suggests that Dolphin Union herd has wintered further west in recent years (i.e., since the previous analysis, from 2019 – 2023) than previously documented (ERM 2019). The 95% UD across years encompass wider variation in the distribution of wintering range since 2001.



FIGURE 9 50% KERNAL DENSITY ESTIMATES OF CALVING HOME RANGE ON BEVERLY AND AHIK SUB-POPULATIONS COLLAR DATA, 2001-2022 AND 2023

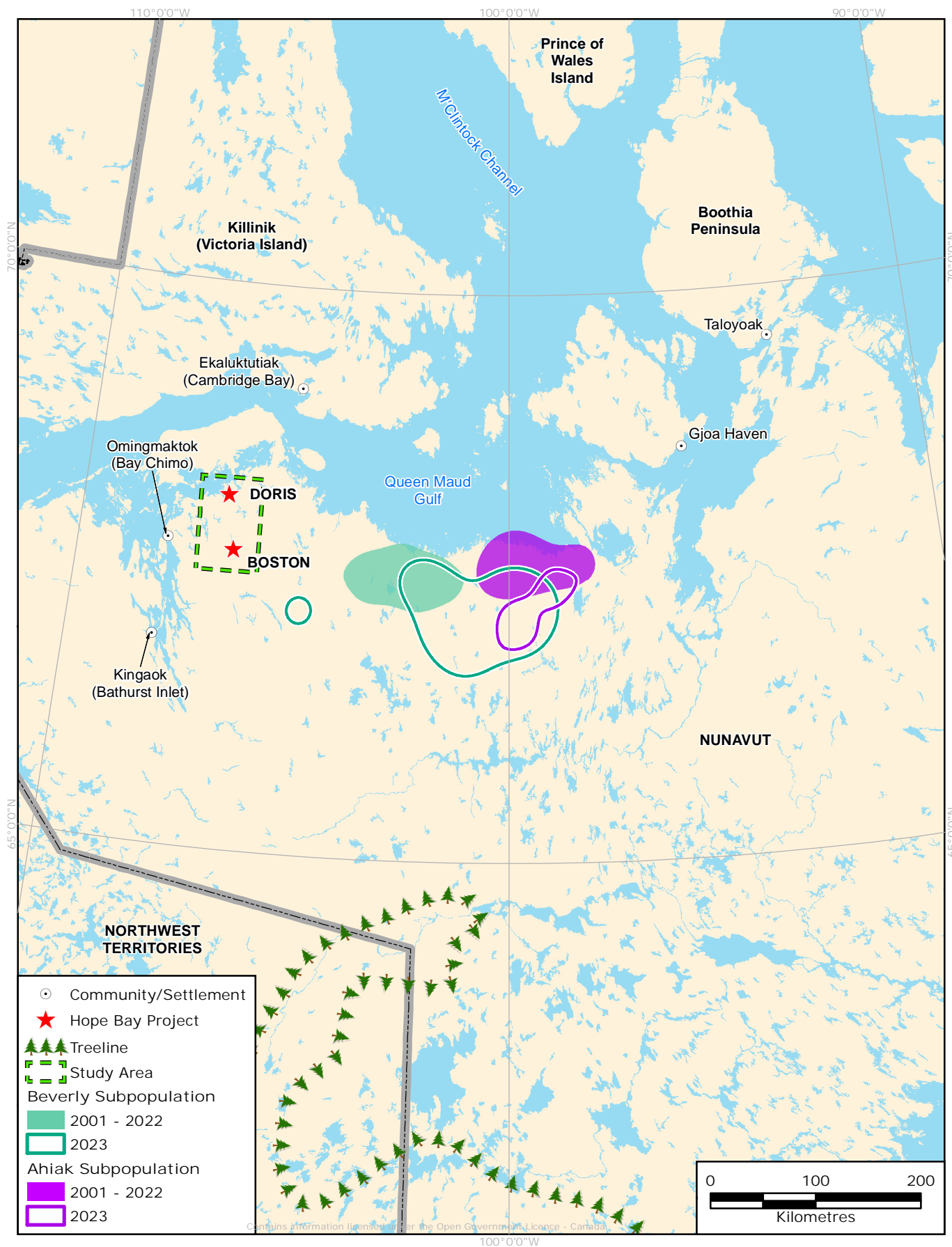


FIGURE 10 95% KERNEL DENSITY ESTIMATES OF CALVING HOME RANGE ON BEVERLY AND AHIK SUB-POPULATIONS COLLAR DATA, 2001-2021 AND 2023

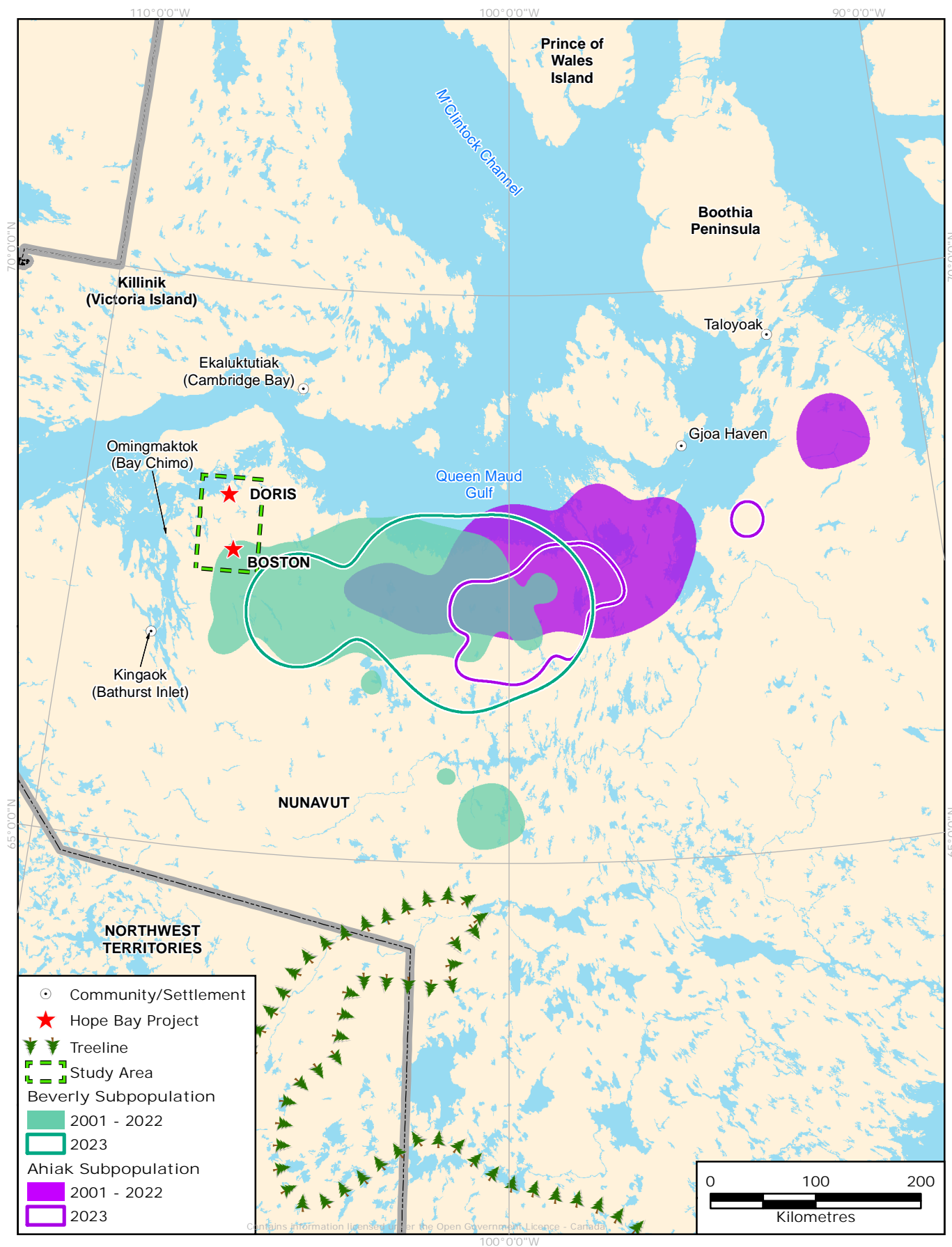


FIGURE 11 50% KERNEL DENSITY ESTIMATES OF CALVING HOME RANGE ON DOLPHIN-UNION SUB-POPULATIONS COLLAR DATA, 2001-2022 AND 2023

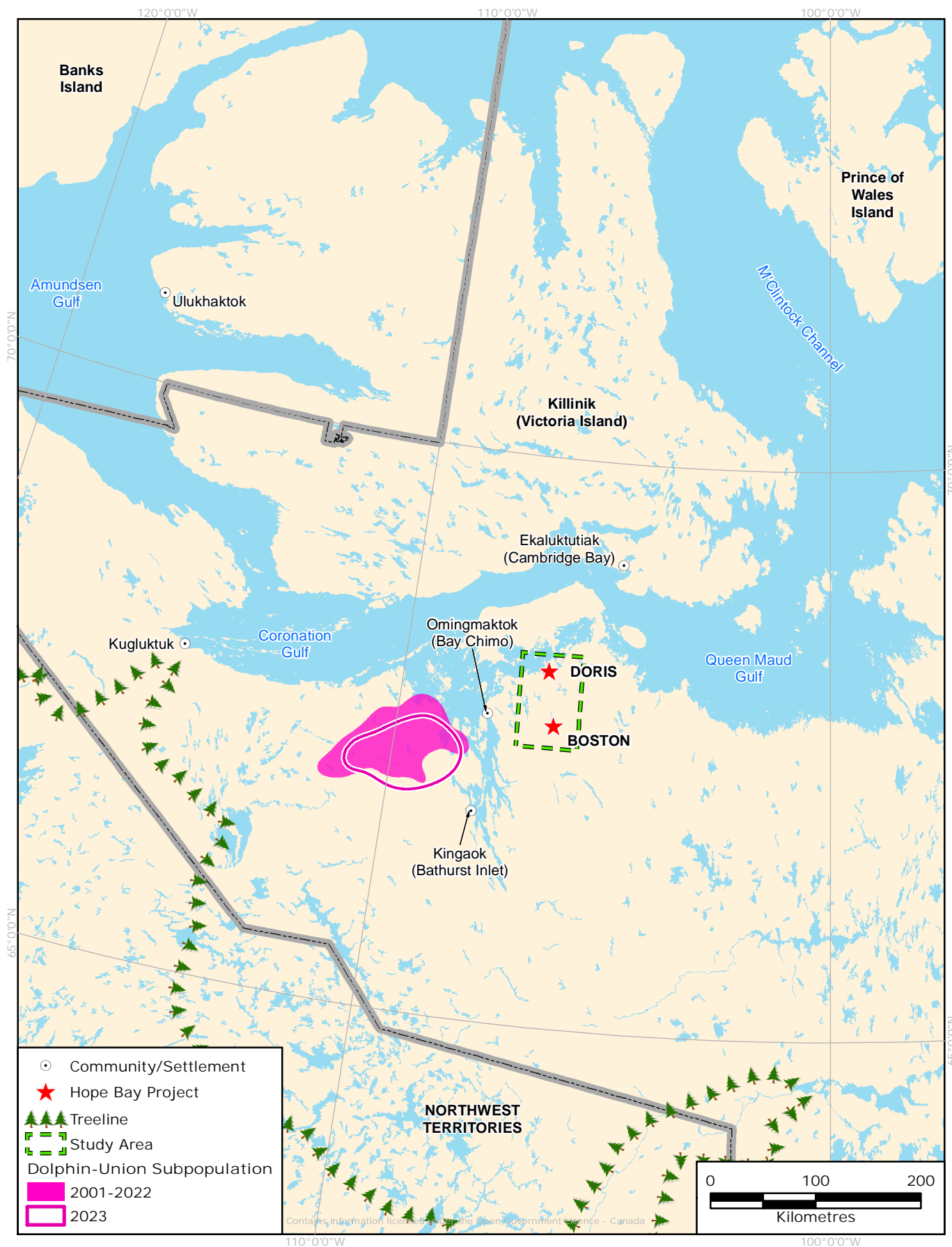
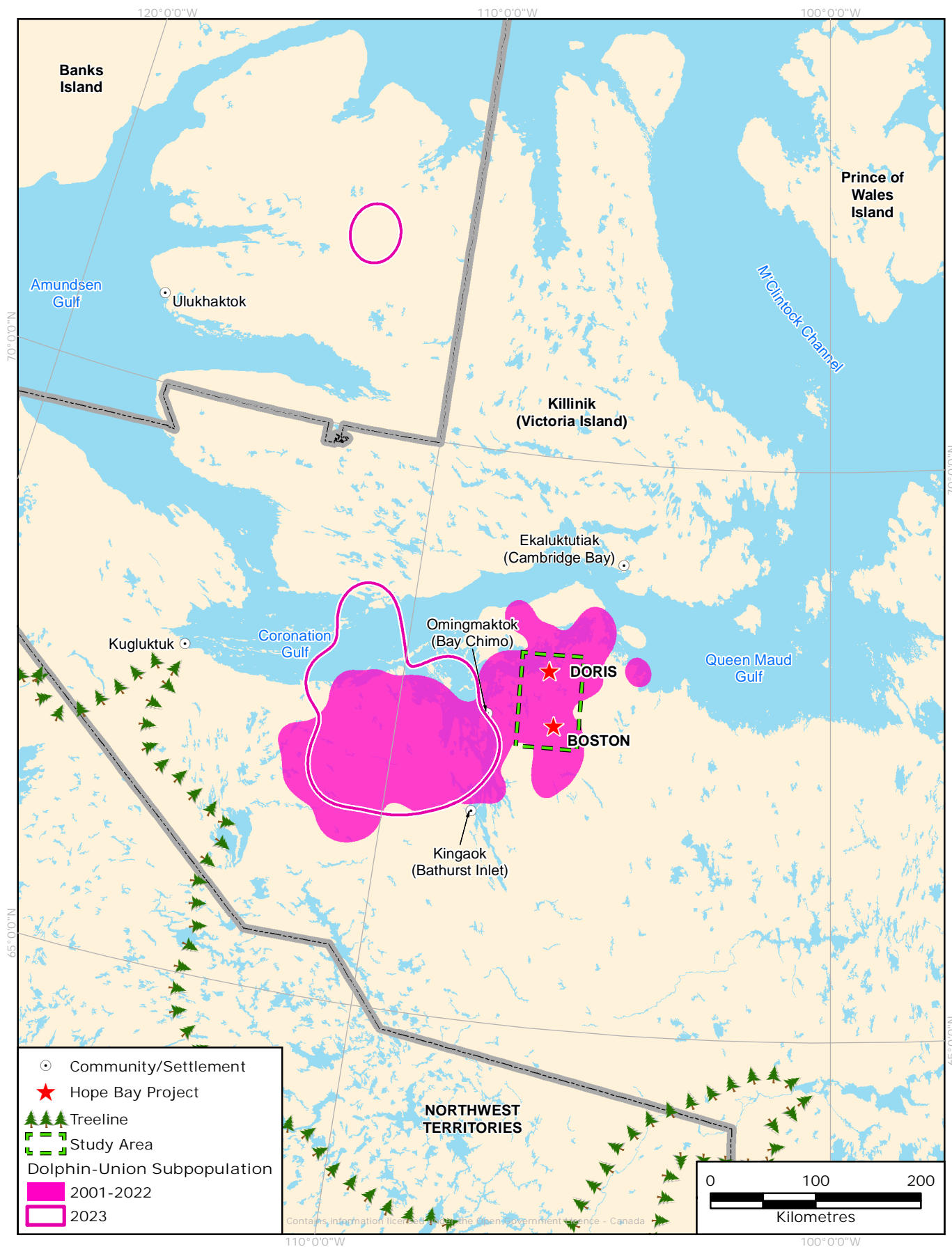


FIGURE 12 95% KERNEL DENSITY ESTIMATES OF CALVING HOME RANGE ON DOLPHIN-UNION SUB-POPULATIONS COLLAR DATA, 2001-2022 AND 2023



3.4.3.2 CAMERA MONITORING

Across all years of the camera monitoring program from June 2016 to September 2023, cameras were active and recording for a total of approximately 69,140 camera days (Table 15; Figure 13; and Appendix D). Camera effort within monitoring zones for the most recent year is summarized by month in Table 9; effort summaries per camera are provided in Appendix D. A brief summary of the images and caribou events recorded across all cameras during the current periods is provided below. Data from cameras 2 and 35 (the cameras responsible for monitoring the road crossing ramps) are also included in the summary below.

From the recent monitoring periods (September 2022 - September 2023), 326 caribou events were recorded (Table 15; Appendix F). Caribou events in this monitoring period primarily occurred from May through August but were most common in July (Table 15; Photos 3, 4, 5, 7, and 8). July 2023 had the highest number of caribou events in a single month since monitoring started. Caribou events in this month were relatively evenly distributed across monitoring zones, however, the ZOI had the highest number of events followed by the treatment zone, and lastly the control zone. Overall, in the most recent monitoring period the ZOI had the highest number of events (133), followed by the treatment zone (104) and control zone (89). Occasional events were also recorded in winter and spring months which is consistent with previous monitoring years.

Facilities Camera Monitoring

Under the current camera program design, there are four cameras that have site specific monitoring objectives for caribou. These are cameras 2 and 35 installed at the two caribou crossing ramps along the Doris-Windy AWR, and cameras 51 and 52 installed at the north and south end of the Tailings Impoundment Area (TIA). Individual camera effort information is provided in Appendix D. Camera effort varied greatly across facility monitoring cameras in 2023 with camera 51 having the most effort (178 active days), followed by camera 52 (47 active days), camera 3 (26 active days), and camera 35 (14 active days).

During the monitoring period from September 2022 to September 2023, only one site specific monitoring camera recorded caribou. Twenty-one events occurred at camera 51 on the south end of the TIA in 2023. Events occurred on 17 individual days primarily from June through August, with one event in early September 2023. A total of 19 events involved a lone adult caribou while the remaining 2 events were comprised of 2 adult caribou, for a total of 23 individuals. Most caribou photos at the TIA show individuals walking or trotting, potentially to escape insect swarms as noted for incidental behavioural observations. One event lasting approximately three minutes showed a lone adult male caribou stopped with its head down in front of the camera. Due to its location in the camera field of view it is unclear what the caribou was doing in the event (Photo 3). A lack of camera data on the remaining site-specific cameras at the caribou crossing ramps may be due to lack of camera functionality throughout 2023 rather than lack of caribou activity. Caribou presence around site may also be noted through the Wildlife Sightings/Reporting process, discussed in Section 3.4.3.4.

TABLE 15 CARIBOU EVENTS RECORDED BY MONTH AT TREATMENT, ZOI, AND CONTROL CAMERAS, JANUARY 2020 TO SEPTEMBER 2023

Year	Month	Treatment Cameras				ZOI Cameras				Control Cameras			
		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²	
				Raw	Corrected			Raw	Corrected			Raw	Corrected
2022	Sept.	505 (20)	2	2	2.28	410 (16)	7	15	17.10	321 (18)	6	9	10.26
	Oct.	489 (18)	-	-	-	451 (17)	-	-	-	259 (13)	-	-	-
	Nov.	390 (18)	-	-	-	339 (16)	1	1	1.24	132 (6)	1	1	1.24
	Dec.	55 (9)	-	-	-	44 (5)	-	-	-	27 (2)	-	-	-
2023	Jan.	105 (11)	-	-	-	66 (8)	-	-	-	20 (2)	-	-	-
	Feb.	94 (8)	-	-	-	102 (7)	-	-	-	43 (3)	-	-	-
	Mar.	373 (15)	-	-	-	372 (13)	1	1	1.15	144 (7)	-	-	-
	April	375 (13)	-	-	-	416 (15)	2	2	2.20	265 (12)	1	1	1.10
	May	401 (16)	1	2	2.08	372 (16)	1	1	1.04	345 (18)	4	7	7.28

Year	Month	Treatment Cameras				ZOI Cameras				Control Cameras			
		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²	
				Raw	Corrected			Raw	Corrected			Raw	Corrected
2023 (cont'd)	June	420 (18)	10	29	29.00	372 (16)	11	27	27.00	434 (18)	8	16	16.00
	July	349 (16)	13	57	58.71	321 (15)	10	70	72.10	376 (17)	9	44	45.32
	Aug.	381 (18)	5	14	15.26	300 (13)	8	16	17.44	344 (17)	7	11	11.99
	Sept.	-	-	-	-	-	-	-	-	-	19 (1)	-	-
Total ³		-	31	104	107.33	-	41	133	139.27	-	36	89	93.19

¹ Camera effort is presented as the total number of camera days by month; number of cameras with at least one camera day (i.e., unobscured) presented in parenthesis.

² Events are presented as the number recorded by cameras (raw) as well as the number of events corrected for the monthly darkness factor (corrected).

³ Total number of cameras with events represents the number of unique cameras with events across the monitoring period. Total number of events is the cumulative total across the monitoring period.



FIGURE 13 DETECTIONS OF CARIBOU ON MOTION-TRIGGERED PHOTOS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023

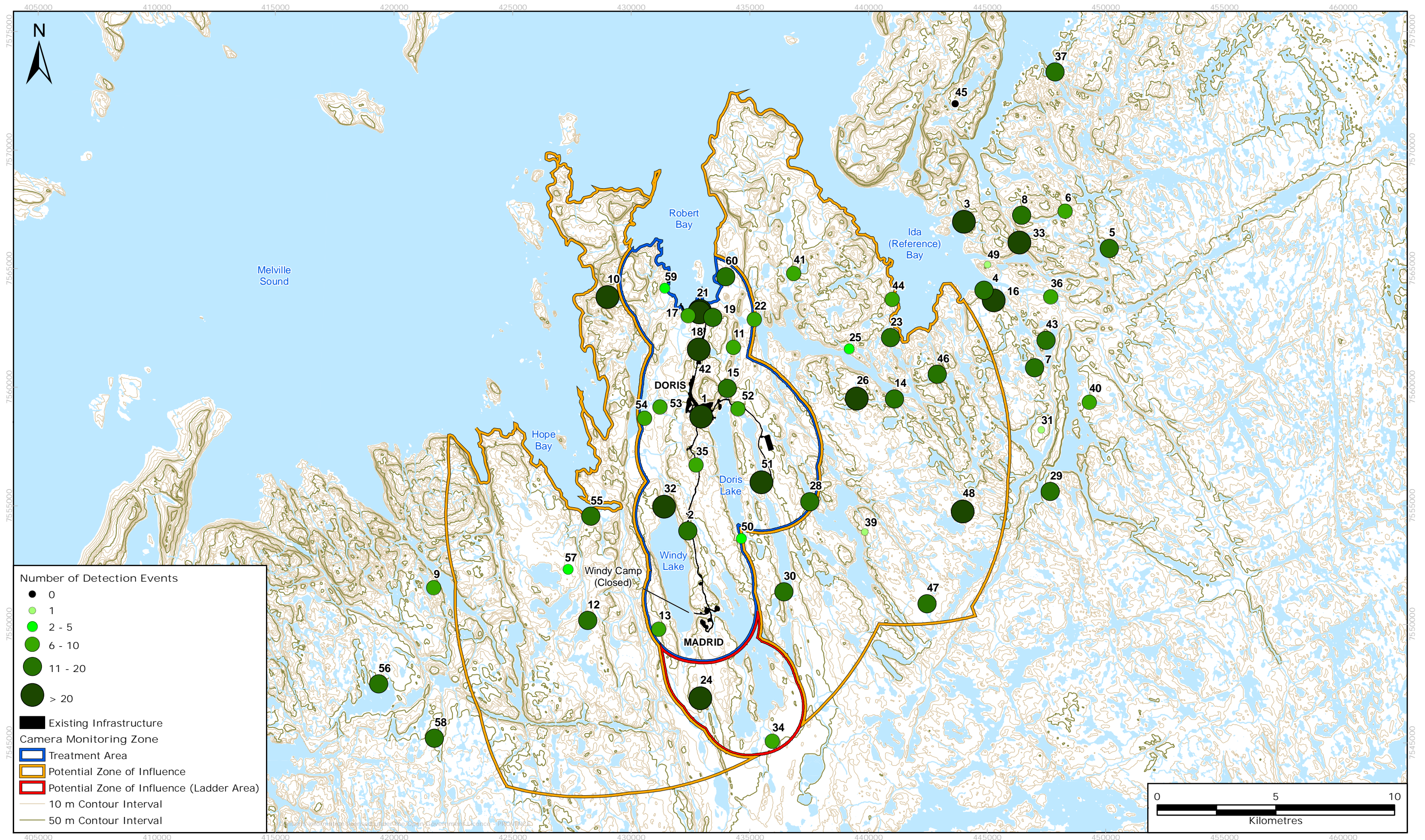




Photo 3 Caribou on TIA monitoring camera 51 July 22, 2023.

During the monitoring period from September 2022 to September 2023, only one site specific monitoring camera recorded caribou. Twenty-one events occurred at camera 51 on the south end of the TIA in 2023. Events occurred on 17 individual days primarily from June through August, with one event in early September 2023. A total of 19 events involved a lone adult caribou while the remaining 2 events were comprised of 2 adult caribou, for a total of 23 individuals. Most caribou photos at the TIA show individuals walking or trotting, potentially to escape insect swarms as noted for incidental behavioural observations. One event lasting approximately three minutes showed a lone adult male caribou stopped with its head down in front of the camera. Due to its location in the camera field of view it is unclear what the caribou was doing in the event (Photo 3). A lack of camera data on the remaining site-specific cameras at the caribou crossing ramps may be due to lack of camera functionality throughout 2023 rather than lack of caribou activity. Caribou presence around site may also be noted through the Wildlife Sightings/Reporting process, discussed in Section 3.4.3.4.



Photo 4 Caribou at Treatment zone camera 60. July 27, 2023.



Photo 5 Caribou at control camera 43. May 7, 2023.

During the August 2022 IEAC site visit, it was noted that caribou trails may be present around a culvert under Windy Road (Photo 6). The culvert is roughly 160 m north of one of the caribou crossing ramps, which also has visible trails from caribou use (Photo 6). Two additional wildlife cameras were deployed on either side of the culvert on August 21, 2022 to record potential caribou activity using the culvert as a road crossing alternative (camera position and deployment details in Appendix A). Data from these cameras were not included in other camera summaries due to the difference in deployment timing. Between September 2022 and September 2023 one caribou event of a single male caribou was recorded on a culvert camera on September 11, 2022. No other wildlife events were recorded on these cameras.



Photo 6 Aerial view of caribou crossing ramp with trails (left), and culvert where two additional cameras were deployed to monitor caribou activity in relation to crossing ramp (right) on Windy Road, August 2022.

Statistical Analysis

A statistical analysis was conducted on caribou camera event data from 56 cameras. Cameras 2 and 35 were excluded from analysis because they were at caribou crossing ramps on the Doris-Windy AWR which may have higher caribou occurrence than other areas near the Project and beyond. Camera effort was deemed too low in December and January across years and therefore these months were removed from analysis altogether (see Methods Section 3.4.2.2.; Table 15). To account for additional periods of low effort which were variable across cameras, observations were only included if the monthly camera effort was ≥ 7 days per month. No caribou events were recorded on cameras with less than a week of effort (this is only considering events recorded when the camera was upright and unobscured) in 2023.

In 2023 the caribou camera statistical modelling approach changed from modelling caribou occupancy to modelling the number of caribou events captured by cameras. The occupancy model for caribou was designed when caribou events were less frequent (fewer events per month) and less common across the study area (fewer cameras with any event, measured by occupancy). With additional years of monitoring and increases in the number of caribou events in some portions of the study area, there is now sufficient data to model overall caribou events. This new model is more robust and provides a more accurate picture of caribou activity throughout the study area.

Predicted caribou abundance was not significantly different at Control cameras compared to Treatment cameras within 2 km of the Project ($p = 0.87$; Table 16). Similarly, there was not a significant difference in caribou occupancy at ZOI cameras compared to Treatment cameras ($p = 0.95$; Table 16). The model also included smooths for month, easting, and northing, which provided a better fit to the data despite the individual terms lacking significance (Table 16).

TABLE 16 SUMMARY OF TREATMENT VS. CONTROL MODEL COEFFICIENTS AND SIGNIFICANCE LEVEL FOR CARIBOU CAMERA OCCUPANCY DATA

Coefficient	β Value	Standard Error (se)	t-Value	p-Value
Camera Zone, ZOI	-0.05	0.27	-0.17	0.87
Camera Zone, Control	-0.02	0.29	-0.07	0.95
Smooth (Easting)	0.03	0.15	0.19	0.85
Smooth (Northing)	0.02	0.10	0.20	0.84
Smooth (Month)	2.07	2.37	0.87	0.38

Given that there were no differences in the predicted number of caribou events between Treatment and Control cameras, a secondary analysis for a potential ZOI was not necessary. The secondary analysis is performed when a statistical difference is obtained between Treatment and Control zones to determine at what distance the effect may be occurring. Modelling of all of camera monitoring data since June 2016 has shown that caribou are not avoiding the Project and therefore, 2023 is proposed to be the last year of conducting the camera ZOI analysis for caribou. The camera monitoring program will continue, and results of caribou detections will be summarized in the annual WMMP Report.

The number of events between zones is highest in the ZOI zone ($n = 133$ events), followed by the Treatment zone ($n = 104$), and then the Control ($n = 89$). In recent years, caribou activity has increased across all zones, but particularly in the Treatment zone (Table 15). Caribou occupancy calculated camera months in which one or more events occur is lowest in the treatment zone and highest in the control zone (Table 17). This suggests that caribou may be more concentrated in the treatment zone and events are limited to a smaller number of cameras and habitats than the ZOI or control zones.

TABLE 17 SUMMARY OF MONTHS AND CAMERAS AND CARIBOU OCCUPANCY SINCE THE START OF THE MONITORING PROGRAM

Occupancy ¹		Treatment	ZOI	Control
Unoccupied (no events)	No. Camera*Months ²	856	558	562
	Percentage (%; of Total)	85	79	76
Occupied (1 or more events)	No. Camera*Months ²	147	144	179
	Percentage (%; of Total)	15	21	24
Total Events		624	537	547

Notes:

¹ Table summaries does not include event or effort data collected from Cameras 2 and 35. These data are included in Table 15 and therefore event summaries will be different.

² Represents individual camera and month combinations. For example, for a single camera that had over a week of camera effort for the monitoring period from June 2016 to September 2023 (except December and January, i.e., 62 months) and did not record a caribou event, this camera would have a total of 62 unoccupied camera*months. If the same camera were to have recorded caribou events in four months, the camera would have a total of four occupied camera*months and 58 unoccupied camera*months.

Caribou Herd Identification

Caribou were identified by herd (either Beverly/Ahiak or Dolphin and Union) for all camera data from June 2022 to August 2023 across a total of 431 caribou detections (Table 18). The Beverly/Ahiak herd accounted for the majority of events (78%; Photo 7), followed by unknown individuals (13%), and finally the Dolphin and Union herd (9%; Photo 8; Table 18). The majority of unknown classifications of caribou were due to poor photo capture such as caribou being too close or too far away from the camera to show identifiable physical features. Unknown identifications due to uncertainty in the herd will be provided to the IEAC for identification assistance.

The Beverly/Ahiak herd was observed from June to October in 2022 (n = 42) and between May and August in 2023 (n = 297). The month with the highest number of observations of the Beverly/Ahiak herd in both years was July, with 26 events in 2022 and 206 events in 2023 (Table 18). This peak in activity corresponds to the post-calving period for the Beverly/Ahiak. The Dolphin and Union herd had a singular detection in November of 2022, and 37 detections between March and July, 2023. The month with the highest number of events of the Dolphin and Union herd occurred in June of 2023 (n = 27; Table 18). These detections align with fall migration (November), winter (March-April) and spring migration (May/June). However, Dolphin and Union individuals present at the Project in later June and July 2023 may not be migrating to Victoria Island for calving, given the annual timing of sea ice melt.



Photo 7 Caribou belonging to the Beverly/Ahaik herd captured on camera 24 July 2, 2023.

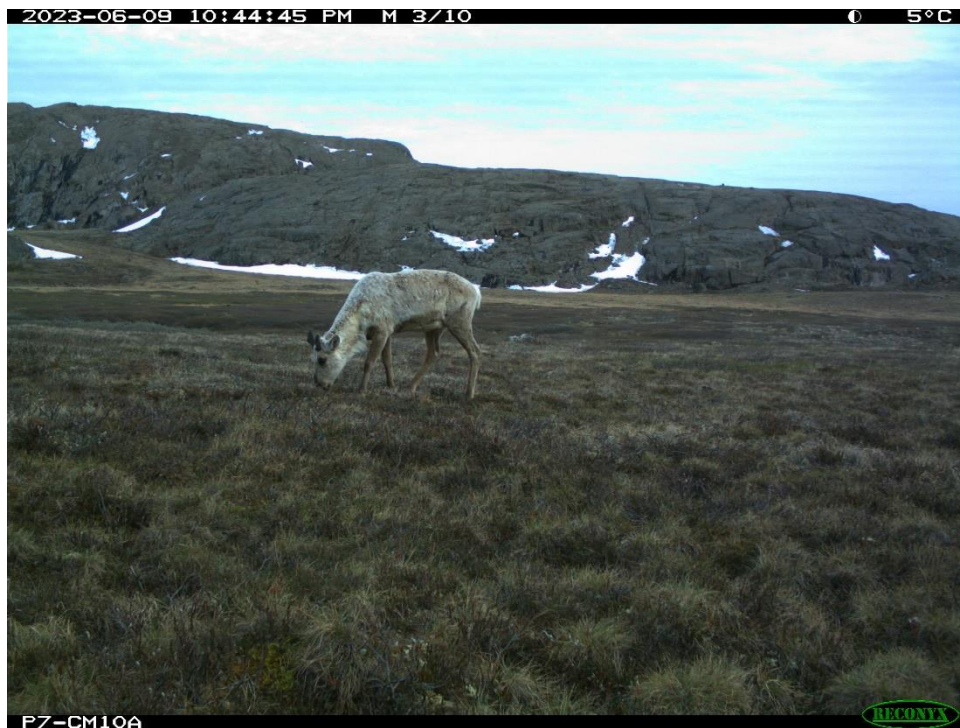


Photo 8 Caribou belonging to the Dolphin-Union herd captured on camera 10 June 9 2023.

TABLE 18 BEVERLY/AHIAK AND DOLPHIN AND UNION CARIBOU HERD IDENTIFICATION, 2022-2023

Date		Herd		
		Dolphin and Union	Beverly/Ahiak	Unknown
2022	June	-	3	-
	July	-	26	1
	August	-	8	-
	September	-	2	1
	October	-	3	-
	November	1	-	1
	December	-	-	-
2023	January	-	-	-
	February	-	-	-
	March	2	-	-
	April	1	-	4
	May	5	3	8
	June	27	43	18
	July	2	206	15
	August	-	45	6
Total		38	339	54

3.4.3.3 HEIGHT OF LAND

Height of Land surveys are triggered based on caribou activity level at the Project (Appendix Z). No HOL surveys were triggered in 2023 (Appendix Z).

3.4.3.4 INTERACTIONS, INCIDENTS, AND MORTALITIES

One caribou interaction occurred in 2023 to deter an individual, to clear the airstrip in advance of an approaching plane on July 19, 2023 (Appendix G). July is the peak time period when caribou frequent site in order to escape biting insects. Caribou are only deterred in situations where their presence poses risk of harm.

3.4.3.5 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

In 2023, 174 sightings of 363 caribou were recorded in the wildlife sightings log from June through October (Appendix H). Several reported sightings were likely the same individuals moving through the area (e.g., caribou reported in the same group size and on the same date along nearby kilometers of Windy Road; Appendix H). Most sightings took place in July (n = 104) and June (n = 33) and were mainly of single individuals. On June 21, 2023 there were two sightings of

a group of 16 caribou, both along Windy Road/ Madrid Area and can be assumed to be the same group. In 2022, no caribou were sighted in January through March. In 2023, sightings of single caribou were observed in January (n=9) and February (n=7).

The majority of caribou sightings occurred near or on Windy Road or in the Madrid area (n = 64) and in the Doris Area (n = 76; Table 19). Twenty-six sightings of caribou occurred near the TIA and the Tail Lake Road (TLR). Three sightings of 15 individuals were on the TIA footprint (Appendix H). Caribou seen near the TIA were monitored to ensure they left the area and none of the caribou were observed interacting with the tailings. Site personnel were made aware when caribou were sighted near active camp areas in order to avoid disturbing the caribou until they left the area.

TABLE 19 CARIBOU SIGHTINGS AND INCIDENTAL OBSERVATIONS 2023

General Location	Months	Total Sightings	Total Individuals
Doris Area	February, June-September	76	135
Windy Road/ Madrid	June-October	64	141
Airstrip	June-October	6	7
TLR/TIA area	January, April, June-September, December	26	77
Boston	N/A	-	-
Not Specified	July	1	2

Generally, the largest numbers of caribou observed per personnel from 2009 to 2023 have been recorded from November to May, with the peak being in March 2016 (152 individuals, 1.95 caribou per personnel) and December 2014 (10 individuals, 1.43 caribou per personnel; Figure 14). In 2023, the largest number of caribou observed per personnel occurred in July, at 0.88 caribou per personnel (Figure 14).

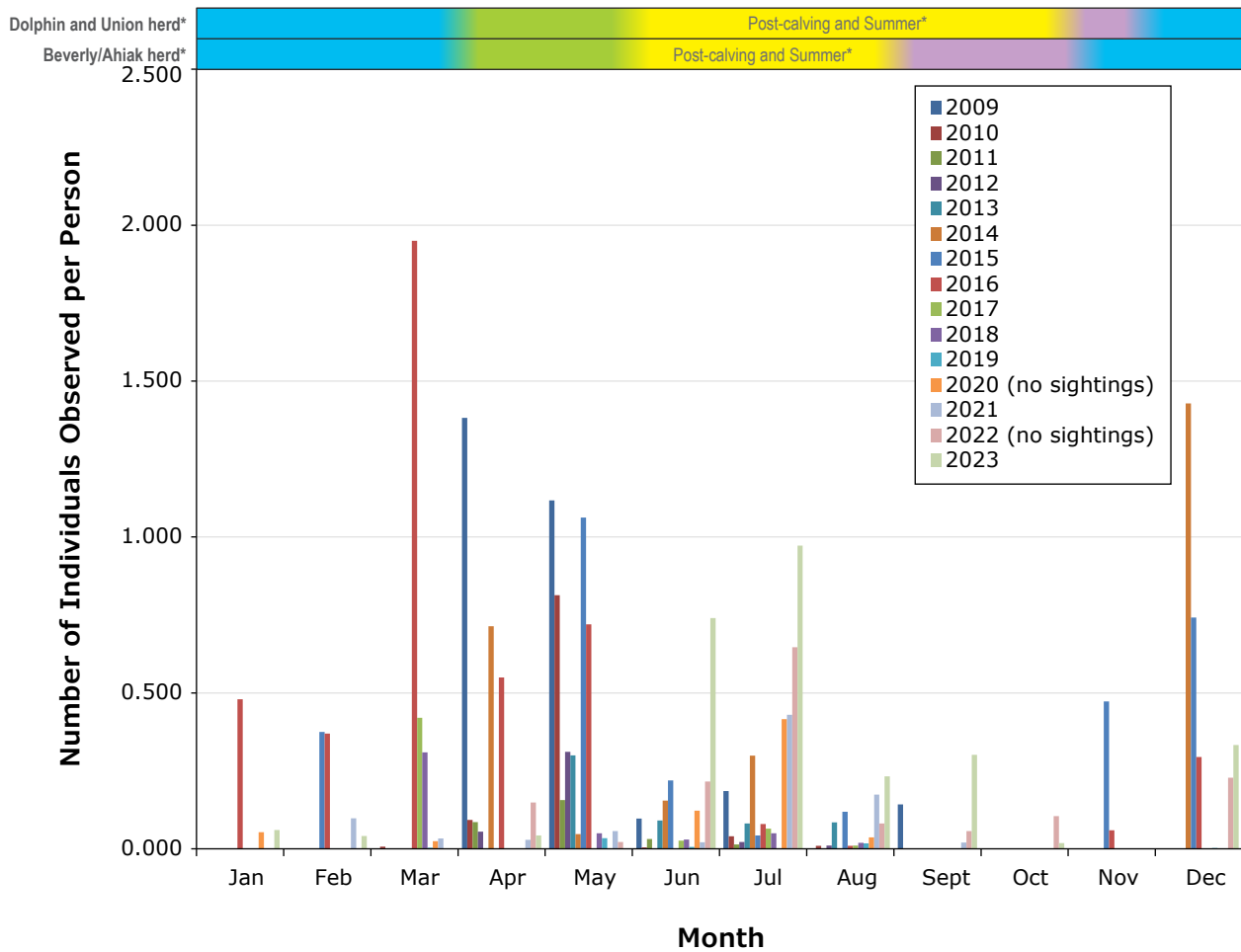
3.4.4 DISCUSSION

3.4.4.1 CARIBOU COLLAR DATA

The 50% and 95% UD calving ranges of the Ahiak sub-population extended further south in 2023 compared to the long-term distribution from 2001-2022, but neither UD overlapped the Project Study Area. A small eastern shift in the Ahiak UD has also occurred in 2019 to 2022 (i.e., is indicated in the long-term distribution and the 2022 UD), while 2023 showed a contraction towards the middle of their long-term range. This suggests that some females have shifted to calving further east along the Queen Maud Gulf than previously recorded. The UDs for the Beverly sub-population have varied through time, and the 2022 UDs extended beyond the long-term range from 2001 to 2022 to both the south and the east. There is extensive overlap in calving areas between the two sub-populations in 2023, including core calving areas which did not previously overlap in the long-term range.

The long-term 95% Beverly UD overlapped with the southern portions of the Study Area, around the Boston Project. This is driven by the 2021 data, which included this westward range extension for the first time. This difference from the 2021 calving range is likely due to annual variation, given that the change was not seen in 2022 or 2023.

FIGURE 14 NUMBER OF CARIBOU INDIVIDUALS RECORDED PER PERSONNEL PRESENT, HOPE BAY PROJECT, 2009 TO 2023



The 50% and 95% UD winter ranges for the Dolphin Union caribou herds in 2023 primarily overlapped with long term ranges with data compiled between 2001 and 2022. The core winter range (50% UD) in 2023 was very similar to the long-term range which occurred extensively on the western side of Bathurst Inlet (Figure 11). This differed from the results of the most recent previous analysis last completed in 2018 which used data from 1994-2007 and 2015-2018 (ERM 2018). This previous analysis indicated that core wintering range was located on both the western and eastern sides of Bathurst Inlet including core wintering range on the northeastern and southeastern corners of the Project Study Area. This suggests that the Dolphin Union wintering range has shifted westward and no longer use area within proximity to the Project Study Area. The 95% UD areas for the previous analysis, long-term range, and 2023 range show continuous variability in wintering range used by Dolphin Union caribou. There are mitigation measures for caribou that are in place year-round and serve to mitigate for effects to Dolphin and Union caribou when individuals from the herd overwinter in the vicinity of the Project (Agnico Eagle 2023).

3.4.4.2 CAMERA MONITORING

Caribou camera events occurred primarily from May through August but were most common in July. Caribou events also occurred sparsely in the fall and winter. In July 2023, caribou were recorded in higher numbers than any single month to date, including 104 events recorded in the Treatment zone. An increase in caribou around site roads and facilities in July were first noticed in 2019; based on the behavior of the animals, the gravel roads and pads are utilized to escape biting insects. No caribou incidents have occurred despite the increase in activity, indicating that current management and mitigation efforts are effective.

Statistical analyses were conducted to test whether the number of caribou events differed between cameras in the Treatment zone (< 2 km from existing infrastructure) and Control zone (> 10 km from existing infrastructure). In 2023, the model was run using the number of caribou events as opposed to occupancy as it had been in previous years, due to an increase in the number of caribou events captured by the cameras. The results of the statistical analyses indicated that the number of predicted caribou events was not significantly different between cameras in the Treatment zone and Control zone. It has been noted that in recent years, caribou events have become more common – particularly at some cameras in the Treatment zone near site roads and camp facilities, where caribou have been frequenting since roughly 2019 during peak biting insect season. Accounting for the influx of caribou events in the Treatment zone, camera data does not indicate caribou avoidance of Project infrastructure.

Other than caribou presence near the site in summer, caribou are more commonly recorded throughout other months in the ZOI and Control zone. This difference is likely attributed to the Project location and relative geography. The Project is located at the north end of the Greenstone Belt, which is a low-lying area surrounded by rocky upland areas to the east and west. The low-lying areas closest to the Project contain large, open sedge meadows that collect snow in winter. In contrast, on either side of the Project are low rocky hills which are wind-blown with snow during winter and make better winter habitat and travel corridors. These differences may cause caribou to avoid using habitat nearest the Project during the winter, spring, and fall seasons when deeper snow



makes forage less accessible and movement difficult compared to the surrounding areas. These natural differences in occurrence are difficult to disentangle from potential Project effects.

The Madrid-Boston FEIS predicted a geographic extent of caribou avoidance of Project infrastructure of 4 km² (with a 1.5 km² ZOI around the AWR). Camera monitoring in the current program has occurred since 2016 and modelling to analyze a potential ZOI has occurred since 2017. Early years of modelling suggested a potential ZOI for caribou within 2 km (ERM 2019, 2020). However, the complete dataset across the last 6 years does not indicate caribou avoidance of the Project. At this time, Agnico Eagle considers the caribou ZOI analysis sufficient to confirm that the effects of the Project on caribou are within predicated levels of potential avoidance (i.e., within 4 km²). Therefore, 2023 is proposed to be the last year of conducting the camera ZOI analysis for caribou. The camera monitoring program will continue, and results of caribou detections will be summarized in the annual WMMP Report. If patterns in caribou occurrence change (as evidenced by increased or decreased detections by camera zone or season), the ZOI analysis may be conducted again for further assessment of caribou occurrence patterns. This update in the WMMP program will be included in an updated 2024 WMMP Plan, and discussed at the first IEAC meeting in 2024 prior to changes being implemented.

Facilities Camera Monitoring

Twenty-one caribou events were recorded on only one of the four cameras with caribou-specific monitoring objectives in 2023, which included cameras at the crossing ramps along the Doris-Windy AWR and near the TIA. All twenty-one events were recorded on TIA monitoring camera 51 across 17 separate days. Events occurred between June and September 2023. Most of the caribou photos recorded at the TIA show individuals walking or trotting, potentially to escape insect swarms as noted for incidental behavioural observations. One event lasting approximately three minutes showed a lone adult male caribou stopped with its head down in front of the camera. The position of the caribou's head was out of frame in the photos, however, it appears that the caribou may be interacting with the ground below the camera. However, the majority of camera events and incidental sightings were not at the TIA, suggesting that caribou were not attracted to the TIA or more likely to interact with the TIA than other infrastructure. The KIA expressed concern during the review of the Boston-Madrid FEIS that caribou may frequent the TIA to drink water if it is salty, but this does not appear to be occurring.

Two additional cameras were deployed in August 2022 to specifically monitor potential caribou activity at a culvert under Windy Road after it was noted that caribou trails may be present around the culvert during an IEAC site visit. Between September 2022 and September 2023 one lone adult male caribou was captured by cameras.

Herd Identification

Caribou herd identification based on wildlife camera data was completed for the first time in 2023 to better determine the seasonal land use of the two herds that occur within the Project area. Camera data from June 2022 through August 2023 were reviewed. The Project area overlaps the Beverly/Ahiak herd summer, fall, and winter range and the Dolphin and Union herd's winter range.



Camera detections of the Beverly/Ahiak herd occurred primarily in the summer and fall, but no events occurred in the winter and early spring, between November and May. There were no recorded caribou events from December to February for either herd, though this may be affected by low camera effort in this period. The Dolphin and Union herd were detected in low numbers on cameras primarily in the late winter to spring (March – June). Two Dolphin and Union caribou were identified in July, potentially corroborating the idea that some individuals are not returning to Victoria Island for the calving period. Additional years of herd identification data will provide better trends in the seasonal occurrence of both herds, in particular the less common Dolphib and Union caribou.

3.4.4.3 HEIGHT OF LAND

A Standard Operating Procedure for HOL surveys was drafted and discussed with the IEAC, and on-site training for the HOL monitoring methods was provided in March 2023. This was the first year for HOL surveys, however, no surveys were completed because the triggers that initiated surveys (25 caribou occurring within 5 km of site within a 24-hour period) were never met.

3.4.4.4 WILDLIFE SIGHTINGS AND OBSERVATIONS LOG

In 2023, 166 sightings of 346 caribou were recorded in the wildlife sightings log. Most of these sightings took place in July ($n = 97$) and June ($n = 33$) and were mainly of individual caribou. The majority of caribou sightings occurred near or on Windy Road or in the Madrid area ($n = 59$) and in the Doris Area ($n = 73$).

Twenty-six sightings of caribou occurred near the TIA and TLR access road, however only three sightings of fifteen individuals were actually on the TIA footprint. Caribou seen near the TIA were monitored to ensure they left the area, observations recorded of the caribou interacting with the tailings. Site personnel were made aware when caribou were sighted near active camp areas in order to avoid disturbing the caribou until they left the area.

3.5 MUSKOX

Muskox inhabit Arctic tundra environments and occur in varying densities throughout Nunavut, including the northern islands archipelago (Leclerc 2015). Muskox are not migratory, but may vary in group size throughout the year, with larger herds forming through the winter (Leclerc 2015). In recent years, possible declines in some muskox populations have been reported; the cause and extent of these declines are still uncertain, but likely has to do with disease, climate, and anthropogenic pressures (Cuyler et al. 2020). These concerns have led to increased monitoring and research efforts throughout the Arctic, even though muskox are not listed as a species of conservation concern federally or in Nunavut.

3.5.1 FEIS PREDICTIONS

The Madrid-Boston FEIS predictions for muskox included a not significant residual effect of disturbance at a geographic extent of the RSA and a low magnitude residual effect for disruption of movement at the extent of the PDA (TMAC Resources Inc. 2017). The previous Doris FEIS did not include muskox as a VEC (Miramar 2005); inclusion in the Madrid-Boston FEIS is a reflection of increased interest in monitoring muskox throughout the Canadian Arctic.

3.5.2 METHODS

The potential effects of Project-related activities on muskox are monitored through the wildlife camera monitoring program as well as through the Wildlife Sightings/Reporting program, results of which are presented as wildlife interactions, incidents, and mortalities and incidental sightings (see Section 3.2). Summarized data are also provided in Appendices D through H, and O.

Although detections of muskox have been recorded since 2016, very few camera events are recorded each year. Modelling capabilities are restricted due to the low volume of muskox camera data available. Therefore, data from wildlife cameras are not sufficient for statistical analysis to test for possible effects on muskox distribution.

3.5.3 RESULTS

3.5.3.1 CAMERA MONITORING

Across the period from June 2016 to September 2023, cameras were active and recording for a total of approximately 69,140 camera days (Appendix D). Camera effort within monitoring zones by month is summarized in Table 12; effort summaries per camera are provided in Appendix D. A brief summary of the muskox events recorded across all cameras during the recent monitoring period is provided below.

From the monitoring period September 2022 – September 2023, a total of eight unique events of muskox were recorded (Table 20; Figure 15; Appendix F; Appendix O). These events occurred between the beginning of May and end of August 2023. Two events occurred at Treatment cameras, four at ZOI cameras and the Control cameras recorded one event (Table 20; Photo 9). Cameras captured a total of 53 individuals for an average group size of approximately 7 individuals. The small number of events overall proved inadequate for statistical modelling, particularly because of few control zone events.

Facilities Camera Monitoring

Two cameras have site specific monitoring objectives for muskox: cameras 51 and 52 installed at the north and south end of the TIA. No muskox were recorded on motion triggered or timed photo events at these two cameras from September 2022 to September 2023, which suggests that muskox use of the areas surrounding the TIA is infrequent. Camera effort varied across facility monitoring cameras in 2023 with camera 51 (178 active days) having almost 75% more active days than camera 52 (47 active days). Muskox presence in this area may also be noted through the Wildlife Sightings/Reporting process, presented in the following sections.

3.5.3.2 INTERACTIONS, INCIDENTS, AND MORTALITIES

No interactions, incidents or mortalities were recorded during 2023 (Appendix G).

TABLE 20 MUSKOX EVENTS RECORDED BY MONTH AT TREATMENT, ZOI, AND CONTROL CAMERAS, SEPTEMBER 2022 TO SEPTEMBER 2023

Year	Month	Treatment Cameras				ZOI Cameras				Control Cameras			
		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²	
				Raw	Corrected			Raw	Corrected			Raw	Corrected
2022	Sept.	505 (20)	-	-	-	410 (16)	-	-	-	321 (18)	-	-	-
	Oct.	489 (18)	-	-	-	451 (17)	-	-	-	259 (13)	-	-	-
	Nov.	390 (18)	-	-	-	339 (16)	-	-	-	132 (6)	-	-	-
	Dec.	55 (9)	-	-	-	44 (5)	-	-	-	27 (2)	-	-	-
2023	Jan.	105 (11)	-	-	-	66 (8)	-	-	-	20 (3)	-	-	-
	Feb.	94 (8)	-	-	-	102 (7)	-	-	-	43 (3)	-	-	-
	Mar.	373 (15)	-	-	-	372 (13)	-	-	-	144 (7)	-	-	-
	April	375 (13)	-	-	-	416 (15)	-	-	-	265 (12)	-	-	-
	May	401 (16)	-	-	-	372 (16)	4	4	4.16	345 (18)	-	-	-
	June	420 (18)	1	1	1	372 (16)	-	-	-	434 (18)	-	-	-



Year	Month	Treatment Cameras				ZOI Cameras				Control Cameras			
		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²	
				Raw	Corrected			Raw	Corrected			Raw	Corrected
2023 (cont'd)	July	349 (16)	1	1	1.03	321 (15)	-	-	-	376 (17)	-	-	-
	Aug.	381 (18)	-	-	-	300 (13)	1	1	1.09	344 (17)	-	-	-
	Sept.	-	-	-	-	-	-	-	-	19 (1)	1	1	1.09
Total ³		-	2	2	2.03	-	5	5	5.25	-	1	1	1.09

Notes:

¹ Camera effort is presented as the total number of camera days by month; number of cameras with at least one camera day (i.e., unobscured) presented in parenthesis.

² Events are presented as the number recorded by cameras (raw) as well as the number of events corrected for the monthly darkness factor (corrected).

³ Total number of cameras with events represents the number of unique cameras with events across the monitoring period. Total number of events is the cumulative total across the monitoring period.



FIGURE 15 DETECTIONS OF MUSKOX ON MOTION-TRIGGERED PHOTOS RECORDED BY REMOTE CAMERAS, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023

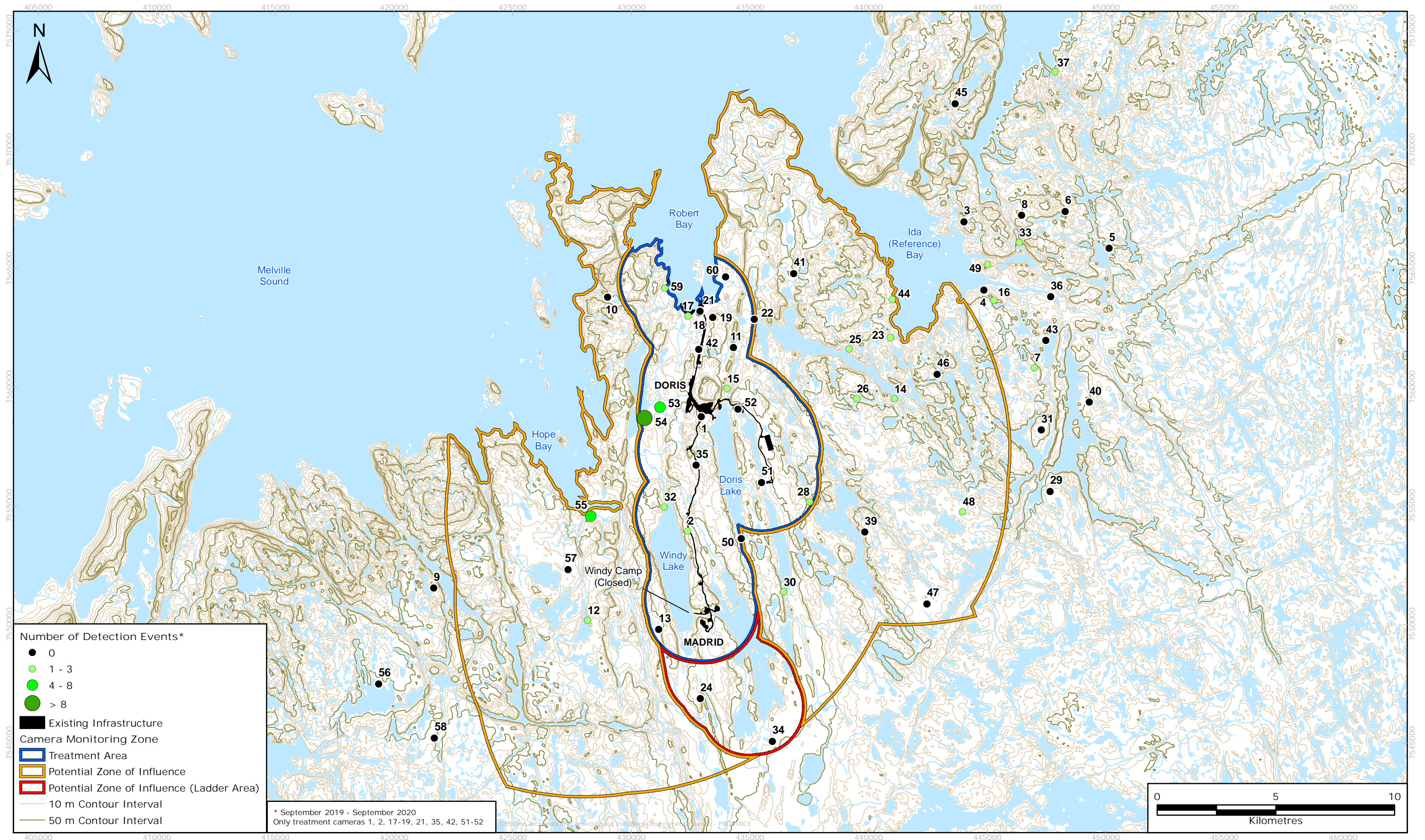




Photo 9 Muskox captured on ZOI zone camera 25. May 5, 2023.

3.5.3.3 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

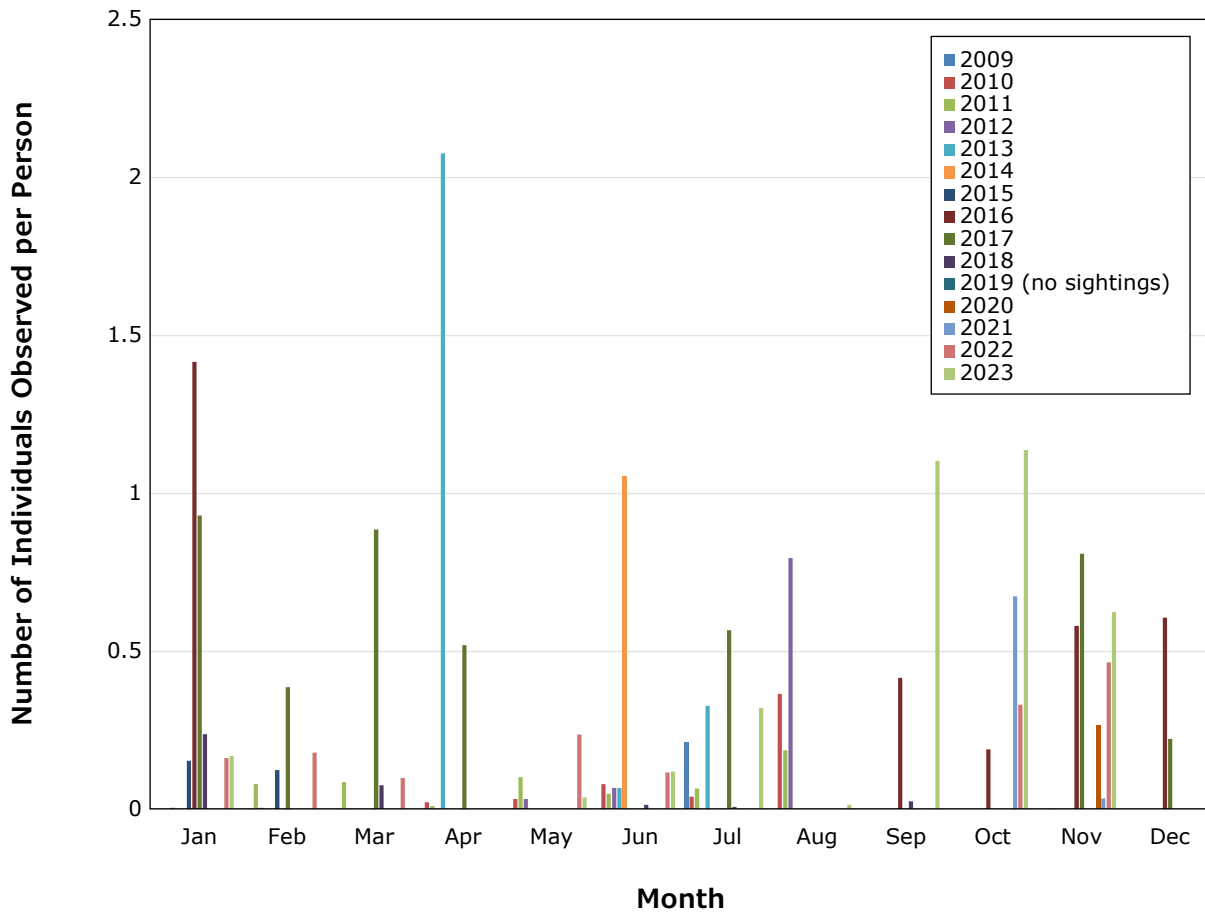
There were a total of 28 muskox sightings in 2023, though several sightings were likely repeats of the same group based on the date, location, and group size (Appendix H). A group of 10 muskox were noted over two days in July near Windy Lake (Appendix H). In late September and early October, a group of 17-22 muskox were repeatedly noted near Patch Lake and Windy Road km 3 to 7 (Appendix H). Herd sizes from all sightings ranged from five to 22 individuals with an average of 17 individuals. Solo individuals were sighted five times from July to August. Nearly all sightings of muskox occurred east or west of Windy Road, with 6 sightings in the TLR/TIA, and five sightings in the Doris area, north of camp (Table 21; Appendix H). The muskox sightings in the TLR/TIA had no observations recorded of the muskox interacting with the tailings.

TABLE 21 MUSKOX SIGHTINGS 2023

General Location	Months	Total Sightings
Doris Area	July-September, November	5
Windy Road/ Madrid	January, July, September-November	17
TLR/TIA	June, August, September	6

Muskox observations from the wildlife sightings log were corrected for the number of people on site each month from 2009 to 2023 (Figure 16). Across years, sightings are variable and have occurred in all months. In 2023, corrected muskox observations peaked at 1.1 observations per personnel (Figure 16). Peaks in muskox sightings typically represent sightings of larger herds, rather than more sightings of a few individuals (Figure 16).

FIGURE 16 NUMBER OF MUSKOX INDIVIDUALS RECORDED PER PERSONNEL PRESENT, HOPE BAY PROJECT, 2009 TO 2023



3.5.4 DISCUSSION

Detections of muskox by wildlife cameras are rare. A total of eight muskox events were recorded during the recent monitoring period from September 2022 to September 2023. Two events occurred in the Treatment zone, five events in the ZOI, and one in the control zone. This is an increase in detections of muskox compared to recent years, with only four camera detections of muskox in the most recent three monitoring years (2020-2022; ERM 2023). The small sample size across years prevented statistical analysis; however, the raw data indicate that muskox are least common in the Control zone in all years. This indicates that muskox are likely not avoiding the Project.

No muskox have been recorded on cameras located at the TIA. This result suggests that muskox do not make use of the area near the TIA. Muskox are also typically not observed near the TIA based on information collected through the wildlife sightings log. However, incidental sightings of muskox increased in 2023 and there were a total of six incidental sightings near the TIA. The muskox sightings in the TLR/TIA had no observations recorded of the muskox interacting with the tailings. There were four observations of muskox near in the TLR/TIA that occurred within 10 days of each other at the end of September, it is likely that they were multiple sightings of the same group.

Twenty-eight incidental sightings of muskox occurred in 2023, with several sightings of a group of ten muskox in July 2023, and a group of 17-22 in September and October 2023. The number of individuals recorded in the wildlife sightings log should not be interpreted as observations of unique individuals (e.g., a population estimate) as it is likely that the same individuals are counted across time by different observers. No other interactions, incidents, mortalities, or incidental sightings of muskox were reported in 2023.

The Madrid-Boston FEIS predicted a not significant residual effect of disturbance at a geographic extent of the RSA and a low magnitude residual effect for disruption of movement at the extent of the PDA. Camera monitoring in the current program has occurred since 2016 and in this time muskox events have been rare. Due to the low number of events modelling of muskox events or occupancy is not possible and it is predicted that muskox will continue to be data deficient indefinitely.

3.6 GRIZZLY BEAR

Grizzly bears are considered a species of Special Concern by the COSEWIC and on Schedule 1 of the SARA (COSEWIC 2002, 2012; Government of Canada 2021b). Additionally, in Nunavut grizzly bears are territorially listed as vulnerable (S3) suggesting they are at moderate risk of extirpation (CESCC 2020). Barren ground grizzly bears are at the most northern and eastern limits of the continental grizzly bear range. Consequently, grizzly bears in the central Arctic have the largest annual home ranges and likely have the lowest densities of any grizzly bear population studied in North America (McLoughlin et al. 1999).

The distribution and abundance of grizzly bears has increased in the region since the 1970s (Banci and Spicker 2016). Grizzly bears have been associated with major river systems, their associated watersheds, and the coast, and are most often seen in the spring and fall during fish-spawning periods and following migrating caribou.



3.6.1 FEIS PREDICTIONS

The Madrid-Boston FEIS predictions included not significant and low magnitude residual effects of disruption of movement and attraction at a geographic extent of the PDA for grizzly bear (TMAC Resources Inc. 2017).

3.6.2 METHODS

The potential effects of Project-related activities on grizzly bear are monitored through the wildlife camera monitoring program as well as through the Wildlife Sightings/Reporting program, results of which are presented as wildlife interactions, incidents, and mortalities and incidental sightings in Sections 3.6.3.2 and 3.6.3.3.

Camera data from June 2016 to September 2023 were summarized and compiled for the purposes of conducting a statistical analysis to investigate whether there were differences between the number of grizzly bear events at cameras located in the Treatment zone (< 2 km from existing infrastructure) and in the Control zone (> 10 km from existing infrastructure). There were a sufficient number of events per month to permit statistical analyses of the predicted number of events recorded rather than predicted occupancy (probability of at least one event per month). A secondary analysis was completed to investigate a potential ZOI should a significant difference in the predicted number of events be detected. The models accounted for spatiotemporal variation in detections by including smoothed terms for northing and easting as well as month, and random variables for camera number and year where these terms improved model fit to the data.

Cameras 18, 21, and 22 monitor areas of possible bear attractants; cameras 18 and 21 monitor the Roberts Bay Waste Management Facility and camera 22 monitors an area at the Roberts Lake Outflow and fish fence (though the fish fence was not active in all camera monitoring years). Bears may be attracted to these areas—despite mitigations to reduce the attractiveness—resulting in these cameras recording more events than other areas near the Project (where avoidance is anticipated).

Further details on methodology for this monitoring program can be found in Appendix A and in Methods Section 3.2. Datasets of 2022 camera effort and detection events are presented in Appendices D to F. Compiled datasets of grizzly bear detection events from June 2016 to September 2023 are presented in Appendix P.

3.6.3 RESULTS

3.6.3.1 CAMERA MONITORING

Across all years of the camera monitoring program from June 2016 to September 2023, cameras were active and recording for a total of approximately 69,140 camera days (Camera effort within monitoring zones for the most recent year is summarized by month in Table 22; effort summaries per camera are provided in Appendix D). A brief summary of the grizzly bear events recorded across all cameras during the current monitoring period is provided below. Data from facility monitoring cameras 18, 21, and 22 are also included in the summary below (see Section 3.2.1).

TABLE 22 GRIZZLY BEAR EVENTS RECORDED BY MONTH AT TREATMENT, ZOI, AND CONTROL CAMERAS, SEPTEMBER 2022 TO 2023

Year	Month	Treatment Cameras				ZOI Cameras				Control Cameras			
		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²	
				Raw	Corrected			Raw	Corrected			Raw	Corrected
2022	Sept.	505 (20)	3	4	4.56	410 (16)	8	10	11.4	321 (18)	3	3	3.42
	Oct.	489 (18)	1	1	1.19	451 (17)	2	2	2.38	259 (13)	2	2	2.38
2023	Mar.	373 (15)	-	-	-	372 (13)	-	-	-	144 (7)	-	-	-
	April	375 (13)	1	1	1.1	416 (15)	-	-	-	265 (12)	-	-	-
	May	401 (16)	1	1	1.04	372 (16)	-	-	-	345 (18)	2	2	2.08
	June	420 (18)	4	7	7	372 (16)	1	1	1	434 (18)	2	2	2
	July	349 (16)	2	2	2.06	321 (15)	8	9	9.27	376 (17)	2	2	2.06
	Aug.	381 (16)	4	11	11.99	300 (13)	6	10	10.9	344 (17)	10	14	15.26
	Sept.	-	-	-	-	-	-	-	-	19 (1)	-	-	-
Total³		-	16	27	28.94	-	25	32	34.95	-	21	25	27.2

¹ Camera effort is presented as the total number of camera days by month; number of cameras with at least one camera day (i.e., unobscured) presented in parenthesis.

² Events are presented as the number recorded by cameras (raw) as well as the number of events corrected for the monthly darkness factor (corrected).

³ Total number of cameras with events represents the number of unique cameras with events across the monitoring period. Total number of events is the cumulative total across the monitoring period.



From the recent monitoring periods (September 2022 – September 2023), 84 grizzly bear events were recorded (Table 22). Temporally, grizzly bear were recorded starting in April and continuing through October (Photo 10), with no events between November and March (when grizzly bear are in hibernation; Table 22). Grizzly bear events were recorded in all zones in June through August (Table 22). Events occurred relatively evenly across zones, however, events occurred more frequently in the in the ZOI zone ($n = 32$) compared to the Treatment or Control zones ($n = 27$ and 25 respectively; Figure 17) in recent monitoring years (Table 22; Appendix P).



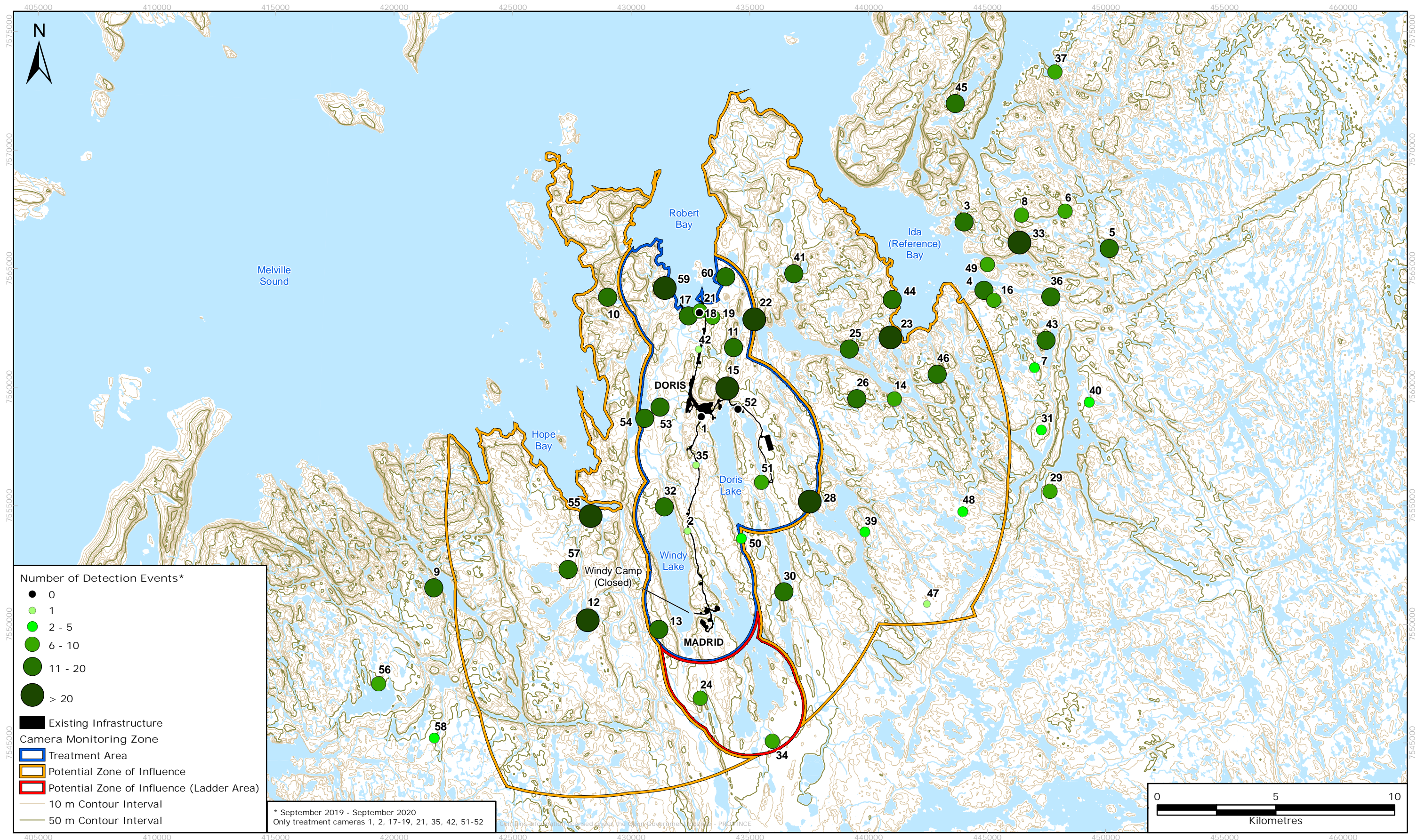
Photo 10 Grizzly bear captured on Control zone camera 33 on August 18, 2023.

Facilities Camera Monitoring

Under the current camera design, there are five cameras that have site specific monitoring objectives for grizzly bear: cameras 18 and 21 at the Roberts Bay Waste Management Facility, camera 22 at the Roberts Lake Outflow/Fish Fence, and cameras 51 and 52 at the north and south end of the TIA.

The Roberts Bay Waste Management Facility changed locations in 2022 and the camera which was responsible for monitoring the Waste Management Facility subsequently moved. The new location is outside of the composter and in the general entrance pathway for the Waste Management Facility. In the most recent monitoring period (September 2022 – September 2023) no grizzly bears were captured on camera in proximity to the Waste Management Facility.

FIGURE 17 DETECTIONS OF GRIZZLY BEAR ON MOTION-TRIGGERED PHOTOS RECORDED BY REMOTE CAMERAS, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023



During the monitoring period from September 2022 - September 2023, ten grizzly bear events were recorded at these cameras. One grizzly bear event was recorded on camera 51 at the north end of the TIA in June 2023. The event included a sow with a cub walking across the TIA (Photo 11). It appears that the pair are moving across the frame without stopping or interacting directly with the ground. The other nine events were recorded by camera 22 between June 30 and August 15 2023. Five of these events took place between August 12 and August 15 and included a single adult. Therefore, it is possible these events are capturing the same individuals using the area, however, events in this time period appear to be of multiple individuals based on size and colouration. Two events including sows with cubs were captured on camera 22 including a sow with a lone cub on June 30th 2023 and a sow with two cubs on August 8th 2023.



Photo 11 grizzly bear sow and cub walking across tia captured on Treatment camera 51. June 22, 2023.

Statistical Analysis

A spatiotemporal analysis was conducted on grizzly bear event data from 55 cameras; cameras 18, 21, and 22 were excluded from the analyses (see Methods Section 3.6.2). Effort and event data for the 55 cameras were included for cameras and months with effort ≥ 7 days. A total of six events occurred on cameras with less than seven days of effort and were subsequently removed from the analysis. This included one event from the Treatment zone and five events from the Control zone.

In the main analysis predicting grizzly bear events by camera zone, the best fit model included smooth functions for month and northing as well as random variables for camera number and year. There was no significant difference in the predicted number of grizzly bear events between

Treatment and Control cameras ($p = 0.83$; Table 23). Differences between ZOI and Control were also nonsignificant with ($p = 0.11$; Table 24). Month and northing were each included as a smooth function in the regression analysis as they provided better model fit to the data, though only the effect of northing was significant ($p < 0.05$; Table 23).

TABLE 23 SUMMARY OF TREATMENT VS. CONTROL MODEL COEFFICIENTS AND SIGNIFICANCE LEVEL FOR GRIZZLY BEAR CAMERA EVENT DATA

Coefficient	β Value	Standard Error (se)	t-Value	p-Value
Camera Type, ZOI	0.46	0.22	1.59	0.11
Camera Type, Control	0.07	0.29	0.21	0.83
Smooth (Northing)	0.30	0.31	2.37	0.02
Smooth (Month)	0.58	0.88	0.66	0.51

There were a modest number of cameras that recorded grizzly bear events in each of the three zones; the percentage of Camera*Months in the main analysis (effort ≥ 7 days per month) that had at least one event was similar between zones in 2023 (Table 24). A total of 27 events were recorded on Treatment cameras, 32 on ZOI cameras, and 26 on Control cameras (Table 19 and 24). Statistical analyses were carried out on the number of events (rather than occupancy, as for wolverine). These numbers suggest that there were robust sample sizes to draw predictions in both the Treatment and Control zones. Grizzly bear occupancy was calculated on the number of camera months in which one or more events occurred. This was lowest in the Treatment zone and highest in the ZOI zone across all monitoring years (Table 24). This suggests that grizzly bear may be concentrated within the Treatment zone to certain cameras or habitats and not occurring uniformly across the zone.

TABLE 24 SUMMARY OF CAMERAS WITH MONTHS ≥ 7 DAYS EFFORT AND TOTAL GRIZZLY BEAR EVENTS RECORDED

Occupancy ¹		Treatment	ZOI	Control
Unoccupied (no events)	No. Camera*Months ²	599	370	420
	Percentage (%; of Total)	79.4	71.2	73.8
Occupied (1 or more events)	No. Camera*Months ²	155	157	149
	Percentage (%; of Total)	20.5	29.8	27.2
Total Events		295	280	217

¹ Table summaries does not include event or effort data collected from Cameras 18, 21, and 22 from June 2016 to September 2023. These data are included in Table 22 and therefore event summaries will be different.

² Represents individual camera and month combinations. For example, for a single camera that had over a week of camera effort for the monitoring period from June 2016 to September 2023 (except hibernation months November-February, i.e., 51 months) and did not record a bear event, this camera would have a total of 51 unoccupied camera*months. If the same camera were to have recorded bear events in four months, the camera would have a total of four occupied camera*months and 39 unoccupied camera*months.

Given that there were no differences in the predicted number of grizzly bear events between Treatment and Control cameras, a secondary analysis for a potential ZOI was not necessary. The secondary analysis is performed when a statistical difference is obtained between Treatment and Control zones to determine at what distance the effect may be occurring. The analysis which uses six years of monitoring data suggests that grizzly bears are neither avoiding nor attracted to the Project. Modelling of all of camera monitoring data since June 2016 has shown that grizzly bear are not avoiding or attracted to the Project and therefore, 2023 is proposed to be the last year of conducting the camera ZOI analysis for grizzly bear. The camera monitoring program will continue, and results of grizzly bear detections will be summarized in the annual WMMP Report.

3.6.3.2 INTERACTIONS, INCIDENTS, AND MORTALITIES

Six grizzly bear interactions were recorded in 2023. On May 29, 2023, a grizzly bear entered the waste sorting area in Robert's Bay throughout the night and tore apart the waste receptacles. Upon inspection of the waste, it was found that food and hygiene waste was disposed of within the general debris instead of the appropriate waste to be incinerated. On-site, reemphasis was communicated with respect to proper waste segregation to reduce animal attraction. General waste is contained within seacans. There were no further incidents at this waste sorting area in 2023.

An interaction involved a single adult grizzly bear deterred by a drone into the tundra on May 28, 2023. Four of the interactions involved a single adult female grizzly bear with one or more cubs, in all cases requiring deterrence from the camp or active site areas. June 5, 2023, an adult female and cub were moved using a drone from the area around the airport and towards Doris Mountain. On June 16, 2023, one adult female and one cub were deterred for six minutes away from the site footprint using a helicopter. One adult female and three cubs were deterred towards Madrid using a drone on June 26, 2023. In July 2023, one adult female and one cub were deterred with a helicopter two times, they continued on towards the Doris Bridge on the TLR.

3.6.3.3 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

A total of 77 grizzly bears were incidentally observed in 2023 in 37 separate sightings (Table 25; Appendix H). Sightings occurred between May and September, with the majority of events in June ($n = 11$) and September ($n = 11$). The latest sighting occurred on September 27, 2023. Most of the sightings ($n = 22$) were of more than one bear. Five sightings were recorded near the TIA and TLR access road, however no bears were noted in the TIA footprint or interacting with the tailings.

TABLE 25 GRIZZLY BEAR SIGHTINGS AND INCIDENTAL OBSERVATIONS 2022

General Location	Months	Total Sightings	Total Individuals
Doris Area	June-September,	9	22
Windy Road/ Madrid	May-July, September	22	45
Airstrip	August	1	2
TLR/TIA	May, June, July, August	5	8

The number of grizzly bears observed per on-site personnel each month were calculated (Figure 18; Appendix K). Across years, grizzly bear sightings peak in July and August. However, in 2023 grizzly bear sightings peaked in September with the highest proportion of grizzly bears per on-site personnel since data collection began in 2009 (0.31 sightings per personnel; Figure 18). This may be in part a reflection of the low number of personnel on site due to care and maintenance, rather than an increase in the number of bears.

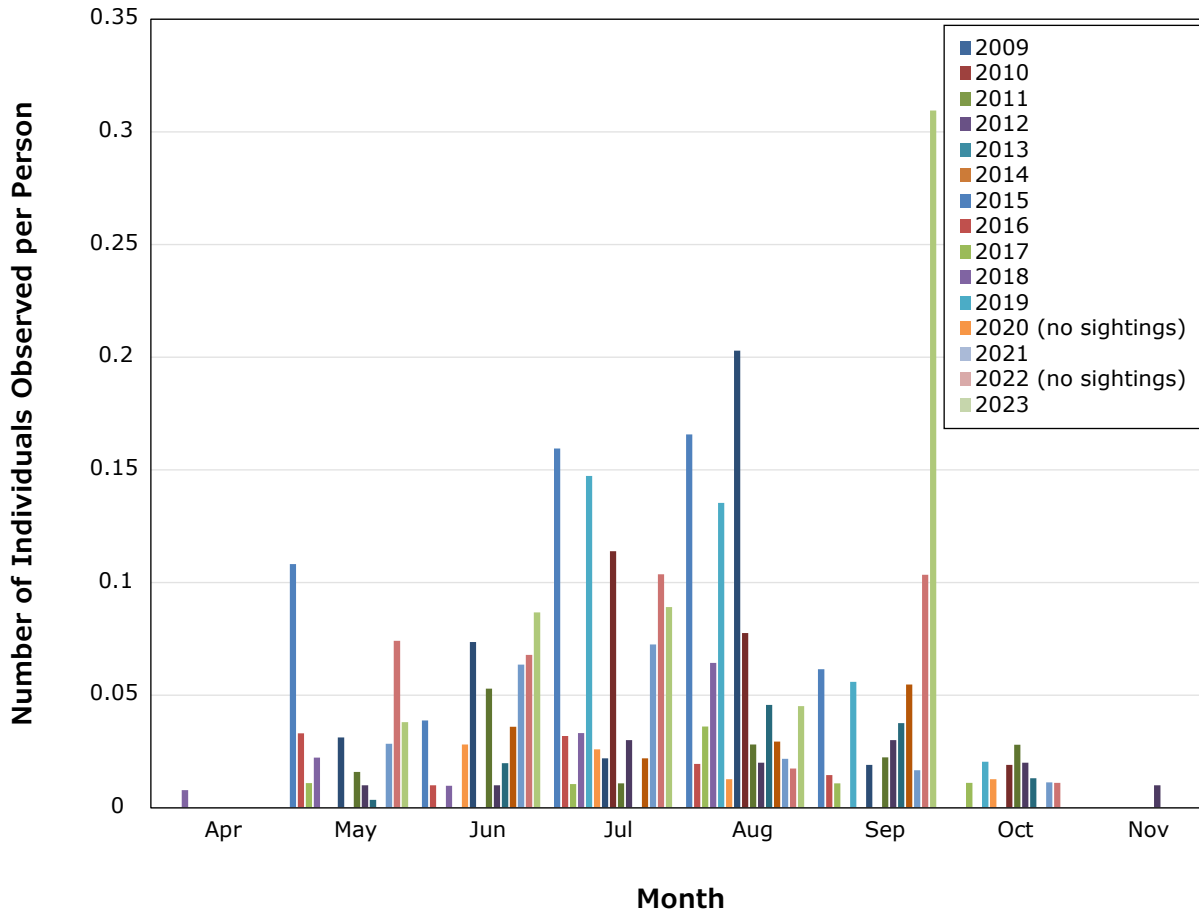
3.6.4 DISCUSSION

Grizzly bears were recorded in 84 camera events across all camera zones during the most recent data collection periods in September 2022 – September 2023. Grizzly bear events were commonly recorded in June through September. In the most recent period, camera events in the ZOI zone occurred at a higher frequency compared to the Treatment or Control zones, although events were relatively evenly distributed between zones. This is similar to monitoring trends in earlier years of the monitoring program.

Grizzly bear occurrences recorded on remote cameras from June 2016 to September 2023 were compiled and analysed to assess Project related effects on bear occurrence between the Treatment zone (< 2 km from infrastructure) and the Control Zone (> 10 km from infrastructure). Statistical analyses indicated that the chance of detecting a grizzly bear at Treatment cameras was not significantly different than at Control cameras, suggesting that the Project is not influencing the distribution of grizzly bears by either attraction to or by avoidance of the Project. Current management practices, such as waste management practices and responses to grizzly bear interactions and incidents, appear to be effective at reducing potential Project effects to grizzly bears. The statistical analysis of camera data will be concluded in 2024, with this analysis representing the final modelling for grizzly bear events. Monitoring has occurred from June 2016 to present and event modelling of these results have suggested that grizzly bears have not been attracted to nor avoiding the Project. In future years camera information for grizzly bears will be classified and summarized without statistical analysis.

One event consisting of a sow and cub was captured in the TIA on camera 51 in June of 2023. It appears that the pair were walking through the TIA without stopping and there was no evidence that they were directly interacting with the ground while moving through the TIA. This was the lone grizzly bear event captured by cameras on the TIA suggesting that grizzly bears may not use the TIA with regularity. An additional nine events including two of sows with a cub were captured on camera 22 which is located at the ERM fish fence. The fish fence was not used in 2023 and instead the grizzly bears were likely there to utilize the stream to catch fish which is supported by 66% of these events occurring in the late summer (August). The Roberts Bay Waste Management Facility changed locations in 2022 and no grizzly bears were captured on camera in proximity to the new location between September 2022 and September 2023. The lack of grizzly bear events indicate that grizzly bears are not being attracted to the Waste Management Facility and waste is being sufficiently handled.

FIGURE 18 NUMBER OF GRIZZLY BEAR INDIVIDUALS RECORDED PER PERSONNEL PRESENT, HOPE BAY PROJECT, 2009 TO 2023



The Madrid-Boston FEIS predicted a not significant and low magnitude residual effect of disruption of movement and attraction at a geographic extent of the PDA for grizzly bear. Camera monitoring in the current program has occurred since 2016 and modelling to analyze a potential ZOI has occurred since 2017. The complete dataset across six years does not indicate that grizzly bears are attracted to or avoiding the Project. At this time Agnico Eagle considered the grizzly bear ZOI analysis sufficient to confirm that the effects of the Project on grizzly bears are within predicted levels of potential attraction. Therefore, 2023 is proposed to be the last year of conducting the camera ZOI analysis for grizzly bear. The camera monitoring program will continue and results of grizzly bear detections will be summarized in the annual WMMP Report. If patterns in grizzly bear occurrence change (as evidenced by increased or decreased detections by camera zone or season), the ZOI analysis may be conducted again for further assessment of grizzly bear occurrence patterns. This update in the WMMP program will be included in an updated 2024 WMMP Plan, and discussed at the first IEAC meeting in 2024 prior to changes being implemented.

Grizzly bears were reported in the wildlife sightings log and as part of the interactions, incidents, and mortalities program. In 2023, there were five interactions in which grizzly bears required helicopter or drone deterrence from the site and one interaction involving a grizzly bear accessing a waste sorting facility in Robert's Bay. After the event waste sorting practices were discussed to prevent the situation from occurring again.

There were 37 incidental sightings of grizzly bears reported. Five sightings were recorded near the TIA and TLR access road, however no bears were noted in the TIA footprint or interacting with the tailings. TIA camera 51 also recorded one adult female grizzly bear and single young of last year cub in early June 2023. This number is similar to the number of grizzly bears incidentally reported in other years. The lack of repeated attraction to site facilities indicates that effective mitigation practices are in place. The number of individuals recorded in the wildlife sightings log should not be interpreted as observations of unique individuals (e.g., a population estimate) as it is likely that the same individuals can be counted across time by different observers.

3.7 WOLVERINE

Wolverine have large home ranges and populations are generally low in the central Arctic (Mulders 2000). This species is an important cultural and economic resource for people in Nunavut and the Northwest Territories. The Canada population of wolverine, including Nunavut, is considered a species of Special Concern by COSEWIC (2014) and under Schedule 1 of the SARA (Government of Canada 2021b). Additionally, in Nunavut wolverines are territorially listed as vulnerable (S3) suggesting they are at moderate risk of extirpation (CESCC 2020). Due to the reliance of wolverine on caribou as their main food source, the distribution and abundance of wolverine is affected by the trends in caribou populations (Banci and Spicker 2016). For example, the abundance of wolverine on Victoria Island was low after caribou abundance decreased in the early 20th century. However, with the increasing abundance of caribou on Victoria Island in the 1990s, the wolverine abundance also increased.

3.7.1 FEIS PREDICTIONS

The Madrid-Boston predictions included not significant and low magnitude residual effects of disruption of movement and attraction at a geographic extent of the PDA for wolverine (TMAC Resources Inc. 2017).

3.7.2 METHODS

The potential effects of Project-related activities on wolverine are monitored through the wildlife camera monitoring program as well as through the Wildlife Sightings/Reporting program, results of which are presented as wildlife interactions, incidents, and mortalities and incidental sightings in Sections 3.7.3.2 and 3.7.3.3. General methods for these programs are described in Section 3.2 and Appendix A.

Camera data from June 2016 to September 2023 were summarized and compiled for the purposes of conducting a statistical analysis to investigate whether there were differences between wolverine occupancy at cameras located in the Treatment zone (< 2 km from existing infrastructure) and in the Control zone (> 10 km from existing infrastructure). Wolverine occupancy at a camera was defined as one or more wolverine events at a camera in a month. Therefore, occupancy was modelled as a binomial distribution between cameras with no observations in a given month and cameras with at least one wolverine event at a camera in a given month. A secondary analysis was completed to assess a potential ZOI should a significant difference in the predicted occupancy between Treatment zone and Control zone cameras be detected. The models accounted for spatiotemporal variation in detections by including smoothed terms for northing and easting as well as month, and random variables for camera number and year where these terms improved model fit to the data.

Datasets of 2023 camera effort and detection events are presented in Appendices D to F. Compiled datasets of detection events from June 2016 to September 2023 are presented in Appendix R.

3.7.3 RESULTS

3.7.3.1 CAMERA MONITORING

Across the period from June 2016 to September 2023, cameras were active and recording for a total of approximately 69,140 camera days (Appendix D). Camera effort within monitoring zones by month is summarized in Table 12; effort summaries per camera are provided in Appendix D. A brief summary of the wolverine events recorded across all cameras during the current monitoring period is provided below. Data from cameras 18, 21, and 22 with specific monitoring objectives are also included in the summary below (see Methods Section 3.2.1).

From the recent monitoring period from September 2022 and September 2023, 11 wolverine were recorded (Figure 19; Table 26). Temporally, wolverine events were recorded from March to August, (Table 26; Photo 12; Appendix F). Events were most common in the Control zone ($n = 7$), followed by the ZOI ($n = 3$) and Treatment zone ($n = 1$; Table 27). In previous years, wolverine events occurred at similar rates and in similar proportions across the camera zones (i.e., lowest in the Treatment zone). Wolverine are almost always recorded as single individuals (Photo 13).



TABLE 26 WOLVERINE EVENTS RECORDED BY MONTH AT TREATMENT, ZOI, AND CONTROL CAMERAS, JANUARY 2020 TO SEPTEMBER 2023

Year	Month	Treatment Cameras				ZOI Cameras				Control Cameras			
		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²	
				Raw	Corrected			Raw	Corrected			Raw	Corrected
2022	Sept.	505 (20)	-	-	-	410 (16)	1	1	1.14	321 (18)	-	-	-
	Oct.	489 (18)	-	-	-	451 (17)	-	-	-	259 (13)	-	-	-
	Nov.	390 (18)	-	-	-	339 (16)	-	-	-	132 (6)	-	-	-
	Dec.	55 (9)	-	-	-	44 (5)	-	-	-	27 (2)	-	-	-
2023	Jan.	105 (11)	-	-	-	66 (8)	-	-	-	20 (3)	-	-	-
	Feb.	94 (8)	-	-	-	102 (7)	-	-	-	43 (3)	-	-	-
	Mar.	373 (15)	-	-	-	372 (13)	1	1	1.15	144 (7)	1	1	1.15
	Apr.	375 (13)	-	-	-	416 (15)	1	1	1.1	265 (12)	1	2	2.2
	May	401 (16)	-	-	-	372 (16)	-	-	-	345 (18)	3	3	3.12
	Jun.	420 (18)	1	1	1	372 (16)	-	-	-	434 (18)	-	-	-
	Jul.	349 (16)	-	-	-	321 (15)	-	-	-	376 (17)	-	-	-
	Aug.	381 (18)	-	-	-	300 (13)	-	-	-	344 (17)	1	1	1.09
	Sep.	-	-	-	-	-	-	-	-	19 (1)	-	-	-
	Total ³	-	1	1	1	-	3	3	3.39	-	6	7	7.56

Notes:

¹ Camera effort is presented as the total number of camera days by month; number of cameras with at least one camera day (i.e., unobscured) presented in parenthesis.

² Events are presented as the number recorded by cameras (raw) as well as the number of events corrected for the monthly darkness factor (corrected).

³ Total number of cameras with events represents the number of unique cameras with events across the monitoring period. Total number of events is the cumulative total across the monitoring period.



FIGURE 19 DETECTIONS OF WOLVERINE ON MOTION-TRIGGERED PHOTOS RECORDED BY REMOTE CAMERAS, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023

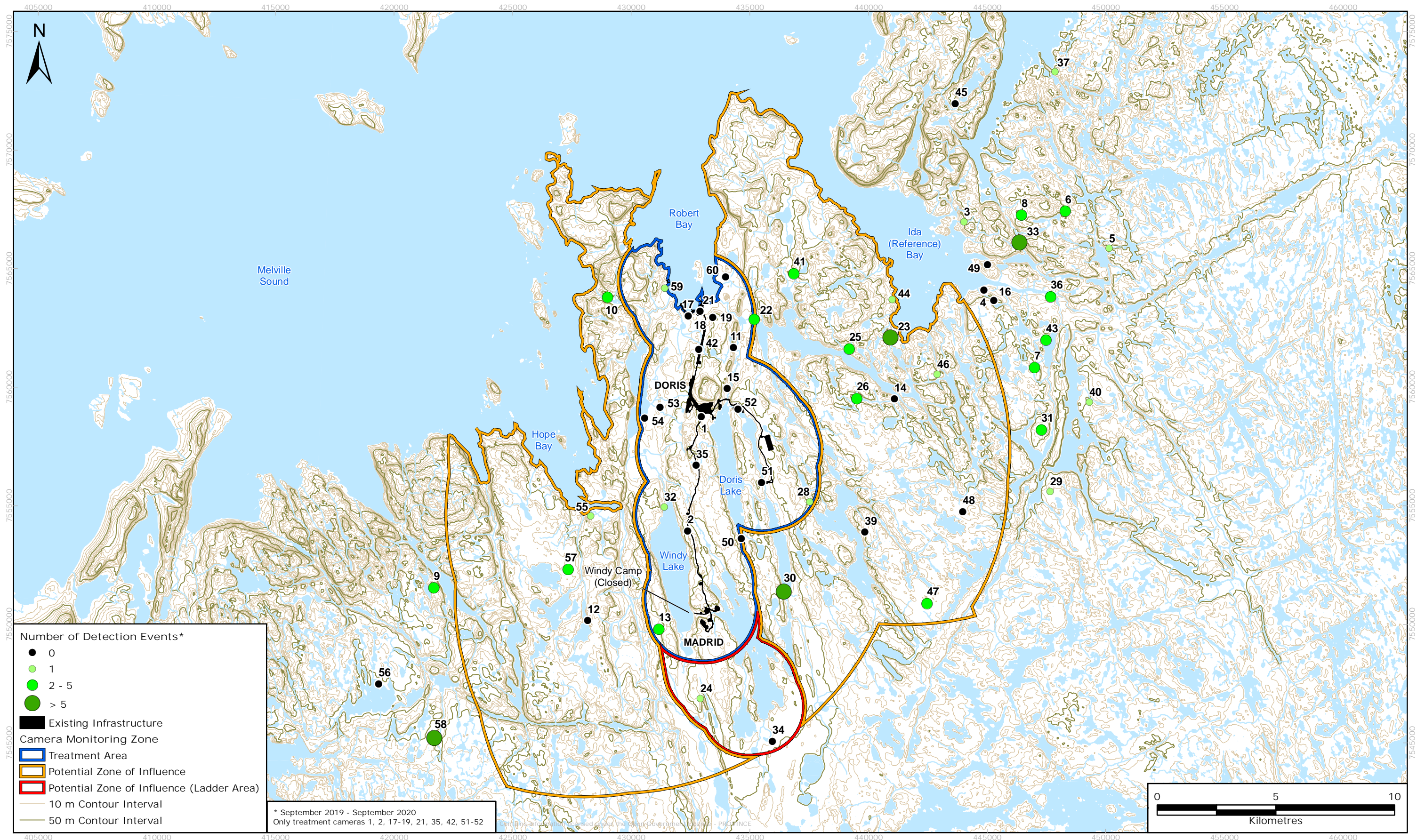




Photo 12 Wolverine captured on Control zone camera 43. May 19, 2023.



Photo 13 Wolverine captured on ZOI zone camera 23. Sept 25, 2022.

Facilities Camera Monitoring

Under the current camera design, five cameras have a site-specific monitoring objective for wolverine (the same cameras with site specific monitoring objectives for grizzly bear): camera 18 and camera 21 at the Roberts Bay Waste Management Facility, camera 22 at the Roberts Lake Outflow and Fish Fence, and cameras 51 and 52 at the north and south end of the TIA. In 2022 the Roberts Bay Waste Management Facility moved locations, and the camera associated with the facility subsequently moved with it. No wolverine events were recorded on facility cameras between September 2022 and September 2023.

Statistical Analysis

A statistical analysis was conducted to determine whether wolverine occupancy (probability of at least one wolverine event at a camera in a month) was different between the Treatment zone and Control zone using 55 cameras. Model selection included variables controlling for spatial and temporal correlation, with a smooth function for location (northing and easting) and month, in addition to the main effect variable for camera zone.

There was a significant difference in predicted wolverine occupancy between the Control and Treatment zones ($p < 0.01$), and between the Treatment zone and potential ZOI ($p < 0.01$; Table 27). The best fitting model did not include the smooth functions for easting, northing, or month, indicating that these variables are not impacting the probability of wolverine occurrence. The significant difference between the Treatment and ZOI camera zones in the main analysis indicates a potential ZOI is occurring within 2 km of infrastructure.

TABLE 27 SUMMARY OF TREATMENT VS. CONTROL MODEL COEFFICIENTS AND SIGNIFICANCE LEVEL FOR WOLVERINE CAMERA OCCUPANCY DATA

Coefficient	β Value	Standard Error (se)	t-Value	p-Value
Camera Type, ZOI	2.15	0.60	3.57	<0.01*
Camera Type, Control	2.45	0.59	4.14	<0.01*

* Indicates significant difference in wolverine occupancy compared to Treatment zone.

A secondary regression analysis was conducted to investigate for a potential ZOI for wolverine. The best fit model was similar to the categorical model, with only the distance from infrastructure variable providing optimal model fit. The significant effect of distance to infrastructure in the follow up regression ($p < 0.001$; Table 28) suggests that a ZOI is occurring for wolverine around the Study Area, and wolverines may be avoiding Project infrastructure. However, the model did not indicate a clear point at which predicted occupancy leveled with distance from infrastructure, and therefore does not provide a conclusive ZOI for wolverine. The probability of wolverine occupancy at wildlife cameras, visualized with a linear model in Figure 20, indicates generally low wolverine occupancy across the Study Area. The probability of occupancy increases from approximately 0.03 to 0.10 (i.e., 3 to 10% probability) between 0 km and 17.5 km from infrastructure. The predicted probability of occupancy values vary across distances, showing variation in wolverine occupancy among both closer distances to infrastructure (< 5 km) and

farther distances (> 10 km; indicated by the predicted values plotted along with the model lines). This variation suggests that wolverines are not altogether avoiding the Project area, but are more likely to occur at greater distances from infrastructure.

TABLE 28 SUMMARY OF SMOOTHED TERM OUTPUTS AND SIGNIFICANCE LEVEL FOR THE POTENTIAL ZOI MODEL FOR WOLVERINE CAMERA OCCUPANCY DATA

Term/Coefficient	β Value	Standard Error (se)	t-Value	p-Value
Distance to Infrastructure	0.76	0.22	3.52	<0.001*

Note: model terms are smoothed with non-linear splines.

* Indicates significant difference in wolverine occupancy compared to Treatment zone.

These results should be interpreted with caution because wolverine events remain extremely low compared to the number of active camera months. Less than 1% Camera*Months (effort \geq 7 days per month) had at least one wolverine event in the Treatment zone, while the ZOI had 5% and the Control zone had 6% Camera*Months with at least one event (Table 29). The statistical analysis of camera data will be concluded in 2024, with this analysis representing the proposed final modelling for wolverine occurrence. Wolverine occurrence remains low and the modelling results in recent years have been consistent in suggesting that wolverine occupancy is lower in proximity to the Project. Modelling of all of camera monitoring data since June 2016 has shown that wolverines are not avoiding the Project and therefore, 2023 is proposed to be the last year of conducting the camera ZOI analysis for wolverine. The camera monitoring program will continue, and results of wolverine detections will be summarized in the annual WMMP Report.

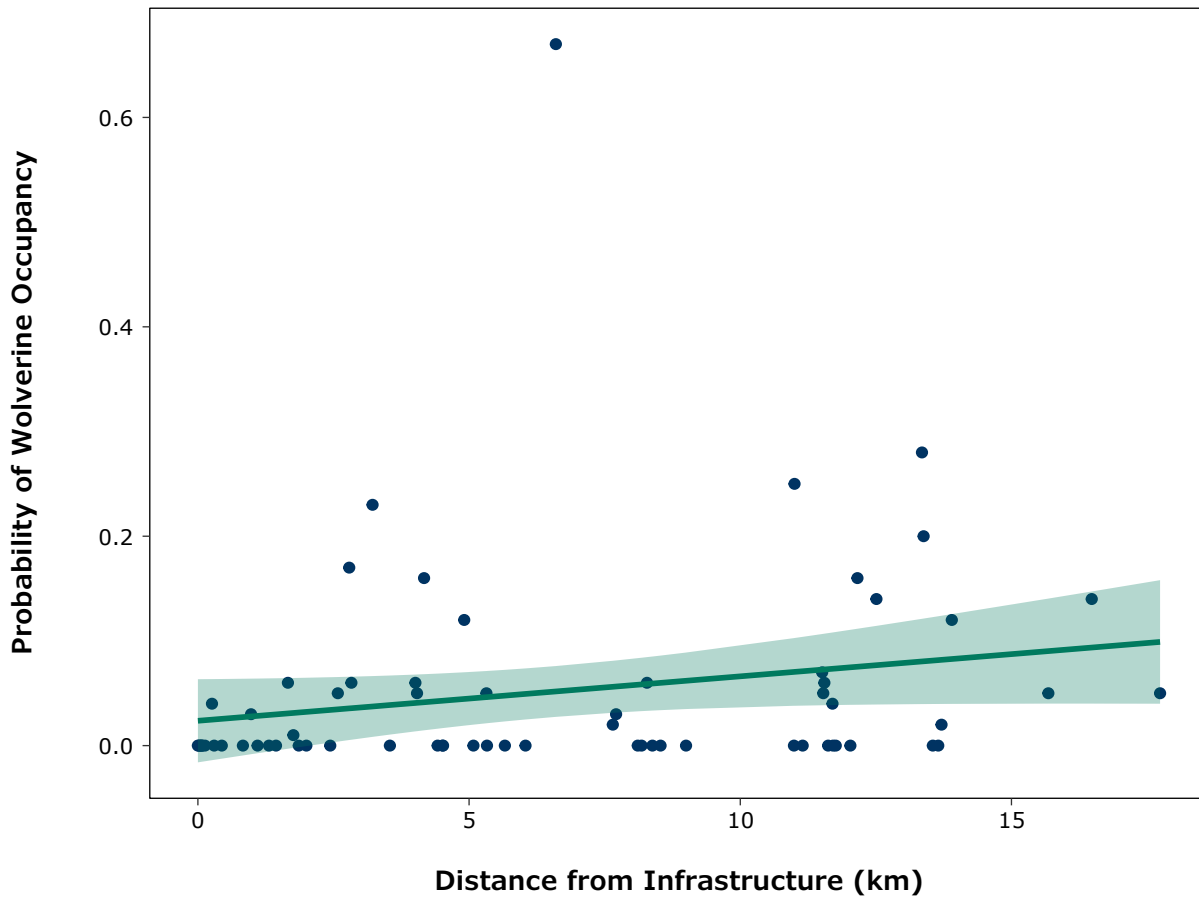
TABLE 29 SUMMARY OF CAMERAS WITH EFFORT \geq 7 DAYS IN A MONTH AND WOLVERINE OCCUPANCY

Occupancy ¹		Treatment	ZOI	Control
Unoccupied (no events)	No. Camera*Months ²	865	558	562
	Percentage (%; of Total)	99.3	94.9	93.6
Occupied (1 or more events)	No. Camera*Months ²	6	30	38
	Percentage (%; of Total)	0.7	5.1	6.3
Total Events		7	39	53

¹ Table summaries does not include event or effort data collected from Cameras 18, 21, and 22 from June 2016 to September 2023. Effort data for these three cameras are included in Table 26.

² Represents individual camera and month combinations. For example, for a single camera that had over a week of camera effort for the monitoring period from June 2016 to September 2023 (except December and January, i.e., 64 months) and did not record a wolverine event, this camera would have a total of 64 unoccupied camera*months. If the same camera were to have recorded wolverine events in four months, the camera would have a total of four occupied camera*months and 60 unoccupied camera*months.

FIGURE 20 PROBABILITY OF WOLVERINE OCCUPANCY AT WILDLIFE CAMERAS BY DISTANCE FROM INFRASTRUCTURE



Notes: Shaded area indicates 95% Confidence Intervals

3.7.3.2 INTERACTIONS, INCIDENTS, AND MORTALITIES

A single wolverine mortality was recorded in 2023 (Appendix G). On May 20, 2023 the remains of a single wolverine were located 750 m east of Windy Road. This mortality was deemed to be due to natural causes given that the carcass was located far away from infrastructure.

No wolverine interactions or incidents were reported during 2023 (Appendix G).

3.7.3.3 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

One wolverine was observed in 2023 (Appendix H). On March 27, 2023 a solo wolverine was observed at kilometer five on Windy Road, bounding west.

Wolverines have been recorded variably across years, with sightings most commonly occurring in winter and spring (January to May; Figure 21). Very few individual wolverines are typically seen in a given year compared to other large mammal VECs (see Sections 3.4 to 3.6).

3.7.4 DISCUSSION

Wolverine were recorded in low numbers across all camera zones, with 11 wolverine events recorded during the recent monitoring period September 2022-2023. Almost all wolverine camera events recorded are of one individual.

Wolverine occupancy (cameras with at least one wolverine event in a month) was compiled from wildlife cameras using data from June 2016 to September 2023. Analysis was conducted to assess Project related effects on wolverine occupancy between the Treatment zone (< 2 km from infrastructure) and the Control zone (> 10 km from infrastructure). The analysis accounted for spatiotemporal variation in the data by including smooth functions for month and location (northing and easting) and random variables for camera number and year.

Consistent with results from 2022, the analyses indicated that wolverine occupancy differed in the Treatment zone compared both the Control zone and the potential ZOI (2 to 10 km from infrastructure). A secondary analysis was conducted using continuous distance from infrastructure as a variable, with visualization showing that the probability of wolverine occupancy at wildlife cameras is very low overall but gradually increases from 3% to 10% as the distance from infrastructure increases to 20 km. The significant difference between the Treatment and ZOI camera zones in the main analysis indicates a potential ZOI is occurring within 2 km of Infrastructure. Results should be interpreted with caution because wolverine detections through the camera program remain rare.

The Madrid-Boston predictions included not significant and low magnitude residual effects of disruption of movement and attraction at a geographic extent of the PDA for wolverine (TMAC Resources Inc. 2017). Current analyses indicate that wolverine may be exhibiting avoidance of Project infrastructure at greater distances, potentially within around 2 km of infrastructure. This result is contrary to the FEIS prediction that wolverine may be attracted to the Project. Using the criteria for residual effects ratings from the FEIS, the current effect would be categorized as a low magnitude, medium duration, and reversible not significant effect (TMAC Resources 2017). At this time Agnico Eagle considered the wolverine ZOI analysis sufficient to confirm that the effects of the Project are not attracting wolverines. Therefore, 2023 is proposed to be the last year of conducting the camera ZOI analysis for wolverine. The camera monitoring program will continue

and results of wolverine detections will be summarized in the annual WMMP Report. If patterns in wolverine occurrence change (as evidenced by increased or decreased detections by camera zone or season), the ZOI analysis may be conducted again for further assessment of wolverine occurrence patterns. This update in the WMMP program will be included in an updated 2024 WMMP Plan, and discussed at the first IEAC meeting in 2024 prior to changes being implemented.

Wolverine have very large home ranges compared to the Project area, and potential avoidance is unlikely to impact a significant portion of any individual's territory. Home ranges of wolverines vary by sex, ranging from 100 km² for an adult female to over 600 km² for an adult male (Copeland and Whitman 2003). Low densities of wolverine in this area have been confirmed through other studies. A two-year wolverine DNA study in the northern portion of the Project Study Area in 2010 and 2011 estimated a relative density of 5.4 to 6.4 wolverine per 1,000 km² (Rescan 2011). Population densities of wolverine in other areas of the Canadian tundra are approximately 1.25 to 25 individuals per 1,000 km², depending on habitat and the availability of prey (Persson, Wedholm, and Segerstrom 2010; Inman et al. 2012).

Wolverine occupancy may also vary in the Project area due to natural differences in habitat and prey availability. For example, in winter caribou have been noted to be more common through the rocky areas surrounding the Project, rather than the low lying Green Belt where the mine site is situated. Wolverine may follow similar patterns, tracking caribou as their main form of prey. Because the camera program was implemented in its current design in 2016 after Project construction had commenced, there is no way to distinguish between natural environmental variation in species occurrence compared to distribution changes due to the presence of the Project.

Wolverine were not recorded on any specific facility monitoring cameras that monitor areas which may be attractants, or in the vicinity of the TIA in 2023. In 2022 the Roberts Bay Waste Management Facility moved locations, and the camera associated with the facility subsequently moved with it. No wolverine events were observed at the new location, nor had they been recorded at the previous location in recent years. The FEIS predicted a low magnitude residual effect for attraction to the Project for wolverine, but monitoring to date does not indicate any attraction of wolverine to the Project.

3.8 NEST PREDATORS

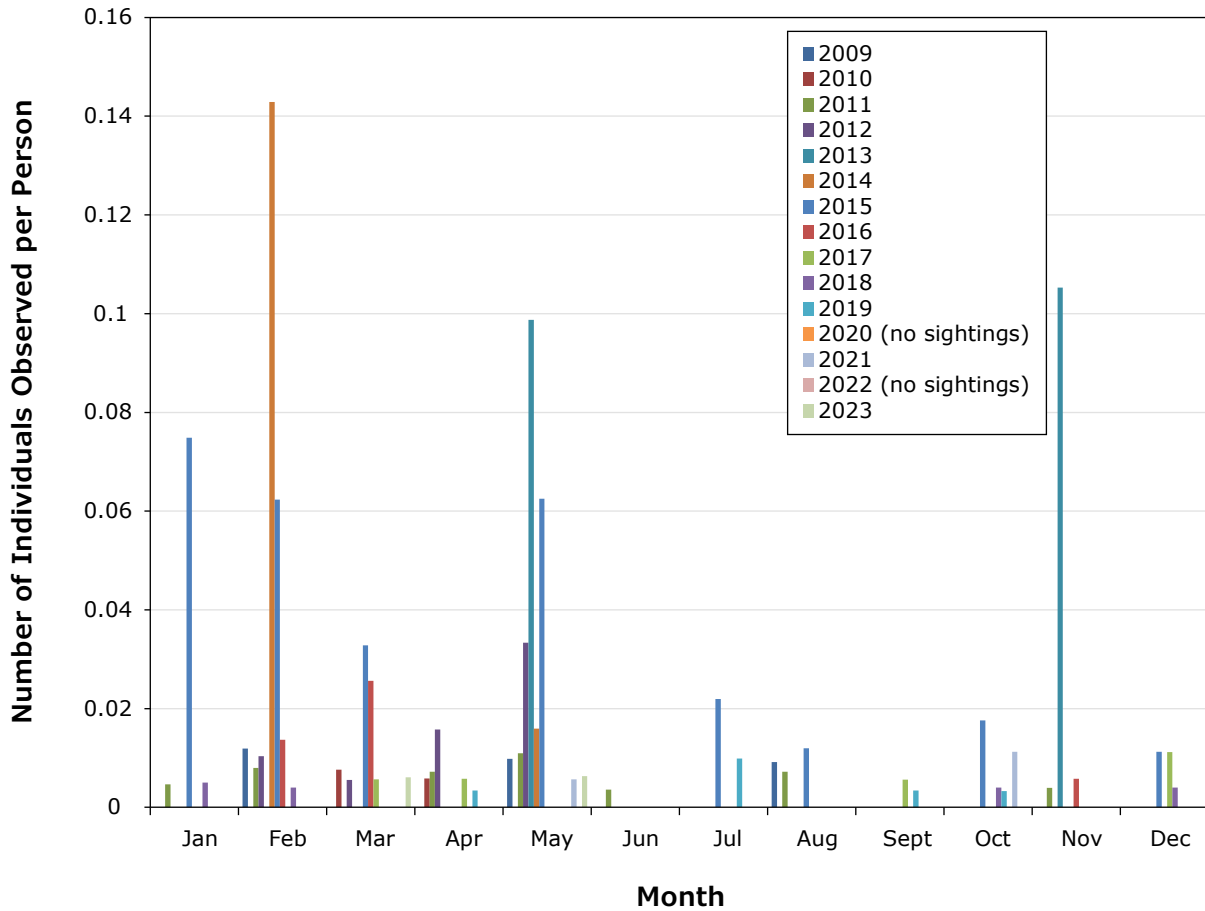
Nest predators include omnivorous or carnivorous species that frequently depredate bird nests. In the Project area, this includes common ravens (*Corvus corax*), Arctic fox (*Vulpes lagopus*), red fox (*Vulpes vulpes*), grey wolf (*Canis lupus*), gulls (*Laridae sp.*), and small-bodied mammals such as weasels (*Mustilidae sp.*).

3.8.1 FEIS PREDICTIONS

The attraction of nest predators to Project infrastructure, which could cause indirect mortality of nesting upland breeding birds and waterbirds, was not predicted to be a residual effect (TMAC Resources Inc. 2017).



FIGURE 21 NUMBER OF WOLVERINE INDIVIDUALS RECORDED PER PERSONNEL PRESENT, HOPE BAY PROJECT, 2009 TO 2023



3.8.2 METHODS

Nest predators are monitored through the wildlife camera monitoring program as well as through the Wildlife Sightings/Reporting program. General methods for these programs are described in Section 3.2.

For nest predators detected at cameras, small-bodied mammals such as weasels are excluded from analysis because of very low detections of these species by wildlife cameras.

3.8.3 RESULTS

3.8.3.1 CAMERA MONITORING

The following section presents the results of detections of potential nest predators from May 15 to August 15, in 2023 (i.e., during the bird nesting period in the Arctic). Across this period from May to August, available cameras were active and recording for a total of 11,996 camera days (Table 30).

From May 15 to August 15, 2023, there were a total of 18 unique events recorded that contained potential nest predators (Table 30; Figure 22; Appendix F). Events were generally consistent across months but were more common in the ZOI ($n = 9$) than the Treatment or Control zones ($n = 5$ and 4 respectively; Table 30). Recorded nest predators in the 2023 bird nesting period included red fox ($n = 8$; Photo 14), unspecified fox ($n = 9$), common raven ($n = 1$). Nest predator events typically consist of one individual and in the most recent monitoring period all events included only a single individual. The observed number of individuals does not represent the total number of unique individuals that were present due to the possibility of double-counting the same individuals both temporally and spatially.



Photo 14 Red fox captured on ZOI zone camera 25. April 5, 2023.

TABLE 30 NEST PREDATOR EVENTS RECORDED BY MONTH AT TREATMENT, ZOI, AND CONTROL CAMERAS, MAY 15 TO AUGUST 15, 2023

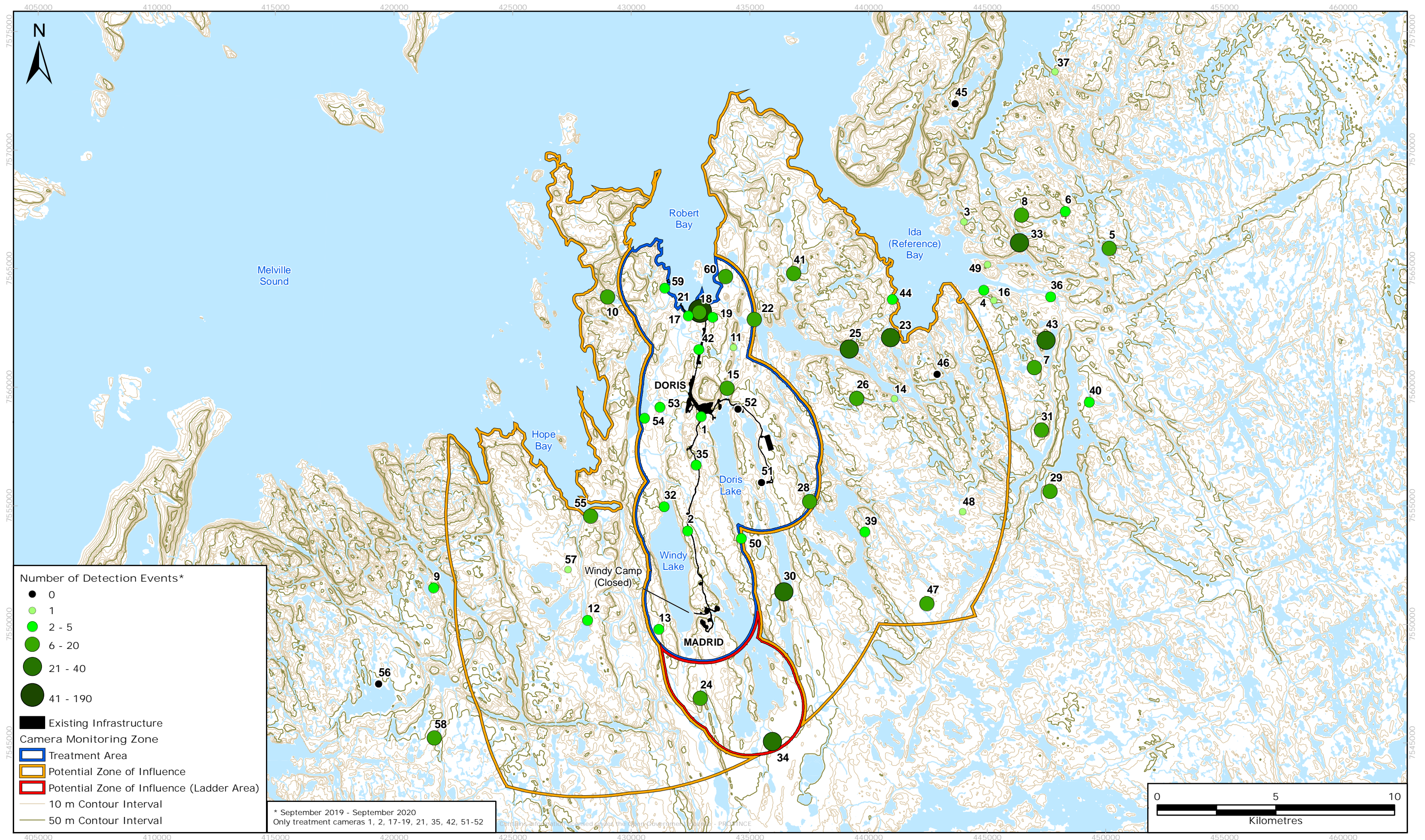
Year	Month	Treatment Cameras				ZOI Cameras				Control Cameras			
		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²		Camera Effort ¹	No. Cameras with Events	No. Events ²	
				Raw	Corrected			Raw	Corrected			Raw	Corrected
2023	May	401 (16)	-	-	-	372 (16)	3	3	4.16	345 (18)	-	-	-
	June	420 (18)	-	-	-	372 (16)	2	2	2	434 (18)	1	2	2
	July	349 (16)	3	4	4.12	321 (15)	3	3	3.09	376 (17)	1	2	2.06
	Aug.	381 (18)	1	1	1.09	300 (13)	1	2	2.18	344 (17)	-	-	-
Total³		-	4	5	5.21	-	9	10	11.43	-	2	4	4.06

¹ Camera effort is presented as the total number of camera days by month; number of cameras with at least one camera day (i.e., upright) presented in parenthesis.

² Events are presented as the number recorded by cameras (raw) as well as the number of events corrected for the monthly darkness factor (corrected).

³ Total number of cameras with events represents the number of unique cameras with events across the entire monitoring period. Total number of events is the cumulative total across the entire monitoring period

FIGURE 22 DETECTIONS OF NEST PREDATORS ON MOTION-TRIGGERED PHOTOS RECORDED BY REMOTE CAMERAS, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023



Facilities Camera Monitoring

Under the current camera design, there are five cameras that have site specific monitoring objectives for nest predators (the same cameras with site specific monitoring objectives for grizzly bear): cameras 18 and 21 at the Roberts Bay Waste Management Facility, camera 22 at the Roberts Lake Outflow/Fish Fence, and cameras 51 and 52 at the north and south end of the TIA. Individual camera effort information is in Appendix D.

Only two nest predator events were captured on facility cameras during the breeding bird period from May 15 to August 15, 2023. These consisted of two red foxes recorded on camera 51 at the North end of the TIA. These events represent the first nest predators captured on the TIA cameras, which suggests that the areas around the TIA are infrequently used by nest predators. The presence of nest predators such as foxes and wolves in this area may also be noted through the Wildlife Sightings/Reporting process, as discussed below.

3.8.3.2 INTERACTIONS, INCIDENTS AND MORTALITIES

One mortality involving nest predators was recorded in 2023 (Appendix G). A dead red fox was seen being carried by another red fox on November 25, 2023. The red fox was believed to have died of natural causes.

No nest predator interactions or incidents were reported during 2023 (Appendix G).

3.8.3.3 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

Fifty-six incidental sightings of potential nest predators were recorded in 2023, primarily red foxes ($n = 31$ sightings; Appendix H). Additional records include eleven raven sightings, five wolf sightings, four arctic fox sightings, ten unidentified fox sightings, two gull sightings, and one ermine sighting (Appendix H). All red fox sightings were of single individuals, except for pairs observed in March and July and one other sighting of an individual fox carrying another deceased fox in November. Sightings generally occurred in the Doris area ($n = 35$) and Windy Road/ Madrid area ($n = 15$; Table 31). All five sightings near the TIA and TLR access road were of red foxes and did not include any records of animals on the footprint of the TIA or interacting with tailings.

TABLE 31 NEST PREDATOR SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS 2023

General Location	Months	Total Sightings	Total Individuals
Doris Area	All months	35	47
Windy Road/ Madrid	February-April, June-August, October-December	15	16
TLR/TIA	February, June, August, November	5	5
Boston	September	1	1

Observations of nest predators standardized by the number of personnel on site between May and August across years are illustrated in Figure 23. Observations typically peak in May and decrease through the summer, with the highest proportion of nest predators per on site personnel from 2013-2014 (Figure 23).

3.8.3.4 SPECIES OF CONSERVATION CONCERN

None of the nest predator species known to occur in the Study Area are listed as species of conservation concern federally or in Nunavut.

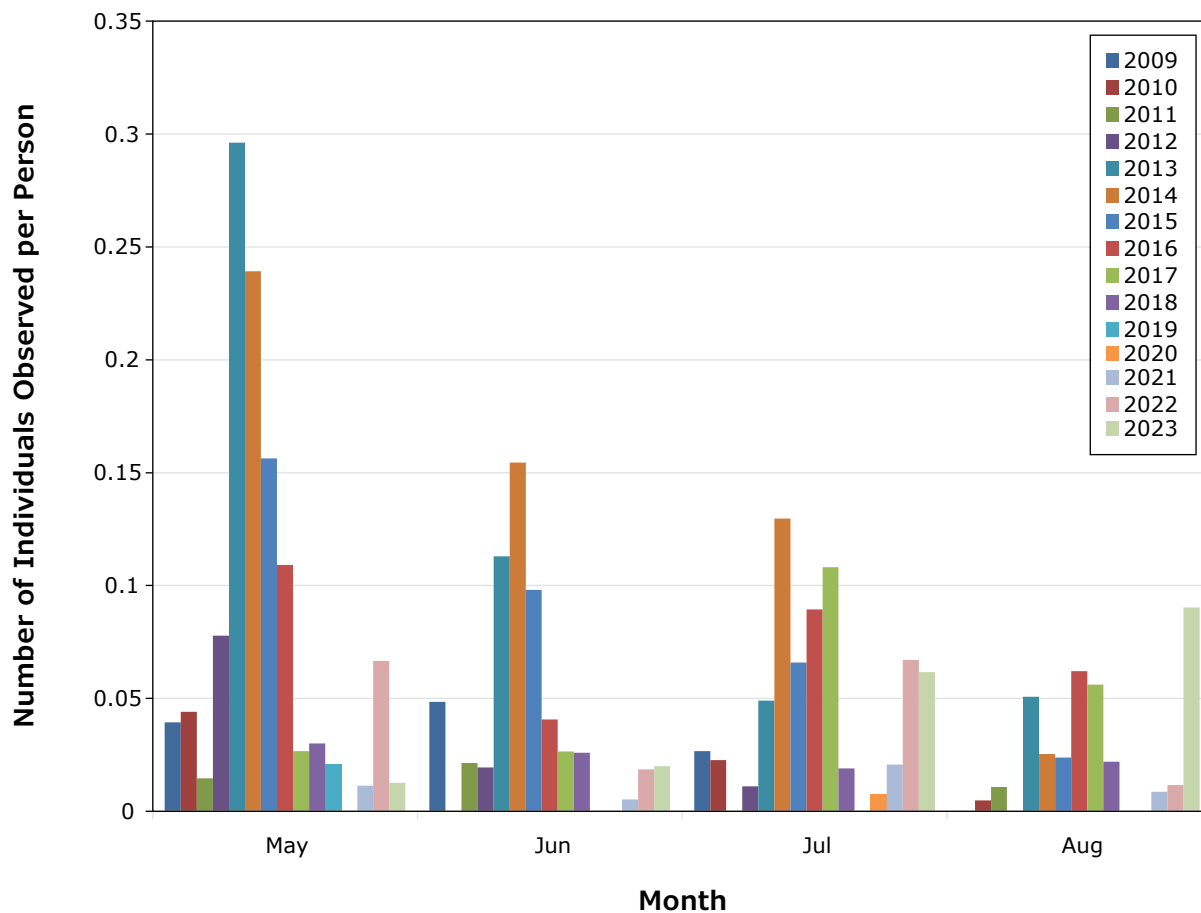
3.8.4 DISCUSSION

Nest predator events in 2023 were summarized during the breeding period for migratory birds (May 15 to August 15). Nest predator observations included red fox, unidentified fox, and common raven. Events were generally consistent across all camera zones and all monitoring months (May to August). Nest predator monitoring was initiated due to concern that the Project may attract nest predators and have a potential impact on upland breeding bird nest success near the site. However, monitoring has not indicated any attraction of nest predators to the Project area. Across years, nest predators are typically equally common across all camera zones. Additionally, the FEIS did not predict any effects related to nest predators and neither Project Certificate No. 003 nor Project Certificate No. 009 have any commitments related to nest predators. Therefore, it is proposed that 2023 will be the last year of targeted monitoring for nest predators. The incidentals, interactions, and incidents of non-VEC species (e.g., wolves and foxes) will continue to be reported in the annual WMMP Report, however camera data will not be assessed for non-VEC species. This update in the WMMP program will be included in an updated 2024 WMMP Plan, and discussed at the first IEAC meeting in 2024 prior to changes being implemented.

Two red fox events were the only nest predator events recorded on facility monitoring cameras. These events occurred on camera 51, which monitors activity at the north end of the TIA. These events represent the first nest predators captured on the TIA cameras, which suggests that the areas around the tailings dams are infrequently used by nest predators.

Fifty-three sightings of nest predators, primarily red fox individuals, were recorded in the wildlife sightings log in 2023. The number of individuals recorded in the wildlife sightings log should not be interpreted as observations of unique individuals (e.g., a population estimate) as the same individuals can be counted across time. No den sites were noted on or under infrastructure. These sightings indicate that building skirting (to prevent wildlife access) and routine inspections for denning potential have been effective mitigation strategies for preventing potential nest predators from denning on infrastructure. Overall, sightings of nest predator species are more common in May than June through August (Figure 23). Red fox and grey wolf are the most commonly detected nest predator species, while Arctic fox and birds (gulls and jaegers) are less frequently recorded.

FIGURE 23 NUMBER OF NEST PREDATOR INDIVIDUALS RECORDED PER PERSONNEL PRESENT BETWEEN MAY AND AUGUST, HOPE BAY PROJECT, 2009 TO 2023



3.9 UPLAND BREEDING BIRDS

Upland breeding birds include passerines and shorebirds. Upland breeding bird monitoring was conducted in 2023 to contribute a regional upland bird monitoring program for the Canadian Arctic led by CWS, as described in the WMMP Plan (Agnico Eagle Mines Limited 2023).

The Doris upland bird monitoring compliance program was paused from 2018-2021 while under active discussion and review with CWS and the KIA. Long term monitoring and analyses from 2006 to 2019 concluded that effects of the Project could not be detected beyond 100-200 m, which is within the predicted effects of 500-1,000 m from the 2006 FEIS.

In early 2021 the upland bird program was officially discontinued for Project effects purposes; monitoring has shifted to contribute to the CWS regional monitoring program. As described in the WMMP, survey plots were selected by CWS from the Program for Regional and International Shorebird Monitoring (PRISM) database and monitored every 5 years. Where possible, the monitoring will be split into two consecutive years of monitoring (i.e., 12 plots one year, and the remaining 12 plots the following year; Agnico Eagle Mines Limited 2023). The first year of PRISM surveys for the regional upland bird monitoring program were conducted in 2022. The second year of PRISM surveys were postponed in 2023 and will subsequently be completed in 2024. Surveys were not completed in 2023 because of logistical constraints created by the Project being in care and maintenance.

Upland breeding bird monitoring is also conducted every two years to monitor bird use of the habitat around the TIA, in compliance with Term and Condition 26 of Project Certificate No. 009 (NIRB 2018, Agnico Eagle Mines Limited 2023). This monitoring was conducted in 2021 and will be completed again in 2024.

Pre-clearing surveys for upland bird nests are conducted if clearing of natural vegetation occurs within the reproductive period for birds in the Arctic (May to August; ECCC 2016). However, pre-clearing surveys for nesting birds were not conducted in 2023, because clearing of new areas did not occur during the breeding bird period in 2023 (see Section 2.1).

3.9.1 FEIS PREDICTIONS

The Madrid-Boston FEIS predictions included two potential residual effects for upland breeding birds: a not significant and a negligible magnitude residual effect of disturbance at a geographic extent of the LSA, and a not significant and low magnitude residual effect of direct mortality at the geographic extent of the PDA for upland breeding birds (TMAC Resources Inc. 2017).

3.9.2 METHODS

The potential effects of Project-related activities on upland breeding birds were monitored in 2023 through the wildlife interactions, incidents, and mortalities program and incidental sightings program; these records are qualitatively assessed for trends. General methods for these programs are described in Section 3.2 and raw data are in Appendices H to J.

3.9.3 RESULTS

3.9.3.1 INTERACTIONS, INCIDENTS, AND MORTALITIES

One interaction involving upland breeding birds was recorded in 2023 (Appendix G). The interaction occurred on July 9, 2023, involving a single unknown species of ptarmigan flushed from their nest by site personnel. The nest contained four eggs and was left for the bird to return to undisturbed.

3.9.3.2 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

Upland breeding birds were observed in 29 separate sightings in 2023, mostly in the Doris area (Table 32; Appendix H). The majority of sightings ($n = 24$) were of unspecified ptarmigan species. Groups of more than 20 ptarmigan were observed on 3 occasions, including one group of 30 on October 27, at kilometer 6 of Windy Road. Additional sightings included one American robin at the Doris Creek Bridge and another American robin near the powerhouse, fifteen Lapland longspur at the South Dam of the TIA, twelve snow buntings flying over kilometer 4 of Windy Road, and over fifty snow buntings at the Robert's Bay Jetty.

TABLE 32 UPLAND BREEDING BIRDS SIGHTINGS AND INCIDENTAL OBSERVATIONS 2022

General Location	Months	Total Sightings	Total Individuals
Doris Area	January-March, May-November	17	142
Windy Road/ Madrid	January-March, May, October, November	8	93
TLR/TIA	April, July, August, October	4	54

3.9.3.3 SPECIES OF CONSERVATION CONCERN

In 2023, the snow bunting was the only upland bird species of conservation concern observed. Snow buntings are listed as a vulnerable species in Nunavut (CESCC 2020). There were two incidental observations of the snow bunting in 2023. Records of species of conservation concern observed at the Project since 1996 are reported in Appendix J.

3.9.4 DISCUSSION

No pre-clearing surveys for upland breeding birds were conducted in 2023 because clearing activities did not occur. One interaction occurred, where in an unspecified ptarmigan species was accidentally flushed from its nest by site personnel. Twenty-nine incidental observations were recorded in the wildlife sightings log, primarily of ptarmigan in the Doris area.

PRISM surveys are conducted to contribute to CWS regional monitoring data. Twelve plots were surveyed in 2022 and another 12 will be completed in 2024. Regional PRISM surveys are set to be conducted on an ongoing basis in two of every five years. Monitoring at the TIA occurs every two years, was most recently conducted in 2021 and will be conducted again in 2024.



3.10 WATERBIRDS

Waterbird field surveys for the Doris compliance program have been scaled back from previous years after comprehensive analyses of the dataset from 2006-2018 and discussion with CWS. Monitoring for waterbirds and shorebirds will be conducted every two years from a height of land on the lakeshore using a spotting scope. Beginning in 2022, shoreline ground monitoring locations for the Project area were established to monitor waterbird abundance and species diversity by distance from Project infrastructure. This monitoring was conducted in 2022, and therefore was not repeated in 2023. Ground surveys for monitoring waterbirds and shorebirds will be continued in 2024.

Water quality at the TIA was monitored in 2023 in accordance with commitment 31 and condition 26 (NIRB 2018). Should water quality exceed guidelines for waterbirds, Agnico Eagle will conduct a toxicological risk assessment to determine if birds are safe using or nesting on the TIA. If that assessment determines that there is a risk to waterbird health, then waterbirds will be deterred from the TIA. Water quality was monitored at the TIA and did not exceed guidelines for wildlife in 2023, so no risk assessment was warranted (Section 3.10.3.2; Appendix T).

3.10.1 FEIS PREDICTIONS

The Madrid-Boston FEIS predictions included a not significant and a negligible magnitude residual effect of disturbance at a geographic extent of the LSA and a not significant and low magnitude residual effect of direct mortality at the geographic extent of the PDA for waterbirds (TMAC Resources Inc. 2017).

3.10.2 METHODS

In 2023 the potential effects of Project-related activities on waterbirds were monitored by water quality in the TIA (section 3.10.2.2), and the interactions, incidents, and mortalities program, as well as the wildlife sightings log. These data are summarized and qualitatively assessed for trends; general methods for these programs are reported in Section 3.2.

3.10.2.1 WATER QUALITY MONITORING IN THE TIA FOR WATERBIRDS

Water quality in the TIA at location TL-1 was sampled every week in 2023 ($n = 52$) by onsite staff as part of the existing water license requirements. Water quality data for parameters with guidelines relevant to wildlife (i.e., arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc) are presented in Appendix T. Summary statistics (mean, standard deviation, and maximum concentrations) were compared to the CCME *Water quality guidelines for the Protection of Agriculture – Livestock* as those are the most relevant available guidelines for wildlife.

3.10.3 RESULTS

3.10.3.1 WATER QUALITY MONITORING IN THE TIA FOR WATERBIRDS

Table 33 presents summary statistics (mean, standard deviation, and maximum concentrations) for water quality parameters measured at TL-1 in the TIA in 2023 and the corresponding CCME water quality guidelines. The comparison of maximum concentrations to respective guideline

values indicates that water quality in the TIA meets guidelines for the protection of livestock and therefore no parameter was screened in for further assessment in an ecological risk assessment.

On June 20th, there was a spike in the maximum concentration of Nickel to 3.95 mg/L, however all other values were below the guideline (Table 33; Appendix T). The single occurrence of a high value indicates it is likely the result of contamination or lab error. This suggests that the value was likely not indicative of the water quality at TL-1 during sampling. Therefore, this sample was not selected for further assessment.

TABLE 33 SUMMARY STATISTICS FOR WATER QUALITY PARAMETERS WITH CCME GUIDELINES AT THE TIA (TL1)

Parameter	CCME Water Quality Criteria, Livestock ¹	Mean	Standard Deviation	Maximum	Selected for Further Assessment ?
Arsenic (As)-Total	0.025	0.0024	0.0007	0.0037	No
Cadmium (Cd)-Total	0.08	3.0 E-04	1.21 E-05	0.0001	No
Copper (Cu)-Total	5 ²	0.0189	0.0067	0.0305	No
Lead (Pb)-Total	0.1	0.0003	0.0001	0.001	No
Mercury (Hg)-Total	0.003	5.0 E-6	6.78 E-21	5.0 E-6	No
Nickel (Ni)-Total	1	0.0966	0.5470	3.95	No, see text
Selenium (Se)-Total	0.05	0.0004	0.0002	0.001	No
Zinc (Zn)-Total	50	0.0224	0.03	0.214	No

Notes:

Concentrations are in mg/L.

¹ Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Agriculture, Livestock.

² Guideline is variable. 5 mg/L for poultry was used, from Canadian Council of Resource and Environment Ministers (CCREM) 1987 (updated 2008) Canadian Water Quality Guidelines (CWQG).

3.10.3.2 INTERACTIONS, INCIDENTS, AND MORTALITIES

One mortality involving waterbirds was recorded in 2023. On November 18, 2023, an unidentified shearwater was located unable to move and was later found deceased. The individual died of natural causes due to exposure to the elements and was scavenged by ravens.

No waterbird interactions or incidents were reported during 2023 (Appendix G).

3.10.3.3 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

Waterbirds were incidentally sighted on 42 occasions, primarily in September ($n = 14$), July ($n = 9$) and August ($n = 7$; Table 34; Appendix H). The majority of sightings ($n = 14$) consisted of geese, including Canada geese and unspecified geese, where sightings ranged from 1 to 60 individuals, for a total of 261 individual geese. Forty-six sandhill cranes were observed on 13 different occasions in varying group sizes from 1 to 12. Eight swans were observed on six separate occasions, three

unidentified gulls were recorded on two occasions, and three pacific loons were also sighted on one occasion. A total of 44 ducks of unidentified species were observed on four occasions. Waterbird sightings were on the tundra ($n = 21$), on water or shoreline ($n = 9$), on site ($n = 9$), in the air ($n = 2$), and within a wetland ($n = 1$).

TABLE 34 WATERBIRD SIGHTINGS AND INCIDENTAL OBSERVATIONS 2023

General Location	Months	Total Sightings	Total Individuals
Doris Area	May, July-September, November	10	38
Windy Road/ Madrid	May-September	23	270
TLR/TIA	July-September	7	60
Airstrip	May, June	2	8

Three observations were of ducks on the TIA ($n = 14$). Waterbirds are occasionally recorded on the TIA, however ongoing monitoring indicates that the water quality is below threshold guidelines and should not pose a risk to wildlife (see Section 3.10.3.2 above).

The number of individuals recorded in the wildlife sightings log should not be interpreted as observations of unique individuals (e.g., a population estimate) as it is likely that the same individuals can be counted across time by different observers.

3.10.3.4 OBSERVATIONS FROM ABOARD VESSELS

Aboard the Qamutik, waterbirds were observed on 14 occasions, with them occurring in August ($n = 11$) and September ($n = 3$). The majority of the sightings the waterbirds were seen flying ($n = 10$) and all others observed on the ocean surface ($n = 4$). Sixteen common loon were observed on two occasions, twelve northern fulmar were observed on six occasions, ten Canada geese were observed on a single occasion, four herring gull were observed on a single occasion, 3 black guillemot were observed on a single occasion and 2 polmarine jaeger were observed on two occasions.

3.10.3.5 SPECIES OF CONSERVATION CONCERN

None of the waterbird species of conservation concern known to occur in the Study Area were observed in 2023. Records of species of conservation concern observed at the Project since 1996 are reported in Appendix J.

3.10.4 DISCUSSION

No chemical parameters were scoped for an ecological risk assessment for waterbirds detected on the TIA, based on a comparison to the only water quality guidelines applicable to wildlife in the area, *CCME Water quality guidelines for the Protection of Agriculture – Livestock (Canadian Council of Ministers of the Environment 1999)*. These guidelines have been developed primarily for the protection of livestock including poultry and are assumed to be protective of waterbirds.

A single elevated detection of Nickel concentration (3.95 mg/L) recorded on June 20 was not selected for further assessment because the value was likely the result of contamination or lab error. The value spiked during that sampling event and then immediately returned to typical values seen in the sampling events leading up to that date. There were no values over the entire sampling period of 2023 that were similar to this value. This suggests that the value was likely not indicative of the water quality at TL-1 during sampling. This is the first and only occurrence of an error in the TIA water quality sampling for this program, which indicates that sampling protocols are followed and generally values should be accurate.

Geese, sandhill cranes, ducks, swans, loons and seabirds were incidentally observed on 56 occasions from May to November. The number of individuals recorded in the wildlife sightings log should not be interpreted as observations of unique individuals (e.g., a population estimate) as it is likely that the same individuals can be counted across time by different observers. Three observations were of ducks on the TIA ($n = 14$ ducks). Waterbirds are occasionally recorded on the TIA, however ongoing monitoring indicates that the water quality is below threshold guidelines and should not pose a risk to wildlife (see Section 3.10.3.2 above).

Eleven waterbirds were observed flying between August 29 and 30, 2023. Twenty-one seabirds were incidentally observed between August 29 and September 8, 2023. Of the twenty-one observed, eleven were flying and ten were resting on the ocean surface. One species of sea duck was observed rafting in the water at sea.

3.11 RAPTORS

Raptor field surveys for the Doris compliance program have been discontinued. A comprehensive statistical analysis of raptor nesting data was performed to test FEIS predictions and presented in the 2018 WMMP Report (ERM 2019). Following comments from ECCC and the GN, a more holistic analysis was conducted, using additional data compiled by the Government of Northwest Territories from 1987 to 2004 and analyzing effects separately for each species. The analysis was submitted as a scientific publication for peer review in 2019 but the peer review process was not properly completed due to reviewer unavailability during the Covid-19 pandemic. The paper is in the process of edits and re-submission. Broadly, the analysis concluded that breeding rate was primarily driven by annual weather variation; influence of specific weather parameters (snow depth, precipitation, temperature) varied by species, connected to differences in nesting site characteristics such as overhang protection. Top AIC ranked breeding rate and productivity models generally did not include mine impact parameters, indicating that mine activity did not influence breeding rates or productivity in any of the raptor species.

Occupancy surveys of raptor territories in Madrid North were not conducted in 2023 because construction did not occur in the area during the raptor breeding period. These surveys are required if construction occurs during the raptor breeding period as part of condition 27 for Project Certificate No. 009 (NIRB 2018).

3.11.5 FEIS PREDICTIONS

The Madrid-Boston FEIS predictions included a not significant and low magnitude residual effect of disturbance at a geographic extent of the RSA and direct mortality at the extent of the PDA for raptors (TMAC Resources Inc. 2017).

3.11.6 METHODS

The potential effects of Project-related activities on raptors were monitored in 2023 through the wildlife interactions, incidents, and mortalities program and incidental sightings program; these records are qualitatively assessed for trends. General methods for these programs are described in Section 3.2.

3.11.7 RESULTS

3.11.7.1 INTERACTIONS, INCIDENTS, AND MORTALITIES

No incidents, interactions, or mortalities with raptors were recorded in 2023.

3.11.7.2 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

In 2023, a total of 39 raptors were reported in 25 sightings between April and November (Appendix H). Eagles were observed on ten occasions and included 10 unidentified eagles, two golden eagles, and one bald eagle. Peregrine falcon ($n = 6$ sightings), ravens ($n = 6$ sightings), and rough-legged hawks ($n = 1$ sightings) were also noted. Additionally, one snowy owl was recorded at kilometer 2 of Windy Road. Sightings were most common in the Doris area, typically noted soaring or flying over camp (Table 35). Raptors were also recorded occasionally along Windy Road and the TLR (Table 35). All raptors observed on the TLR were not observed within the footprint of the TIA or interacting with it.

TABLE 35 RAPTOR SIGHTINGS AND INCIDENTAL OBSERVATIONS (2023)

General Location	Months	Total Sightings	Total Individuals
Doris Area	April-September	15	27
Windy Road/ Madrid	May-September	8	10
TLR/TIA	September	2	2

3.11.7.3 SPECIES OF CONSERVATION CONCERN

In 2023, the golden eagle, listed as a vulnerable species in Nunavut (CESCC 2020), was the only species of conservation concern observed. There were two incidental observations of the golden eagle in 2023. Records of species of conservation concern observed at the Project since 1996 are reported in Appendix J.

3.11.8 DISCUSSION

Aerial surveys of raptor nests in the vicinity of Madrid North were not conducted in 2023 because no construction occurred in the area.

During 2023, 25 raptor sightings were recorded in April through September. The majority of individuals were peregrine falcons and eagles, while the remainder included a snowy owl and rough-legged hawks. No raptor nests were identified incidentally in 2023, and no interactions or incidents occurred.

3.12 MARINE MAMMALS

The WMMP Plan includes potential monitoring for noise and marine mammals during construction of the planned dock in Roberts Bay. Noise monitoring activities will be subject to an authorization from DFO, via an application process including information on detailed design and construction methods. The dock at Roberts Bay was not constructed in 2023 and as such, no monitoring related to construction noise was conducted (Agnico Eagle Mines Limited 2023).

The Shipping Management Plan was updated in early 2023 to include monitoring for marine wildlife in Roberts Bay during the shipping season, following condition 33 in Project Certificate No. 009 (NIRB 2018), which is specific to marine noise monitoring. Monitoring for this program was conducted for the first time 2023.

Mitigations for marine mammals related to shipping activity are described in the Shipping Management Plan (based on conditions 30, 31, and 32 in Project Certificate No. 009; NIRB 2018). These mitigations include required measures for shipping vessels and reporting of incidental sightings and incidents on shipping routes. All incidental sightings and incident reports are included in the WMMP Report (see Results).

3.12.1 FEIS PREDICTIONS

The Madrid-Boston FEIS predictions included a not significant and no potential of residual effects on ringed seals, which were used as an indicator for the larger marine mammals community. (TMAC Resources Inc. 2017).

3.12.2 METHODS

The potential effects of Project-related activities on marine mammals are monitored via observation surveys Roberts Bay during shipping activity, as well as through the Wildlife Sightings/Reporting program, results of which are presented as wildlife interactions, incidents, and mortalities and incidental sightings (see Section 3.2).

3.12.2.1 MARINE MAMMAL MONITORING

In 2023, a marine wildlife monitoring program was implemented to assess disturbance of marine wildlife during shipping season from vessel noise. The surveys were conducted in Roberts Bay, once per day for at least four days of each of the following: before the ships arrived in the bay, while they were anchored in the bay, and after they had departed. Surveys followed an SOP which details the timing, locations, data collection, and provides resources for common species ID



(Appendix AB). Surveys were completed from the shore, at locations with the best view of the Bay (the jetty or the 730 building, see map in Appendix AB). Surveys lasted thirty minutes and observers scanned for the presence and behaviour of any marine mammal in the bay.

Survey data included the date, start and end time, weather, sea state, wind (Beaufort scale), wind direction, wave height in the bay, glare conditions, and estimated visibility in kilometers. When a marine mammal was sighted, observers recorded the species, numbers of marine mammal individuals, age class, sex, and behavior of the animals. In addition, timing of the observation, distance from the observer, angle of sighting relative to observation, whether a mitigation action occurred, and location were recorded.

3.12.2.2 SHIPPING MITIGATIONS

Incidental sightings and incidents along shipping routes are also reported by shipping vessel operators. Additionally, vessel tracks were assessed via data from the Wood Mackenzie vessel tracking database to confirm that setbacks and avoidance areas were followed.

3.12.3 RESULTS

3.12.3.1 MARINE MAMMAL MONITORING

A total of 15 marine mammals surveys in Roberts Bay were completed in 2023. Surveys occurred once per day from September 2 to September 16, 2023 (Appendix U). The surveys were conducted on days before the ship arrived in Roberts Bay (September 2 to September 5, 2023), when it was anchored in the bay (September 6 to September 11, 2023), and after departure (September 12 to September 16, 2023; Table 36). On the days before the ship arrived in Roberts Bay, two adult marine mammals were observed, one unknown seal and one bearded seal. While the ship was anchored in the bay, one adult unknown seal was observed, the seal did not react to the tugboat traffic nearby. After the ship left, one adult unknown seal was observed.

TABLE 36 MARINE MAMMAL MONITORING, 2023

Monitoring Period	Monitoring Dates	Total Marine Mammals	Notes
Before Shipping	September 2-5	2	1 bearded seal, playing
			1 unknown seal, resting
During Shipping	September 6-11	1	1 unknown seal, resting
After Shipping	September 12-16	1	1 unknown seal, resting

3.12.3.2 SHIPPING MITIGATIONS

No marine wildlife incidents were reported in 2023. Incidental sightings in 2023 were reported and summarized below.

Five seals, two hooded seals, one harbour seal and two bearded seals, were recorded while the Qamutik was travelling at sea in August 2023. In September 2023, an incidental sighting of a whale diving near the Qamutik at sea was reported. Incidental sightings of seabirds are included in Section 3.10.3.4 above.

The Qamutik vessel tracks, the only vessel traffic, from 2023 were summarized to confirm that mitigations for setbacks and designated routes were followed (Figure 24). The track does not reflect precise vessel locations due to gaps in GPS signals (e.g., where tracks appear to cross land; Figure 24). The Qamutik vessel had no deviations from the nominal shipping route.

3.12.3.3 INTERACTIONS, INCIDENTS, AND MORTALITIES

No incidents, interactions, or mortalities with marine mammals were recorded in 2023.

3.12.3.4 WILDLIFE SIGHTINGS LOG AND INCIDENTAL OBSERVATIONS

Two seals of unknown species were incidentally reported in 2023 (Appendix H). One individual was seen swimming at Roberts Bay and the other was seen resting on the beach of a small island.

There was also one report of a dead fish on the beach at Patch Lake, without species identification or details. The dead fish is assumed to have died due to natural causes and not related to project activity.

3.12.4 DISCUSSION

Marine mammal monitoring for Roberts Bay occurred daily from September 2-16, 2023. Surveys were conducted during three monitoring periods: before shipping activity ($n = X$ days in 2023), during shipping activity ($n = X$ days in 2023), and after shipping activity ($n = X$ days in 2023). Four marine mammals (i.e., seals) were observed during surveys. The observations were split among the three monitoring periods, with two seals recorded before shipping activity, one recorded during shipping activity, and one recorded after shipping activity. All seals observed were exhibiting normal behaviour of resting, basking, or playing. This was the first year of surveys for this monitoring program under T&C 33, and as such the sample size is too small to analyze patterns in marine mammal occurrence with shipping activity. As per the Shipping Management Plan, the first two years of monitoring will inform appropriate indicators and thresholds to determine if negative impacts on marine wildlife are occurring. Indicators and thresholds cannot be set until the overall rate of marine wildlife observations is known.

Two seals of unidentified species were reported in Roberts Bay incidentally through the Wildlife Sightings/Reporting program in 2023.

Additionally, shipping vessels incidentally reported marine mammals along the shipping route. In August 2023, two hooded seals, one harbour seal and two bearded seals were observed while at sea. In September 2023, an incidental sighting of a whale diving was reported. No marine wildlife incidents were reported along shipping routes in 2023. Vessel operators were provided with Project-specific training and review of marine wildlife setbacks and mitigations. In addition, operators were trained on reporting requirements prior to the shipping season, as is described in the Shipping Management Plan. Operators were also provided with identification guides for seabirds, whales, and pinnipeds.

An assessment of vessel tracks indicated that vessels followed setbacks and sensitive areas for wildlife in the shipping area.

FIGURE 24 VESSEL TRACKS DURING SHIPPING SEASON, SEPTEMBER 2023



3.13 PLANTS

A sedge sampling program for tissue metal concentrations was initiated in 2018; additional data collection will be discussed when operations of the Madrid and/or Boston areas is underway.

Monitoring for invasive plants occurred during baseline work for the FEIS. At that time, no invasive plants were found onsite. Ongoing monitoring for invasive plants is required by condition 17 and commitment GN#04 in Project Certificate No. 009 (NIRB 2018). The WMMP Plan includes invasive plant monitoring along Project infrastructure at 5-year intervals. This monitoring was conducted during the baseline for the Phase 2 FEIS, and again for the second time in 2023. Surveys will be conducted again in 2029.

3.13.1 FEIS PREDICTIONS

The FEIS did not include any predictions about invasive plants related to potential effects of the Project on vegetation. The potential for habitat loss related to special landscape features is included in Section 2.1.

3.13.2 METHODS

3.13.2.1 SURVEY AREA

Monitoring for non-native invasive plant species was completed across existing Project infrastructure and disturbed areas within the Local Study Area, including:

1. Doris Camp and surrounding area including airstrip, helipad, TIA dams, vent rails, water treatment plant, and other disturbed areas;
2. Disturbed portions of Madrid North (Windy Road, Naartok pits and waste rock storage);
3. Boston Camp and airstrip;
4. The reclaimed Windy Camp;
5. Roberts Bay;
6. Road infrastructure including Windy Road and the TLR; and
7. All other cleared areas including rock quarries, overburden storage/stockpiles, open pits, waste rock piles, pads and laydowns, bridges, etc.

3.13.2.2 INVASIVE PLANT MONITORING PROTOCOL

Invasive plant surveys targeted species with the greatest potential to occur at the Hope Bay site. Further information on the invasive plant species monitoring methodology can be found in Appendices V to Y.

The list of invasive plant species targeted in surveys (Appendix V) referenced the *Non-native and Invasive species in Nunavut* list (Government of Nunavut 2022) and the *Hope Bay Belt Project: 2010 Ecosystems and Vegetation Baseline Report* (Rescan 2011). Since Nunavut does not currently maintain a Conservation Data Centre nor does it have an invasive plant council to track exotic or invasive plant species, supplemental information was obtained from neighbouring

Northwest Territories (e.g., NWT Species Infobase) and invasive plant databases, as described in Rescan (2011). Incidental observations of other non-native plants were also recorded.

A grid-based survey method was implemented across Project infrastructure for comprehensive coverage of the Project area. A survey grid was developed for the area defined by the 2022 as-built project footprint. This consists of a 50 m by 50 m grid, in addition to an elongated grid (10 m buffer on either side of road cut to 250 m segments) adapted for rapid roadside surveys (Appendix AD). Within each 50 m by 50 m grid cell, surveyors walked an 'S' shaped search pattern to ensure good survey coverage, beginning at one corner and ending in the diagonally opposite corner. Search pattern is adjusted for site features or visibility, for example buildings or compacted gravel which lack vegetation are skipped or surveyed more quickly.

Rapid roadside surveys are completed within a 10 m wide buffer on either side of the road edge. Roadside surveys are conducted from vehicles travelling at approximately 5 km/h, with one crew member driving while the surveyor is in the passenger seat scanning the roadside for invasive plants.

Since Nunavut has no invasive plant survey standards, monitoring attributes were informed by the InvasivesBC Reference Guide (BC Ministry of Forests 2023), formerly the Invasive Alien Plant Program (IAPP). Field data collection utilizes ArcGIS Field Maps for navigation and tracking survey progress, in combination with Survey123 for efficient and standardized data collection (Appendix X). Invasive plant surveys collect information on:

- Species and location;
- Abundance (percent cover) of each species in grid cell;
- Distribution of each species in grid cell;
- Density (plants per m²) within patches of vegetation;
- Life stage/phenology; and
- Additional details such as date, notable features, opportunistic management applied, etc.

Additional information on survey attributes, such as description of rankings, can be found in the InvasivesBC Reference Guide (BC Ministry of Forests 2023). A list of invasive plant attributes is shown in Appendix W and an example of the data collection form is shown in Appendix X.

Identification of plants is completed to the species level, with unknown and potentially non-native specimens collected as samples along with detailed photos taken for follow-up identification. Plant identification utilized references including local plant identification keys such as Saarela et al. (2020) and *Flora of the Canadian Arctic Archipelago* (Aiken et al. 2007). Invasive plant identification features can be seen in Appendix Y, Slides 23 to 65.

To limit disturbance and spread of invasive plants if observations occur, invasive plant patches will have yellow and black striped flagging put around them in the field (e.g., tie to wood stakes inserted into ground) to indicate areas containing invasive plants. If observations of invasive plants occur, a 10 m buffer distance will be and plants should be targeted for follow-up management. The invasive plant survey digital field form also enables the ability to record opportunistic management (e.g., hand pulling) applied to small patches of invasive plants.

3.13.2.3 SURVEY TIMING

Invasive plant surveys are completed during the peak growing season to ensure easier identification of plant species. For the Project area, suitable times for invasive plant monitoring are between early July to mid-August. Plant phenology will vary slightly year to year, but with peak flowering of target invasive species generally expected mid-July. Survey timing may also be dependent on timing of invasive species management.

3.13.2.4 QUALITY CONTROL/ASSURANCE

Survey design using ArcGIS Field Maps and Survey123 allows for auto-populated values and standardized options for invasive plant survey attributes (i.e., dropdown menus), reducing data collection errors. Survey data are reviewed prior to submitting a record. Records of completed surveys are also reviewed and updated as necessary using ArcGIS Online and ArcGIS Pro. ArcGIS Field Maps is used to track survey progress made in each area within the disturbance footprint. Following the completion of invasive surveys, all survey data including spatial data and invasive attribute data are reviewed in detail and any necessary edits made.

3.13.3 RESULTS

Invasive plant surveys were conducted July 26 to August 1, 2023. A total of 909 grid cells (264.1 ha) overlapping the current disturbance footprint were completed in 2023. Seventy-three of the completed grids (61.6 ha) were completed using the rapid roadside survey method while 836 area grids (202.5 ha) were completed on foot. A map of areas surveyed in 2023 is shown in Appendix AD. Fifty-nine grid cells (14.9 ha) were inaccessible due to proximity to the restricted Doris portal area (Appendix AD).

No invasive or non-native plant species were observed during 2023 surveys. Two native species which closely resemble invasive species were identified: seaside chamomile (*Tripleurospermum maritimum* subsp. *phaeocephalum*) and horned dandelion (*Taraxacum ceratophorum*). Photos of these species can be seen in Photo 15. Additionally, surveys observed native grasses which could be mistaken for target invasive grasses, particularly native alkali grasses which could be mistaken for invasive spreading alkali grass (*Puccinellia distans*), or native broadleaf Arctagrostis (*Arctagrostis latifolia*) which could be mistaken for invasive reed canary grass (*Phalaris arundinacea*). Information on plant identification characteristics and how to differentiate non-native invasive from look-alike native species can be found in the *Hope Bay Mine Site Invasive Plant Survey Presentation* presented on August 2, 2023 in Appendix Y.

3.13.4 DISCUSSION

Prevention, early detection, and eradication of invasive plants is the most economical and effective means of managing impacts from invasive species (Hobbs & Humphries 1995). To date, no invasive or non-native plant species have been recorded at Hope Bay. Mitigation to prevent the introduction of invasive plant species through Project activities is described in Section 2.11.1 of the WMMP (Agnico Eagle Mines Limited 2023). Monitoring of invasive plant species will continue every 5 years to ensure early detection and rapid response to eradicate detected non-native invasive species. Future surveys will account for any expansions to the as-built site footprint.



Areas with the highest likelihood of invasive plant introduction would be areas where activity is the greatest (e.g., Doris Camp) and where incoming shipments are received or processed, such as Roberts Bay.



Photo 15 Look-alike native plant species observed during 2023 Hope Bay invasive plant surveys

Top: seaside chamomile (*Tripleurospermum maritimum subsp. phaeocephalum*), similar to invasive scentless chamomile (*Tripleurospermum inodorum*); and Bottom: horned dandelion (*Taraxacum ceratophorum*), similar to invasive common dandelion (*Taraxacum officinale*).

The absence of non-native plant species in both 2010 baseline (Rescan 2011) and in 2023 can likely be explained by the harsh growing conditions and isolated (fly-in only) location of Hope Bay which limit risk of introduction, as well as effective implementation of mitigation measures to prevent species introduction. However, climate change associated regional warming in addition to increased activity/development in the Arctic are expected to result in increases in invasive species regionally (Clements & DiTommaso 2011; Turbelin & Catford 2021; Rew et al. 2020; Ricciardi et al. 2017).

The target invasive plant species list should be maintained and updated for future surveys, with consideration of new non-native species that may establish in Nunavut between the 5 year survey periods at Hope Bay. A 2008 Canadian Food Inspection Agency study reported 16 invasive plant species in Nunavut, the least of all Canadian provinces and territories, and 85 for the Northwest Territories (CFIA 2008); however, this number has increased in recent years. Nunavut is also currently building the capacity to host a Conservation Data Centre with NatureServe, which would enable tracking of non-native plant species in the territory.

To facilitate early detection and rapid response, site environmental team familiarize withselves the local native Arctic flora, to facilitate incidental sightings and reporting of potential non-native plants. This facilitates earlier identification and control measures, when management is most successful and least-costly (Hobbs & Humphries 1995). Plant identification resources can be referenced in the *Hope Bay Mine Site Invasive Plant Survey Presentation* presented on August 2, 2023 in Appendix Y.

4. REFERENCES

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APPENDIX A DETAILED METHODOLOGY FOR THE HOPE BAY PROJECT PROGRAMS, 2023





APPENDIX A: DETAILED METHODOLOGY FOR THE HOPE BAY PROJECT PROGRAMS, 2023

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1. OVERVIEW

Detailed descriptions of the methods used during the 2023 monitoring programs that were subsequently used to compile the 2023 Wildlife Mitigation and Monitoring Plan Compliance Report (the 2023 Report) are provided below. Table 1-1 outlines the monitoring programs executed in 2023 and for which detailed methods are provided in this appendix; the corresponding results section numbers of the 2023 Report are also provided.

TABLE 1-1 MONITORING PROGRAMS AND CORRESPONDING 2023 REPORT SECTIONS

Monitoring Program	2023 Report Section
Habitat Loss	Section 2.1
Valued Ecosystem Components (VEC) Specific Monitoring and Mitigation	Section 3
Facilities and Wildlife Camera Programs	Included with each VEC in Section 3; Methods in Section 3.2
On-site Monitoring and Mitigation (interactions, incidents and mortalities)	
Incidental wildlife observations by Environment and Onsite Personnel	
Caribou	Section 3.4
Muskox	Section 3.5
Grizzly Bear	Section 3.6
Wolverine	Section 3.7
Nest Predators	Section 3.8
Upland Breeding Birds	Section 3.9
Waterbirds	Section 3.10
Raptors	Section 3.11
Marine Mammals	Section 3.12
Plants	Section 3.13

2. HABITAT LOSS

The Project Footprint used to assess habitat loss includes as-built infrastructure up until December 2023, not including unbuilt permitted infrastructure. Because no new infrastructure footprint was cleared in 2023, habitat loss was not calculated for the annual report.

3. FACILITIES AND WILDLIFE CAMERA PROGRAMS

A wildlife camera monitoring program was implemented in late 2012 to monitor for VEC species on and adjacent to the Project site and at control sites. Wildlife VEC species monitored by wildlife camera include caribou, muskox, grizzly bear, and wolverine. Muskox were added as a VEC after the Madrid-Boston expansion approval as part of Project Certificate No. 009. Muskox are not common in the Study Area and there is not currently sufficient data of muskox occurrence across the camera Study Area and throughout all years of data collection for statistical analysis.

Nest predators are also monitored using cameras. Mammalian nest predators are monitored through the wildlife camera program, including Arctic fox, red fox, and grey wolves, which are an opportunistic nest predator. Avian nest predators, including gulls, jaegers, and the common raven, in addition to weasels, are also considered to be potential nest predators. However, birds are generally underreported in camera data due to their smaller size and aerial mobility, making them difficult to monitor through camera traps. Similarly, weasels are a small-bodied animal and are underreported in camera data. For these reasons, birds and small mammals were not included in the camera data analyses.

This section of the Report presents the results of the ninth year of wildlife camera studies at the Project (September 2022 to September 2023). Results from the first eight years of monitoring were presented in ERM Rescan (2014), ERM (2015), ERM (2016a), ERM (2017), (ERM 2018), ERM (2019), ERM (2020), ERM (2021), and ERM (2022).

In February 2016, TMAC met with representatives of the Kitikmeot Inuit Association (KIA) and Government of Nunavut Department of Environment (GN DOE) to redesign the camera program. This redesign was conducted to address a variety of comments from regulators on camera placement and use (ERM 2016b). Cameras were deployed in June 2016 using the new design (Section 3.1.1). Data have been statistically analyzed for differences in caribou, grizzly bear, and wolverine occurrence according to distance from the mine from the new design program starting 2016 and continuing onwards.

In September 2018, an additional camera program was initiated in the Boston area. Wildlife cameras around the Boston area collected baseline data during the September 2018 to September 2023 monitoring period. These data are reported in a short summary in Section 3.3 of the 2023 Report. Analysis of the Boston camera program will not begin until data have been collected for both baseline and construction/operations periods in the Boston area. The Boston camera program will be discontinued in Spring 2024 with over five years of baseline data. Development plans for the Boston area are currently paused. The camera program will resume once construction plans are in place for the Boston area.

3.1 CAMERA PROGRAM STUDY DESIGN

3.1.1 DORIS AND MADRID PROGRAM STUDY DESIGN

A total of 60 Reconyx™ PC800 HyperFire Professional cameras were used to monitor caribou, muskox, grizzly bear, wolverine, nest predators, and other wildlife from June 2016 to September 2023. The camera layout is shown on Figure 7 of the 2023 Report. A minimum convex polygon (MCP) was generated in ArcGIS 10.5.1 around all camera locations to generate an estimate of the monitoring area, as suggested by Meek et al. (2014). The resulting MCP area around all cameras was 50,837 ha including all terrestrial and aquatic (freshwater and marine) habitats, and 40,025 ha considering only terrestrial habitats. The total area of the MCP inclusive of aquatic habitats is representative of area that could be used by wildlife that could encounter wildlife cameras during the winter period, as lakes, rivers, and the ocean are frozen at this time. The area of the MCP including only terrestrial habitats is representative of the areas that could be used by wildlife that could encounter wildlife cameras during the spring through the fall.

The placement of wildlife cameras was modified in June 2016 relative to the first three years of the camera program. The new camera layout addressed two monitoring aspects: 1) facilities interaction monitoring: cameras associated with specific infrastructure and gathering site specific data, and 2) wildlife camera monitoring: cameras placed in various distances from the Project and used to look for changes in species relative abundances with proximity to the Project.

Under the current camera study design, cameras are arrayed in three zones:

1. Treatment, with cameras placed at distances within 2 km of the Project site;
2. Zone of Influence (ZOI), with cameras placed at distances between 2 and 10 km of the Project site; and
3. Control, with cameras placed at distances beyond 10 km of the Project site.

One area was designated a “Ladder Area” where two cameras were placed in the area of tundra where the Madrid expansion will be constructed; for the purposes of the 2023 camera program, these cameras functioned as ZOI cameras. Once the Madrid expansion has been constructed, these cameras will become Treatment cameras. These two cameras will allow for a before-after analysis that will have greater sensitivity in determining potential effects related to the Madrid expansion on grizzly bears, and possibly wolverine, and caribou.

Cameras were deployed in relatively equal numbers in each of the three zones, including 21 Treatment cameras, 17 ZOI cameras, and 19 Control cameras (see Figure 7 in the 2023 Report; Table 3.1-1). The ZOI and Control cameras were located along a predominantly east-west axis such that Control and ZOI cameras were located at relatively similar distances from the ocean shoreline as the Treatment cameras. This was done to account for the relative abundance of predators such as bears and wolverine at the coast versus inland.

TABLE 3.1-1 CAMERA LOCATIONS AND RATIONALE FOR PLACEMENT UNDER THE CURRENT CAMERA STUDY DESIGN, SEPTEMBER 2016 TO SEPTEMBER 2023

Camera Zone	Camera No.	Total Cameras	Site Specific Monitoring Objective
Treatment	1, 11, 13, 15, 17, 19, 28, 32, 42, 50, 53, 54, 59, 60	14	-
	2, 35	2	Road Crossing Ramp (caribou only) ¹
	18, 21	2	Waste Management Facility (grizzly bear, wolverine, and nest predators) ²
	22	1	Roberts Creek Boulder Field/ERM Fish Fence (grizzly bear, wolverine, and nest predators) ²
	51, 52	2	Tailings Impoundment Area (TIA; all VECs and nest predators)
ZOI	10, 12, 14, 23 - 26, 30, 34, 39, 41, 44, 46 - 48, 55, 57	17	-
Control	3 - 9, 16, 29, 31, 33, 36, 37, 40, 43, 45, 49, 56, 58	19	-

¹ Caribou interactions: Road crossing ramp = cameras installed at crossing ramps along the Doris-Windy AWR.

² Grizzly bear, wolverine and nest predator interactions: Roberts Bay Waste Management Facility and Roberts Lake Outflow/ERM Fish Fence.

ZOI and Control cameras were placed in habitats comparable to habitat where Treatment cameras were placed. The habitat considerations included microhabitat (i.e., similar habitat within the 'trigger zone' field of view between Treatment, ZOI, and Control cameras) and broader habitat considerations including distance to ocean, distance to large and medium lakes, and distance to streams and rivers. To improve independence, cameras were not in line of sight of each other. Cameras were oriented so that the area within at least 40 m in front of the camera was clear and the cameras were equal in their field of view. The minimum distance between all cameras in any zone was 71.3 m, which was the distance between Treatment cameras 18 and 21 at the Roberts Bay Waste Management Facility (Figure 7 in the 2023 Report). These two cameras, while not in line of sight of one another, have site specific monitoring objectives (see below). Hence, these two cameras were placed closer to one another for the purposes of facilities monitoring. The next closest distances between cameras was 487.9 m, between Treatment cameras 17 and 18 (Figure 7 in the 2023 Report). The maximum distance among all cameras was 38.5 km, the distance between Control cameras 37 and 56; camera 37 is in the Control zone on the east side of the Project while camera 56 is in the Control zone on the west side of the Project. Overall, the average distance among all cameras was 12.3 ± 6.7 km (\pm standard deviation).

There were seven cameras that were placed near Project infrastructure to address the facilities interaction monitoring component of the camera program (Table 3.1-1). These seven cameras included:

- Two cameras located at caribou crossing ramp locations along the Doris-Windy AWR (Cameras 2 and 35; Photos 3.1-1 to 3.1-4);
- One camera facing the in-stream boulder field in Roberts Lake Outflow¹ (Camera 22; Photos 3.1-5 and 3.1-6);
- Two cameras set up at the Roberts Bay Waste Management Facility (Cameras 18 and 21; Photos 3.1-7 to 3.1-9); and
- Two cameras set up at the Tailings Impoundment Area (TIA; Cameras 51 and 52; Photos 3.1-10 to 3.1-13).

The seven cameras that monitor Project facilities are considered to be cameras with site specific monitoring objectives for wildlife VECs (Table 3.1-1). The cameras located at the caribou crossing ramps are specifically monitoring for caribou usage, while the two cameras located at the Roberts Bay Waste Management Facility and one camera at Roberts Lake Outflow are monitoring for grizzly bear and other predators/scavengers (wolverine, wolves, and foxes) interactions. Cameras 51 and 52 monitor for interactions of all wildlife VECs as well as nest predators.

As per the revised Study Design, the Doris Landfill will be monitored by remote camera (ERM 2016b). The landfill has not been constructed and will be located on the east side of the TIA. A remote camera will be placed at this location when it has been constructed and a suitable location for long-term monitoring has been assessed.

¹ This camera also faces the site where the ERM Fish Fence has been installed in previous years; the ERM Fish Fence was not installed in 2020.



Photo 3.1-1 Example of the winter monitoring view of Camera 2 at one of the two caribou crossing ramps along the Doris-Windy AWR (ramp indicated in mid-left).



Photo 3.1-2 Example of the summer monitoring view of Camera 2 at one of the two caribou crossing ramps along the Doris-Windy AWR (ramp indicated in mid-left).



Photo 3.1-3 Example of the winter monitoring view of Camera 35 at one of the two caribou crossing ramps along the Doris-Windy AWR.



Photo 3.1-4 Example of the summer monitoring view of Camera 35 at one of the two caribou crossing ramps along the Doris-Windy AWR.



Photo 3.1-5 Example of the winter monitoring view of Camera 22 at Roberts Creek.



Photo 3.1-6 Example of the summer monitoring view of Camera 22 at Roberts Creek.



Photo 3.1-7 Example of the monitoring view of Camera 21 at the Roberts Bay Waste Management Facility.



Photo 3.1-8 Example of the winter monitoring view of Camera 18 at the Roberts Bay Waste Management Facility.



Photo 3.1-9 Example of the summer monitoring view of Camera 18 at the Roberts Bay Waste Management Facility.



Photo 3.1-10 Example of the monitoring view of Camera 52 at the North Dam of the TIA, September 2016.

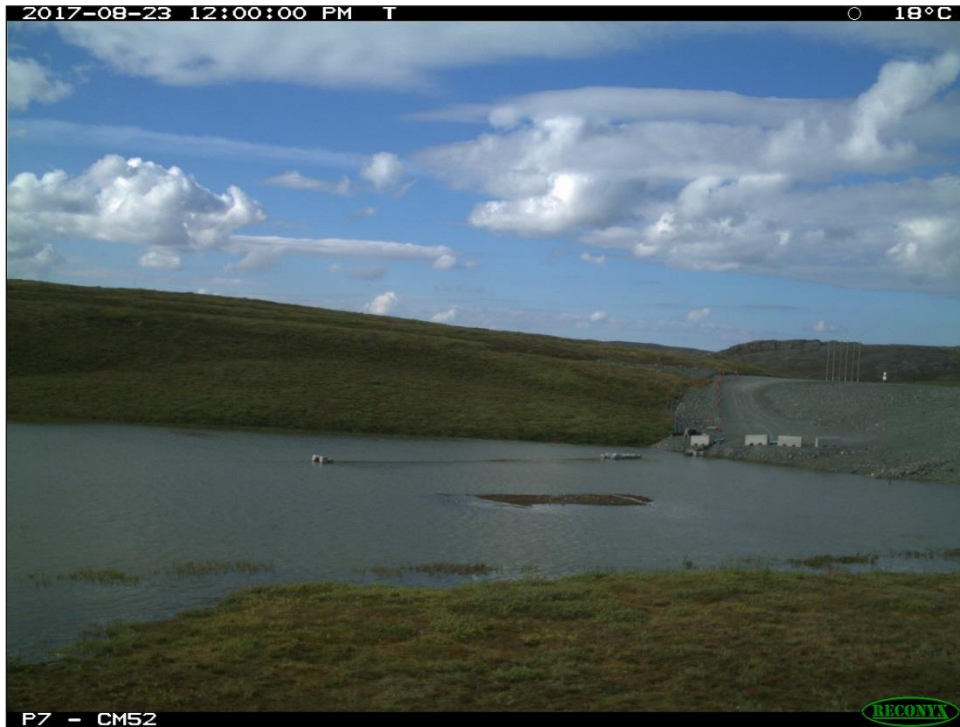


Photo 3.1-11 Example of the monitoring view of Camera 52 at the North Dam of the TIA, September 2017.



Photo 3.1-12 Example of the monitoring view of Camera 51 at the future site of the South Dam of the TIA, September 2016.



Photo 3.1-13 Example of the monitoring view of Camera 51 at the future site of the South Dam of the TIA, September 2017.

It should be noted that there is a camera that is located at the Doris Lake outflow waterfall (Camera 15; see Figure 7 in the 2023 Report). A camera was placed in this location in 2015 to address a condition of Project Certificate No. 003 that wildlife activity at the waterfall shall be monitored (Revised Term and Condition 25). However, under the amendment to the Water License, mine water will be discharged via a submarine process into Roberts Bay instead of being discharged into the freshwater environment in Doris Creek. Camera 15 will continue to monitor wildlife activity at the Doris Lake outflow waterfall to address Revised Term and Condition 25; however, considering the change in the Project design with no mine water discharge into Doris Creek, Camera 15 is not being considered as a camera with a site specific monitoring objective under the revised study design as no effects to water quality are anticipated at this location.

In August 2022, two new cameras were deployed on either side of a culvert running under Windy Road (Photo 3.1-14 and Photo 3.4-3 in the 2023 Report). The cameras were set with the specific purpose of detecting caribou activity, after an Inuit Environmental Advisory Committee (IEAC) member noticed possible caribou trails from the culvert. The culvert is roughly 160 m north of one of the caribou crossing ramps (and camera 35). Both cameras are placed north of the culvert, facing south in order to record any caribou passing through the culvert (Photo 3.1-14). These cameras will be included in wildlife event summaries starting in 2023.

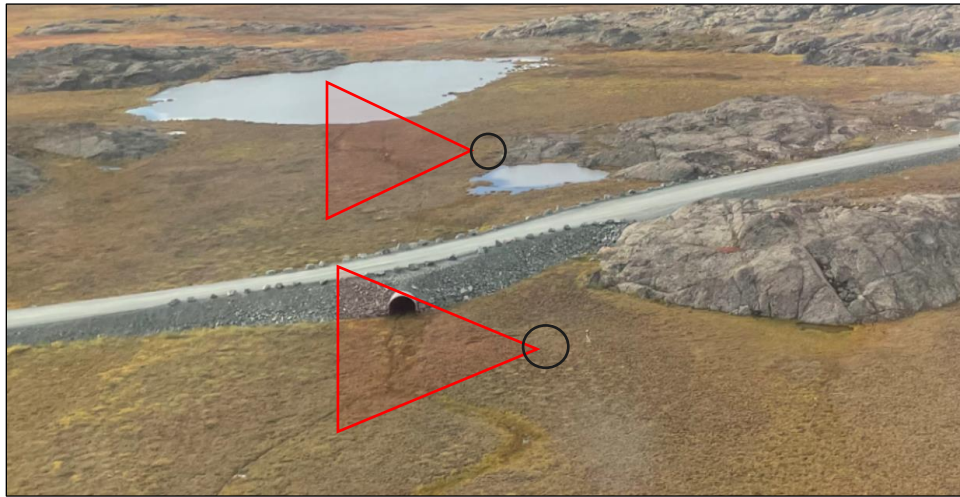


Photo 3.1-14 Culvert wildlife cameras and their approximate field of views, facing south on either side of Windy Road. August 2023.

3.1.2 BOSTON PROGRAM STUDY DESIGN

In September 2018, 26 remote cameras were deployed in the Boston area. In June 2019, an additional three cameras were deployed (see Figure 8 in the 2023 Report). Design of the camera placement followed the same process as the program already established in the Doris and Madrid area. The Treatment (within 2 km of planned infrastructure), ZOI (2-10 km from planned infrastructure), and Control (> 10 km from infrastructure) zones each have five cameras, with an additional 14 cameras along the proposed All Weather Road (AWR) between Madrid and Boston (Figure 8 in the 2023 Report).

Camera placement was balanced with similar considerations as the Doris and Madrid area program. Locations for Treatment, ZOI, and Control cameras were pre-selected using Google Earth and available satellite imagery to verify that each of the five Treatment cameras had a paired camera within similar broad and small scale habitats in ZOI and Control zone. Locations were chosen to balance distance to ecological features such as waterbodies. Sites were scoped in the field before placement to assess the accessibility of the location for wildlife and the camera field of view. For cameras placed along the proposed road route, camera locations were optimized according to existing caribou trails so that cameras are placed near future caribou crossing ramps. Camera positions were oriented towards existing caribou trails, and where possible, also the proposed road route. No camera views are within sight of each other, with the closest cameras 1.05 km apart (cameras 79 and 84; Figure 8 in the 2023 Report). The furthest distance between two cameras is 69 km (between camera 75 and 83); this marks the southern extent of the Boston camera Study Area and the northern extent of the AWR route (Figure 8 in the 2023 Report). Other than the cameras placed along the AWR route, no cameras in the area had site specific monitoring objectives.

3.2 CAMERA SET UP AND OPERATIONS

The Reconyx™ PC800 HyperFire uses a passive infrared sensor to capture motion-triggered images and has a maximum reported motion detection radius of 30.5 m in daylight and 21.3 m at night

(Reconyx 2013, 2017a, 2017b). There was no bait used in the study to lure animals to the camera locations.

Cameras were deployed on wooden tripods where the height of the camera ranged from 1.2 to 1.4 m off the ground. The camera sensor was directed perpendicular to the ground, such that the sensor faced the horizon on the tundra (Photos 3.2-1 and 3.2-2).

Cameras were programmed to take two types of photos: timed and motion-triggered photographs. Timed photos are mainly used to determine the number of active deployment days for cameras (camera effort). As such, cameras were programmed to take a minimum of one timed photo at noon to determine whether cameras were actively recording photos or were obscured (e.g., covered by snow or knocked over; see Camera Effort section below).

Detailed camera settings are presented in Table 3.2-1. Cameras were programmed to take motion-triggered photos automatically 24 h/day whenever there was movement in front of the camera, as detected by the passive infrared sensor. Based on the camera trigger specifications (field of view) and field-testing of the cameras, the motion trigger range of the cameras was approximately 25 to 30 m, depending on the size of the animal. During each motion triggered event, cameras were programmed to take a set of 10 photos at one second intervals (Table 3.2-1). If there was still motion in front of the camera following the initial set of triggered photographs, the cameras were programmed to immediately start a second set of 10 photos. Each image recorded the photo type (i.e., timed [T] or motion triggered [M]), the camera number, date, time, temperature, and, for motion-triggered photos, the number from the series of photos taken (i.e., 1/10 to 10/10).



Photo 3.2-1 Example of camera set up camera height approximately 1.2 m).

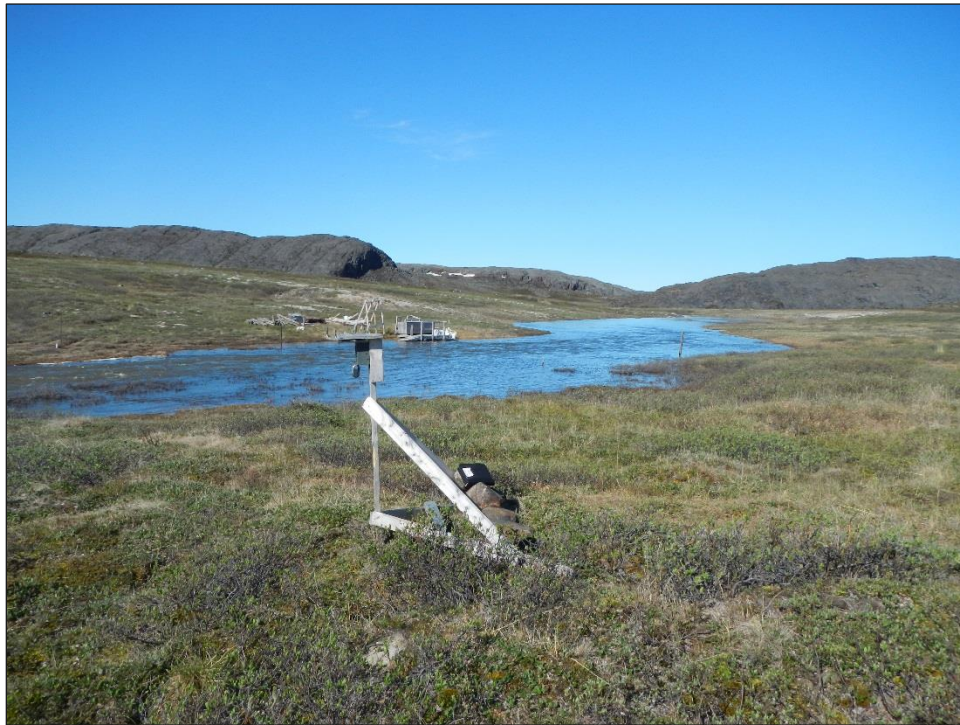


Photo 3.2-2 Example of camera set up camera height approximately 1.4 m).

TABLE 3.2-1 DETAILED CAMERA SETTINGS FOR MOTION AND TIMED PHOTOS, SEPTEMBER 2022 TO SEPTEMBER 2023

Photo Type	Setting	Winter Settings (~September - ~June) *	Summer Settings (~June - ~September) *
Motion-triggered Photos	Trigger Sensitivity (Low, Low/Med, Med, Med/High, High)	High	High
	Trigger Response Time**	1/5 Second	1/5 Second
	No. Photos Taken (per Trigger)	10	10
	Capture Interval (time between successive photos) ***	1 second	1 second
	Delay (time between successive triggers)	None	None
	Photo Schedule	On All Day	On All Day
	Nighttime shutter speed**	1/30 Second	1/30 Second
	Nighttime ISO Sensitivity (Low, Medium, High)	Medium	Medium

Photo Type	Setting	Winter Settings (~September - ~June) *	Summer Settings (~June - ~September) *
Timed Photos	No. Photos Taken	1	1
	Photo Frequency	30 min	30 min
	Photo Schedule	On All Day***	Every Day, 11:30 to 12:30 only
General (motion and timed)	Brightness (1 - 9)	Default (Low-Medium; 3)	Default (Low-Medium; 3)
	Contrast (1-9)	Default (Medium-High; 7)	Default (Medium-High; 7)
	Sharpness (1 - 9)	Default (Medium; 5)	Default (Medium; 5)
	Saturation (1-9)	Default (Medium; 5)	Default (Medium; 5)
	White Balance	Default (Auto)	Default (Auto)
	Flash	On	On

Notes:

* Approximate date range between camera checks. Camera checks are performed in June and September, though checks were not completed on the same day at a given camera in each year.

** Reported values from Reconyx User Manual (Reconyx 2013) and Instruction Manual (Reconyx 2017a). Trigger response speed is the time between when motion occurs within the sensor range and when the camera is activated and records an image.

*** Camera capable of taking photos at a speed of 2 frames per second, if rapid fire settings are used.

3.3 CAMERA DATA ANALYSIS

Camera data in 2023 were reviewed for the deployment period from September 2022 to September 2023 to record the presence of caribou, muskox, grizzly bear, wolverine, nest predators, and other wildlife. Camera effort was recorded from timed photos as the number of active deployment days for each camera.

3.3.1 PHOTO REVIEW PROCESS

All photos, including timed and motion-triggered photos, were manually scanned for wildlife observations using PC photo viewing software. For every wildlife observation, the following information was recorded in an Excel spreadsheet: species, number of animals, and behaviour (e.g., resting, foraging, travelling), date, time (including start and end times for motion-triggered photo sets), photo type, photo number (including start and end photo numbers for motion-triggered photo sets), number of photos, and number of triggers.

A portion of wildlife observations of VEC species were checked by a second person for the purposes of quality control. All observations of caribou and wolverine in the raw data were reviewed, as well as a portion of grizzly bear observations (approximately 75%). A portion of observations of non-VEC species were also checked including nest predator observations (approximately 75%).

3.3.2 CAMERA EFFORT

Camera effort was calculated as the total number of active deployment days from September 2022 to September 2023. Cameras occluded by snow (25% or more of the screen occluded) for 24 hours or more were considered to have no effort until the screen cleared (75% visibility or better). Cameras were also considered to have no effort during periods in which they were knocked over.

Overall camera effort (i.e., the total number of days in which the camera was able to record images of wildlife) was then calculated as follows:

- The dates associated with the first and last images recorded at a camera across the deployment period were determined; and
- Periods of inactivity (e.g., when a camera was obscured by snow or knocked over) were tabulated in 24 h increments and subtracted from each camera's total period of operation.
- Following the above calculations, camera effort was then summarized by month and reported as "camera days".

From fall 2017 through spring 2018, camera effort (typically recorded via timed photos automatically taken throughout each day) was unavailable due to a camera programming error; therefore, from September 2017 through the next re-programming phase in June 2018, each camera's effort was assumed to be the same as the previous year's effort for a given camera and month. A sensitivity analysis conducted in 2019 filled the no-effort period with the following year's data (i.e., September 2018 to June 2019) and found no difference in caribou modelling data.

The effort information from June 2016 to September 2018 (ERM 2017, 2018, 2019, 2020) was combined with the effort information for the camera deployment periods from September 2022 to September 2023 for the total number of camera effort days monitoring caribou, muskox, grizzly bear, and wolverine.

3.3.3 SUMMARIZATION OF WILDLIFE EVENTS

Camera data were reviewed to determine total number of wildlife events recorded at a camera as the basis for the quantitative (i.e., the statistical analysis) and qualitative analyses of species detections included in the 2023 Report. An event was defined as the detection of an individual or group of individuals on a timed (T) or motion-triggered (M) photo. Events were considered separate from one another if there was a period of inactivity at the camera between two successive photo observations of wildlife, regardless of photo type. A standard period of 30 minutes of inactivity was used to assess separate events for both photo types, as this was the longest period between successive timed photos during the winter period when cameras were programmed to take timed photos every 30 minutes. This 30-minute period was extended for use during the summer periods, when only one timed photo a day was recorded.

There was one exception to the general rule applied to determining separate wildlife events. A caribou event could be considered to be one event if the same individual, or group of individuals, were recorded at a camera during the same day. Caribou can often be identified to the individual based on behaviour (e.g., bedded down in front of the camera for several hours) or visible characteristics (e.g., size, coat colour, antler shape). This distinction was made to avoid

double-counting the same individual(s) across events. For all other species it was not possible to determine unique individuals on images with certainty due to the lack of distinguishing features, and all events separated by 30 minutes or more were considered to be unique detections for the purposes of analysis.

Wildlife events (and the number of individuals recorded on events) were corrected for a monthly darkness factor supplied by the KIA (Table 3.3-1) (Table A-5; KIA 2017). This correction is used to make events and individuals recorded during the months with shorter day length more comparable to events recorded in the summer with long day length, as the reported detection radius of the Reconyx™ PC800 HyperFire camera is smaller in the dark relative to the daylight. This correction factor was used when qualitatively comparing between events and individuals recorded between cameras in the three monitoring zones. The correction factor is not used in the statistical analyses for caribou, grizzly bear, and wolverine, as month of the year was included as covariate term and camera effort per month was included an offset term in the modelling. Considering this, including the darkness factor was not necessary as effect of month was included and controlled for in the statistical modelling.

TABLE 3.3-1 MONTHLY DARKNESS CORRECTION FACTOR FOR CAMERA EVENT DATA

Month	Average Day Length (hh:mm:ss)	Average Day Length (h)	Proportion Daylight	Darkness Factor Correction
January	3:23:50	3	0.13	1.26
February	7:52:52	8	0.33	1.2
March	11:51:19	12	0.5	1.15
April	15:57:32	16	0.67	1.1
May	20:52:32	21	0.88	1.04
June	24:00:00	24	1	1
July	22:29:10	22	0.92	1.03
August	17:11:01	17	0.71	1.09
September	13:05:46	13	0.54	1.14
October	9:09:50	9	0.38	1.19
November	4:54:51	5	0.21	1.24
December	0:30:14	0	0	1.3

3.3.4 SPECIES-SPECIFIC ANALYSIS

General Camera Monitoring

Caribou, grizzly bear, and wolverine event data recorded on motion-triggered photos in the Doris and Madrid areas for the period from June 2016 to September 2023 were compiled for the purposes of conducting a statistical analyses (see Section 6.1-6.3).

Qualitative summaries of camera data for muskox and mammalian nest predators were generated. Muskox data will be statistically analysed for possible ZOI effects in future years, if there are sufficient detections across the Study Area zones over time.

Boston camera data were processed and summarized but will not be analysed until data have been collected during a construction/operations phase, in addition to the current baseline data.

Site Specific Camera Monitoring

There were seven cameras with site specific monitoring objectives, and each of these cameras were set up to monitor for activity of a specific species or group of species (Table 3.1-1). For the purposes of the report, the cameras with site specific monitoring objectives are those that were placed to satisfy facilities monitoring objectives (see above), and data from these cameras are summarized in a separate report section to evaluate interactions between wildlife and Project facilities. Camera event data from timed and motion-triggered photos from these seven cameras are evaluated qualitatively; behaviour of individuals recorded during events was also discussed where relevant to the discussion of the interaction.

4. ON-SITE MONITORING AND MITIGATION

Wildlife interactions, incidents, and mortalities are recorded as part of the Wildlife Sightings/Reporting process. Reporting procedures at site use Sightings Cards for routine sightings of live animals, nesting, denning activity, and mortalities. A Wildlife Notification System is also used which includes non-emergency traffic awareness notifications plus higher levels of alerts for potentially dangerous wildlife. The site Environmental Department keeps a separate register of potential conflicts that may require deterrence of animals which require a response from the Wildlife Response Team (WRT). These records are labelled as an interaction or incident. An interaction occurs when wildlife interacts with people or Project infrastructure; deterrents may be used, but direct harm, injury, damage, or wildlife mortality does not take place. An incident is an interaction where there is active deterrence and direct harm, injury, damage, or wildlife mortality occurs. Incidents that result in the mortality of VECs or large fauna, or mortalities resulting from potential interaction with Project activity are reported directly to GN DOE and KIA as necessary and are also reported in this Report annually. A mortality of Arctic ground squirrel is not considered to be an incident and is not reported to the GN DOE and KIA following a change to the incident reporting procedures in 2017; ground squirrel mortalities are now considered interactions. Incidents and mortalities involving migratory birds are reported to Environment and Climate Change Canada (ECCC) as necessary and are also reported in this Report annually.

5. INCIDENTAL WILDLIFE OBSERVATIONS BY ENVIRONMENT PERSONNEL

5.1 WILDLIFE SIGHTINGS LOG

Observations from the wildlife sightings log were summarized by VEC species (caribou, muskox, grizzly bear, wolverine, upland birds, raptors, waterbirds and marine mammals), nest predators, and other mammalian species. Nest predators include fox species, grey wolf, weasels, gulls,

jaegers, and the common raven. Prior to 2015, grey wolf was included in the other species category; it is now classified as a nest predator following a request to do so by the KIA (KIA 2015). Species observed that are classified as a conservation concern are summarized in each relevant VEC section. Some records did not indicate the number of individuals observed, stated a group/flock were observed, or gave an approximate number. When an approximate number or range was given, the lowest number was used in calculations. If a number was not recorded, it was assumed that at least one individual was observed.

The wildlife sighting log data have limitations which preclude their use in estimating population size or densities. These include:

- Number of workers on site (the more workers the more potential reports);
- Observers knowledge (not all observers have the same experience or training in the identification of wildlife);
- Observers location of work (indoor versus outdoor);
- Mode of travel (snow machine versus rock truck);
- Eagerness to record species observed (which may vary with point in shift or by individual);
- Likelihood to report animal, e.g., large mammals (grizzly bear or caribou) are more likely to be reported than a waterbird or upland breeding bird;
- Multiple reports of same individual by different staff members;
- Lower likelihood of reporting common species (e.g., ground squirrels);
- Increased likelihood of reporting species on first emergence (e.g., end of hibernation or during migration); and
- Seasonal daylight differences (i.e., there is only a few hour period each day in winter that wildlife can be seen, whereas wildlife can be seen 24 hours a day in summer).

These limitations demonstrate why wildlife sightings log data are not useful to infer population sizes or densities. However, data from the wildlife sightings log provide a variety of natural history data that are useful for answering certain questions, including: 1) identifying anomalous species not encountered during other wildlife surveys, and 2) providing information on the timing of a species using an area (migrations, hibernation, calving).

Observations of the VEC species (caribou, muskox, grizzly bear, and wolverine), have been corrected by the average number of employees and contractors at site following a request from the KIA to do so for caribou (KIA 2015). The daily number of personnel at site was calculated and averaged for each month; the number of wildlife individuals recorded per month and number of records per month for each of the four species was divided by this number. Although sightings are standardized for number of personnel on site, for the other reasons outlined in the list above, these data are still not an appropriate information source for wildlife densities in the area.

5.2 INCIDENTAL WILDLIFE OBSERVATIONS BY ENVIRONMENT AND ON SITE PERSONNEL

Incidental wildlife are detected spatially or temporally outside of VEC-specific monitoring surveys or are not the intended target group of VEC-specific monitoring surveys. Incidental data are most

useful for documenting species that inhabit an area, and can identify species that might not be encountered during formal wildlife surveys. These observations can also provide information on the timing of migrations (caribou, various bird species), emergence from hibernation (ground squirrels, grizzly bears), and calving (muskoxy, caribou).

Incidental wildlife observations were collected opportunistically by environment personnel including wildlife biologists at the Project through all phases, including during Baseline/Pre-development surveys for the Project in 1996 through 2006, Construction (2007 to 2012, and 2015 to 2016), Care and Maintenance (2013 to 2014 and 2022 to 2023), and Operations (2017 to 2021). These observations may help provide a more robust understanding of species richness on site.

6. VEC AND OTHER SPECIES MONITORING AND MITIGATION

6.1 CARIBOU

Analysis for caribou is conducted using two approaches: analysis of satellite collar data and analysis of data collected through the wildlife camera monitoring program.

6.1.1 ANALYSIS OF SATELLITE COLLAR DATA

Collar data for the Beverly and Ahiaik sub-populations were obtained for the period of 2001 to 2023 from the Government of Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR).

6.1.1.1 BEVERLY/AHIAIK CARIBOU KERNEL DENSITY ANALYSIS

Data from the calving period were analyzed. The calving period for the Beverly and Ahiaik caribou herds was estimated to be between June 5 and 20 (Gunn, Fournier, and Nishi 2000). Based on these findings, data outside of this date range were excluded from the analysis.

Duplicate data (same animal, date, and time) were removed, as were any obvious spatial outliers (single locations set well apart from the remaining locations for that animal). Data for each female caribou were retained for the period from June 5 to June 20 inclusive; then further reduced to the first location on each day for each animal. The Beverly and Ahiaik data received from GNWT ENR were not specific to which herd the collared caribou belonged to, i.e. Beverly or Ahiaik, this is a determination made by the calving ground each animal uses and which can vary annually. The sets of single-locations-per-day for each animal for the calving season were plotted against a reference longitude of 100.77° West and a north-south axis in line with the mouth of the Simpson River, which is consistent with the division between these sub-populations as reported by others (Nagy, Campbell, and Kelly 2012; Campbell et al. 2014). Animals with the majority of their locations to the West of the reference point were assigned to the Beverly herd, those with the majority of locations to the East were assigned to the Ahiaik herd.

During some years with late springs, females may arrive on the calving grounds late, after June 5. All movement tracks of individual caribou were examined for each year. A set of locations for an animal trailing northward at the start of the calving period was considered part of its spring migratory movement; these series of locations were removed until the point at which the animal slowed and remained for the duration of the calving period near the body of the herd. The

remaining data set, stripped of migratory movement data, with each animal assigned to either the Beverly or Ahiak herd was used for seasonal range analyses.

Utilization distribution (UD) surfaces were then created for each of the Ahiak and Beverly groups using the R package 'adehabitat'. The output is defined as a joint probability distribution (bivariate (X, Y)), "the probability that each of X, Y falls in any particular range specified for that variable" (R Core Team 2015). Vector contours of the raster surfaces were created within the same script using specified confidence intervals (95%, 50%). This analysis was done for a compilation of collar data from 2001 to 202 as well as the 2023 data on its own. The current year was separated from the historical data for the purposes of monitoring for a potential shift in calving ground distribution relative to the Project, as outlined in ERM (2016). A shift may be evident if the current calving grounds are outside of areas used in previous years, and a range shift towards the Project Study Area that overlaps with Project activities may trigger additional mitigation measures in the following year (ERM 2016b).

6.1.1.2 DOLPHIN AND UNION CARIBOU KERNEL DENSITY ANALYSIS

An analysis of the calving range of the Beverly and Ahiak sub-populations was performed using caribou collar data supplied by the Government of Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) for both the current year (2023) as well a compilation of historical years (2001 to 2023). See Section 3.4 in the 2023 Report for available analysis results.

Data from a period from December 8 to April 16 are analyzed as representative data for the winter range for the herd. The date range was selected based on the period of time when caribou from the herd are present on the mainland outside of the spring and fall migratory period. The beginning of the spring migration (April 17) was based on the earliest date that a collared Dolphin and Union caribou was observed on the sea ice within the Coronation Gulf, Dease Strait, and the Queen Maud Gulf. The end of fall migration (December 7) was the last date when a collared caribou was still present on the sea ice. The spring and fall migration dates were defined using collar data from 1999 to 2004. These date ranges were also applied to the collar data from 2015 onward. Two individuals remained north of 71° latitude for the winter of 2016/2017 and were excluded from calculations of winter UDs. Considering the above, no adjustments to the date ranges were deemed necessary.

Utilization Distributions surfaces are created using the winter data in ArcGIS. Kernel UDs are produced for (i) the current winter of study (December 8 to April 16) and (ii) combining available data from all years, including the current winter of study. The winter kernel is created using the same methodology used to map caribou habitat in the 2016 Draft Nunavut Land Use Plan (Nunavut Planning Commission 2016). Both the individual year and compilation of existing data are mapped using various features in ArcGIS 10.5.1. The data are compiled to provide a perspective on the overlap between the winter range and the Project Study Area in the most recent winter as well as the degree of overlap relative to the larger extent of the winter range by combining all available data. This analysis was guided by requests made by the KIA in 2017 (KIA 2017). Overlap in the winter grounds of the Dolphin and Union caribou herd with the Project Study Area/Project activities does not trigger any additional mitigation for caribou, as there are mitigation measures for caribou employed year round (ERM 2016b).

6.1.2 STATISTICAL ANALYSIS OF CAMERA DATA

Caribou occupancy data from motion-triggered photos from June 2016 to September 2023 were analyzed in R.4.3.1. First, a focused hypothesis test was used to assess whether or not cameras in the Treatment locations (< 2 km from existing infrastructure) had a different probability of caribou occupancy than the cameras in the Control locations (> 10 km from existing infrastructure). Caribou occupancy at a camera was defined as one or more caribou events at a camera in a month. A secondary analysis was conducted to evaluate the breadth of the potential ZOI (between 2 and 10 km from existing infrastructure); i.e., to evaluate at what distance an effect on caribou occupancy may be occurring.

Analyses were conducted using data from all cameras except cameras 2 and 35. Cameras 2 and 35 monitor caribou crossing ramps installed on the Doris-Windy AWR. Given the potential for caribou usage to differ at the crossing ramps relative to other areas near the Project and beyond, these cameras were removed from the analyses so that they would not influence the hypothesis test or secondary analysis for a ZOI. The two TIA cameras were included in the statistical analyses given that these two cameras are similar to other Treatment cameras located in close proximity to the Project site.

Camera effort was reviewed prior to the analyses to determine whether adjustments to the data were necessary. Variation in the number of camera days per month has the potential to influence modelling outcomes. A review of the camera data indicated that most cameras had a week or more of monitoring effort throughout most of the monitoring period except for the period from November through February, when most cameras had a week or less effort. December and January were removed from analyses due to low effort across cameras, following recommendations by the KIA (ERM 2018). Given the variation across cameras, all other months only included cameras with an effort cut point of ≥ 7 days per month; sensitivity analyses conducted in 2017 indicated that using lower effort cut points of ≥ 1 days per month and effort ≥ 4 days per month did not affect results.

Generalized additive mixed models were used to test whether there were differences in caribou occupancy recorded by cameras set up in Treatment locations and Control locations. A binomial distribution was used to model the probability of occupancy in a month at each camera. Smoothed covariate terms were included for month and northing, and effort was included as an offset term to adjust for varying number of days of effort per camera in each month. Camera number and year were included as categorical random effects to account for repeated measurements across cameras and interannual variation. The null hypothesis (H_0) was that there was no difference between the probability of at least one event occurring at the Treatment and Control cameras. The alternate hypothesis (H_a) was that the probability of an event differed between Treatment and Control cameras.

Samples sizes for the regression analyses were the total number of cameras by month, referred to as Camera*Months. Effort data were unavailable for September 2017 to May 2018 due to a camera programming error, thus the effort during these months was assumed to be the same as that month in the previous year. The Camera*Months represent the total number of cameras with a certain effort level by month across the 52-month monitoring period from June 2016 to September 2023 (omitting December and January in all years). For example, if all 21 cameras deployed in the

Treatment Zone had seven or more days of effort in every month between June 2016 to September 2023, the number of Camera*Months in the Treatment zone would be $21 \times 52 = 1,092$

Camera*Months at the effort level of ≥ 7 camera days per month. The number of Camera*Months were further split for caribou by cameras that had caribou occupancy or did not (i.e., recorded at least one event or did not record any events). For example, for a single camera that had over a week of camera effort for every month of the monitoring period and did not record a caribou event, this camera would have a total of 52 unoccupied Camera*Months at the effort level of ≥ 7 days per month. If the same camera were to have recorded caribou events in two months, the camera would have a total of two Camera*Months with caribou occupancy and 50 unoccupied Camera*Months.

The secondary analysis for a ZOI also used a generalized additive mixed modelling approach, using similar approaches as the hypothesis test between Treatment and Control. An additional smoothed covariate term was included for distance to infrastructure. The distance to infrastructure was measured using the 2019 Project footprint, because footprint additions have been negligible since that time.

The Treatment vs. Control model (i.e., hypothesis test) and the secondary model testing for a potential ZOI were run using the *gamm()* function from the *mgcv* library. The *gamm()* function allows covariates to be modelled using smooth spline functions that accommodate non-linear trends which are expected for covariates such as month.

6.2 MUSKOX

Muskox monitoring was conducted through the wildlife camera program. Muskox camera records were summarized across the entire June 2016 – September 2023 period, though muskox were not a formally monitored VEC until 2018 (when Project Certificate No. 009 was adopted for the Phase 2 Project). Muskox events were too rare over the monitoring period and among the camera study area zones to perform a statistical analysis testing whether there is an effect of the Project.

6.3 GRIZZLY BEAR

Grizzly bear monitoring is conducted through the wildlife camera program. The program was focused on whether there is an effect of the Project by analysing whether the number of grizzly bear events differ between cameras in the Treatment and Control zones. Data from cameras in the ZOI zone are further analyzed if a difference is detected between the Control and Treatment zones to determine the distance at which an effect may be occurring.

Grizzly bear event data recorded on motion-triggered photos were analyzed in a similar fashion to caribou occurrence data. Since more grizzly bears were observed, it was possible to explore models for the number of bear events in a month, rather than the occupancy analysis used for caribou. Due to the large number of zero counts in the grizzly bear event data, a Poisson distribution did not provide a good fit to the data. Thus, grizzly bear regression models were fit using a negative binomial distribution on the error term. This is a flexible alternative to the standard Poisson distribution. The analyses were conducted using data from all cameras except for cameras 18, 21, and 22. Cameras 18 and 21 monitor the area of the Roberts Bay Waste Management Facility and camera 22 monitors an area along the Roberts Lake Outflow. Both of these areas may attract grizzly bears, e.g., from scents from the Waste Management Facility or as

a fishing area along Roberts Creek. Given the potential for grizzly bear usage to be different at these two areas relative to other areas near the Project and beyond, these cameras were removed so that they would not influence the hypothesis tests or secondary analysis. The two TIA cameras were included in the statistical analyses given that these two cameras are similar to other Treatment cameras located in close proximity to the Project site.

Hibernation months (November to February) were removed from the grizzly bear analyses. Therefore, the number of months included was 43 total between June 2016 and September 2023. The calculation of sample sizes for the regression analyses, as the number of Camera*Months, was conducted the same way as described for caribou. These were further split by cameras that did not record any grizzly bear events and those that recorded at least one, and the total number of events recorded was also calculated.

6.4 WOLVERINE

Wolverine monitoring is conducted through the wildlife camera program. The program was focused on whether there is an effect of the Project on wolverine occurrences. Differences between Treatment and Control zones were tested. Data from the ZOI zone were also assessed to determine the effect of distance to infrastructure, if a significant difference between occupancy in the Treatment and Control zones was detected. Regression models, as outlined for the caribou analysis (see Section 6.1.2), were fit to the wolverine occupancy data recorded on motion-triggered photos.

6.5 NEST PREDATORS

Nest predator monitoring is conducted through the wildlife camera program. Nest predator attraction to the Project could result in indirect mortality of breeding birds, so nest predators are monitored during the reproductive period for birds in the Arctic, mid-May to mid-August. The monitoring program aims to qualitatively compare nest predator occurrence in the Treatment zone with the ZOI and Control zone.

Nest predators monitored through the camera program do not include small bodied mammals, such as weasels, because they are often not recorded in the camera data. Avian nest predators (i.e., gulls and common raven) are also generally under-reported in camera data, but are included in summaries when they are recorded.

6.6 UPLAND BREEDING BIRDS

Pre-clearing surveys were not required in 2023 as no new area was cleared during the bird breeding season. Pre-clearing surveys are done if clearing is scheduled to occur between mid-May and mid--August, which is the reproductive period for birds in the Arctic (ECCC 2016).

6.6.1 PRISM PLOT SURVEYS

PRISM plot surveys did not take place in 2023, the surveys will resume in 2024.

6.7 WATERBIRDS

6.7.1 GROUND SURVEYS

Ground-based surveys were not conducted in 2023, the surveys will resume in 2024.

6.7.2 WATER QUALITY MONITORING

Water quality at the TIA was monitored in 2023 in accordance with Commitment 31 and Condition 26 (NIRB 2018). Should water quality exceed guidelines for waterbirds, Agnico Eagle will conduct a toxicological risk assessment to determine if birds are safe using or nesting on the TIA. If that risk assessment determines that there is a risk to waterbird health, then waterbirds will be deterred from the TIA.

Water quality in the TIA at location TL-1 was measured weekly in 2023 by on site staff as part of the existing water license requirements. Water quality data for parameters with guidelines relevant to wildlife (i.e., arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc) were provided to ERM and are presented in Appendix 3.10-1. Maximum concentrations were compared to the CCME *Water quality guidelines for the Protection of Agriculture – Livestock* as those are the guidelines that are available and most relevant for wildlife. If the maximum concentration exceeded the guideline, the parameter was considered for an ecological risk assessment for waterbirds at the TIA.

Water quality did not exceed guidelines for wildlife in 2023, so no risk assessment was therefore warranted.

6.8 RAPTORS

Surveys were not necessary for raptor nests in 2023 because there was no active construction of Madrid North during the raptor breeding season.

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APPENDIX B HOPE BAY ROADSIDE SNOWBANK MONITORING DATA 2023



APPENDIX B: HOPE BAY ROADSIDE SNOWBANK MONITORING DATA 2023

Date	Survey Details	Site	East Measure (cm)	West Measure (cm)	Photos	Snowbank Condition	Comments
01/04/2023	Start Time: 11:15 End Time: 12:10 Observers: GO, WN Days since last snow: 12 Temp (°C): -35 Wind Speed (m/s): 3 W Weather: partially cloudy	SB1	11.8	0	SB1 East and SB1 West	Recently plowed	
		SB2	86	0	SB2 East and SB2 West	Recently plowed	Fox trails, west side
		SB3	86	4.6	SB3 East and SB3 West	Recently plowed	Fox trails, west side
		SB4	17.8	2	SB4 East and SB4 West	Recently plowed	
		SB5	30	6.6	SB5 East and SB5 West	Recently plowed	
		SB6	14.2	4.4	SB6 East and SB6 West	Recently plowed	
		SB7	13	5	SB7 East and SB7 West	Recently plowed	
01/30/2023	Start Time: 13:30 End Time: 15:00 Observers: TL/LPG Days since last snow: 1 Temp (°C): -32 Wind Speed (knots): 9 NW Weather: sunny	SB1	16.6	1.6	20230130_152158; 20230130_152224; 20230130_152340; 20230130_152404	Recently plowed	
		SB2	0	1.8	20230130_151051; 20230130_151119; 20230130_151259; 20230130_151328	Recently plowed	
		SB3	20.6	17.6	20230130_145558; 20230130_145630; 20230130_145946; 20230130_150016	Recently plowed	
		SB4	12.4	1.6	20230130_144110; 20230130_144135; 20230130_144307; 20230130_144335	Recently plowed	
		SB5	3.2	5.2	20230130_142949; 20230130_143047; 20230130_143141; 20230130_143206	Recently plowed	
		SB6	6.8	5.2	20230130_141639; 20230130_141704; 20230130_142003; 20230130_142026	Recently plowed	
		SB7	95.6	15.8	20230130_135830; 20230130_135856; 20230130_140243; 20230130_140309	Recently plowed	
02/16/2023	Start Time: 13:55 End Time: 14:48 Observers: GD, WN Days since last snow: 4 Temp (°C): -50 Wind Speed (m/s): 7 Weather: mostly clear, cold	SB1	17	0	20230216_144717_001; SB1 East; SB1 West	Clear	No wildlife presence observed
		SB2	28	0	20230216_143622; SB2 East; SB2 West	Clear	No wildlife presence observed
		SB3	32	11	20230216_142928_001; SB3 East; SB3 West	Clear	No wildlife presence observed
		SB4	14	3	20230216_142045; SB4 East; SB4 West	Clear	No wildlife presence observed
		SB5	21	5	20230216_141337; SB5 East; SB5 West	Clear	No wildlife presence observed
		SB6	57	6	20230216_140552; SB6 East; SB6 West	Clear	No wildlife presence observed
		SB7	39	15	20230216_135450; SB7 East; SB7 West	Clear	No wildlife presence observed
02/28/2023	Start Time: 14:40 End Time: 16:30 Observers: LPG, WN Days since last snow: 5 Temp (°C): -45(windchill) Wind Speed (m/s): - Weather: mostly sunny	SB1	17.2	0	SB01- West and SB01-East	Graded Feb 27/2023	None observed
		SB2	51.2	0	SB02 East and SB02 West	Graded Feb 27/2023	None observed
		SB3	139.8	8.6	SB03 East and SB03 West	Graded Feb 27/2023	None observed
		SB4	10.4	0	SB04 East and SB04 West	Graded Feb 27/2023	None observed
		SB5	22	3.8	SB05 East and SB05 West	Graded Feb 27/2023	None observed
		SB6	36.2	4.6	SB06 East and SB06 West	Graded Feb 27/2023	None observed
		SB7	35	13.4	SB07 East and SB07 West	Graded Feb 27/2023	None observed

Date	Survey Details	Site	East Measure (cm)	West Measure (cm)	Photos	Snowbank Condition	Comments
03/16/2023	Start Time: 13:00 End Time: 15:00 Observers: TL, GDV Days since last snow: - Temp (°C): - Wind Speed (m/s): - Weather: -	SB1	19	0	SB1-1; SB1-2; SB1-3; SB1-4	Clear	
		SB2	1	2	SB2-1; SB2-2; SB2-3; SB2-4; SB2-5	Clear	Hare tracks
		SB3	15	14	SB3-1; SB3-2; SB3-3; SB3-4; SB3-5	Clear	
		SB4	32	0	SB4-1; SB4-2; SB4-3; SB4-4; SB4-5	Clear	
		SB5	0	0	SB5-1; SB5-2; SB5-3; SB5-4; SB5-5	Clear	Fox tracks
		SB6	24	5	SB6-1; SB6-2; SB6-3; SB6-4; SB6-5	Clear	Fox and hare tracks
		SB7	44	47	SB7-1; SB7-2; SB7-3; SB7-4	Clear	
03/28/2023	Start Time: 15:00 End Time: - Observers: WN, GDV Days since last snow: 0 Temp (°C): -28 Wind Speed (m/s): 4 W Weather: overcast	SB1	25	0	SB1 East (1); SB1 East (2); SB1 West (1); SB1 West (2)	Clear	No tracks
		SB2	2	5	SB2 East (1); SB2 East (2); SB2 West (1); SB2 West (2)	Clear	No tracks
		SB3	0	2	SB3 East (1); SB3 East (2); SB3 West (1); SB3 West (2)	Clear	No tracks
		SB4	18	0	SB4 East (1); SB4 East (2); SB4 West (1); SB4 West (2)	Clear	No tracks
		SB5	10	0	SB5 East (1); SB5 East (2); SB5 West (1); SB5 West (2)	Clear	No tracks
		SB6	64	6	SB6 East and SB6 West	Clear	No tracks
		SB7	42	18	SB7 East; SB7 Fox Tracks East Side; SB7 West	Clear	Fox tracks noted east side
04/11/2023	Start Time: 16:20 End Time: 17:25 Observers: WN/GO Days since last snow: 5 Temp (°C): -17 Wind Speed (m/s): 6 Weather: mostly sunny	SB1	22	0	SB01 East (1); SB01 East (2); SB01 West (1); SB01 West (2)	Clear and graded	No tracks observed
		SB2	0	4	SB02 East (1); SB02 East (2); SB02 West (1); SB02 West (2)	Clear and graded	No tracks observed
		SB3	98	4	SB03 East (1); SB03 East (2); SB03 West (1); SB03 West (2)	Clear and graded	No tracks observed
		SB4	68	0	SB04 East (1); SB04 East (2); SB04 West (1); SB04 West (2)	Clear and graded	No tracks observed
		SB5	40.6	4	SB05 East (1); SB05 East (2); SB05 West (1); SB05 West (2)	Clear and graded	No tracks observed
		SB6	86.8	4	SB06 East (1); SB06 East (2); SB06 West (1); SB06 West (2)	Clear and graded	No tracks observed
		SB7	38	16	SB07 East (1); SB07 East (2); SB07 West (1); SB07 West (2)	Clear and graded	No tracks observed
4/27/2023	Start Time: 10:30 End Time: 11:10 Observers: TL/GDV Days since last snow: 5 Temp (°C): -7 Wind Speed (km/h): 25 SW Weather: sunny	SB1	12	0	SB1-1; SB1-2; SB1-3; SB1-4; SB1-5	Melting	N/A
		SB2	0	0	SB2-1; SB2-2; SB2-3; SB2-4; SB2-5	Melting	N/A
		SB3	94	0	SB3-1; SB3-2; SB3-3; SB3-4; SB3-5	Melting	N/A
		SB4	58	0	SB4-1; SB4-2; SB4-3; SB4-4; SB4-5	Melting	N/A
		SB5	0	0	SB5-1; SB5-2; SB5-3; SB5-4; SB5-5	Melting	N/A
		SB6	118	0	SB6-1; SB6-2; SB6-3; SB6-4; SB6-5	Melting	N/A
		SB7	34	8	SB7-1; SB7-2; SB7-3; SB7-4; SB7-5	Melting	N/A

Date	Survey Details	Site	East Measure (cm)	West Measure (cm)	Photos	Snowbank Condition	Comments
05/11/2023	Start Time: 14:40 End Time: 15:50 Observers: JN/KP/WN Days since last snow: 1 Temp (°C): -1.9 Wind Speed (knots): 2.9 NW Weather: overcast	SB1	0	0	SB01 East and SB01 West	No plow activity	None observed
		SB2	51	0	SB02 East and SB02 West	No plow activity	None observed
		SB3	0	0	SB03 East and SB03 West	No plow activity	None observed
		SB4	0	0	SB04 East and SB04 West	No plow activity	None observed
		SB5	0	0	SB05 East and SB05 West	No plow activity	None observed
		SB6	58	0	SB06 East and SB06 West	No plow activity	None observed
		SB7	0	0	SB07 East and SB07 West	No plow activity	None observed
10/15/2023	Start Time: 14:30 End Time: - Observers: KP, GDV Days since last snow: Temp (°C): - Wind Speed (m/s): - Weather: -	SB1	0	0	-	Roads bare	No snow
		SB2	0	0	-	Roads bare	No snow
		SB3	0	0	-	Roads bare	No snow
		SB4	0	0	-	Roads bare	No snow
		SB5	0	0	-	Roads bare	No snow
		SB6	0	0	-	Roads bare	No snow
		SB7	0	0	-	Roads bare	No snow
11/11/2023	Start Time: 10:45 End Time: 11:30 Observers: KP Days since last snow: 0 Temp (°C): -15 Wind Speed (km/h): 19 Weather: cloudy	SB1	0	0	SB1	Blowing snow, clear road	No signs of wildlife
		SB2	0	0	SB 2 Animal tracks; SB2	Blowing snow, clear road	Signs of Arctic hare tracks
		SB3	0	0	SB3	Blowing snow, clear road	No animal tracks
		SB4	0	0	SB4	Blowing snow, clear road	No animal tracks
		SB5	0	0	SB5	Blowing snow, clear road	No animal tracks
		SB6	0	0	SB6	Blowing snow, clear road	No animal tracks
		SB7	0	0	SB7	Blowing snow, clear road	No animal tracks
11/25/2023	Start Time: 10:15 End Time: 10:50 Observers: KP Days since last snow: 2 Temp (°C): -20 Wind Speed (m/s): -NW Weather: partly cloudy	SB1	0	0	SB1	Roads clear	No snowbanks present
		SB2	0	0	SB2	Roads clear	No snowbanks present
		SB3	0	0	SB3	Roads clear	No snowbanks present
		SB4	0	0	SB4	Roads clear	No snowbanks present
		SB5	0	0	SB5	Roads clear	No snowbanks present
		SB6	0	0	SB6	Roads clear	No snowbanks present
		SB7	0	0	SB7	Roads clear	No snowbanks present

Date	Survey Details	Site	East Measure (cm)	West Measure (cm)	Photos	Snowbank Condition	Comments
12/14/2023	Start Time: 13:00 End Time: 14:00 Observers: TL, LPG Days since last snow: unknown Temp (°C): -36 Wind Speed (m/s): 4.6 Weather: overcast	SB1	-	-	20231214_122522; 20231214_122543; 20231214_122609; 20231214_122632	-	No data recorded
		SB2	-	-	20231214_121830; 20231214_121856; 20231214_121938; 20231214_122006; 20231214_122120	-	No data recorded
		SB3	-	-	20231214_120338; 20231214_120907; 20231214_121012; 20231214_121038	-	No data recorded
		SB4	-	-	20231214_115518; 20231214_120222; 20231214_120245; 20231214_120314	-	No data recorded
		SB5	-	-	20231214_114652; 20231214_115341; 20231214_115405; 20231214_115451	-	No data recorded
		SB6	-	-	20231214_113546; 20231214_114515; 20231214_114541; 20231214_114626	-	No data recorded
		SB7	-	-	20231214_113300; 20231214_113327; 20231214_113428; 20231214_1134448	-	No data recorded
12/23/2023	Start Time: 11:45 End Time: 12:30 Observers: KP Days since last snow: 2 Temp (°C): -28 Wind Speed (km/h): 8 SE Weather: partly cloudy	SB1	0	0	IMG_0926; IMG_0927; IMG_0928; IMG_0929	Recently plowed	No snowbanks
		SB2	0	0	IMG_0931; IMG_0932; IMG_0933; IMG_0934	Recently plowed	No snowbanks
		SB3	0	0	IMG_0936; IMG_0937; IMG_0938; IMG_0939	Recently plowed	No snowbanks
		SB4	0	0	IMG_0940; IMG_0941; IMG_0942; IMG_0943	Recently plowed	No snowbanks
		SB5	0	0	IMG_0944; IMG_0945; IMG_0946; IMG_0947	Recently plowed	No snowbanks
		SB6	0	0	IMG_0948; IMG_0949; IMG_0950; IMG_0951	Recently plowed	No snowbanks
		SB7	0	0	IMG_0952; IMG_0953; IMG_0954; IMG_0955	Recently plowed	No snowbanks

APPENDIX C HOPE BAY QUARRY BLAST NOISE MONITORING SOP



HOPE BAY SAFE OPERATING PROCEDURES

Division:	Environment		
SOP #:	ENV-SOP-ES-031		
Subject:	Noise Monitoring Procedure		
Owner:	Hope Bay Environment	Effective Date:	December 1, 2023
Revision:		Replaces:	

1 OBJECTIVE

- 1.01 To provide guidance to deploy the Larson Davis SoundAdvisor Model 831C in the field to collect noise monitoring data. The requirement to collect this data is outlined in the Hope Bay Project (Sept. 2022) Wildlife Mitigation and Monitoring Plan (Jan. 2023)

2 SCOPE

- 2.01 This scope applies to field staff when noise monitoring is required for blasting events.

3 INTRODUCTION

- 3.01 Proper operation of the SoundAdvisor 831C noise monitor is vital to the proper collection of noise data.

4 RESPONSIBILITY

Environmental Technician

Ensure noise monitoring equipment is fully charged and calibrated.

Ensure all safety conditions are considered and met before commencing field work.

Environmental Coordinator

Provide Standard Operating Procedure to field staff for review and assess level of competency of field staff to complete task.

Provide UTM coordinates and monitoring distance from blast site.

5 DEFINITIONS

- 5.01 Larson Davis CAL200 – sound meter calibration device
Larson Davis SoundAdvisor 831C – Noise monitor
Larson Davis Model NMS044 Portable Noise Monitoring System



HOPE BAY SAFE OPERATING PROCEDURES

Division:	Environment		
SOP #:	ENV-SOP-ES-031		
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Owner:	Hope Bay Environment	Effective Date:	December 1, 2023
Revision:		Replaces:	

6 REFERENCES AND RELATED DOCUMENTS

- 6.01 - TMAC Resources Noise Abatement and Monitoring Plan, December 2017
- Hope Bay Project Quarry Management Plan and Monitoring Plan, 2022
- Wildlife Mitigation and Monitoring Plan, 2023
- SoundAdvisor 831C Sound Level Meter Reference Manual
- SoundAdvisor Noise Monitoring Solutions Reference Document

7 PREPARATION

7.01 TOOLS:

Larson Davis SoundAdvisor Model 831c
SoundAdvisor Portable Noise Monitoring System Model NMS044
Portable weather station
Handheld GPS
Digital camera
Field datasheet
Writing utensil
Extra AA batteries

8 PROCEDURE

8.01 Calibration

- 1 Remove foam oval windscreen and unscrew bird spike to reveal the microphone.
- 2 Carefully slide calibration pack hole located on the bottom of the unit, over the microphone tip ensuring that when the unit is placed on a flat surface the entire tip of the microphone is covered.
- 3 With the unit powered on, select 'TOOLS'/CALIBRATION
 - Select 94Db by using the cursor to highlight the dropdown menu.
- 3 On the calibration pack, press the black button – this starts the tone for the microphone to use as an audial reference tone.

Division:	Environment		
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On the 831C, use the cursor to highlight 'CALIBRATION'.

The unit will now enter calibration mode and run a diagnostic. Once calibration is complete, the 831C will prompt you to save – select yes.

- 4 Calibration procedure complete.

8.02 Monitoring Station Set-Up

1. At the prescribed monitoring location (~2km from blast location), set up the microphone using the yellow broom pole and the molded bracket on the side of the pelican case.
2. On the microphone cable, slide the two cable ties up to the microphone grip. Now slide the microphone with cable ties over the yellow pole.

(Figure 1.)



Figure 1. Microphone affixed to vertical pole.



HOPE BAY SAFE OPERATING PROCEDURES

Division:	Environment		
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- Using the two pieces of Velcro material on the microphone cable, secure microphone cable to the yellow pole to prevent wind from rattling the cable on the yellow pole during monitoring.
- Once the microphone and pole are secure, take photos from all four cardinal directions depicting both the audio recording gear and the background.

8.03 Noise Monitoring using the SoundAdvisor Model 831C

At the bottom of the 831C screen there are three menu items

LIVE CLOSE LOG

- Select 'LIVE' – audible noise will register indicating the microphone is picking up ambient sounds. IF yes, proceed. IF not, check all connections in the Pelican case, and along the microphone.
- If the mic is working, use the arrow keys to select 'LOG.' In this screen, the unit is now ready to start recording.
- Select the Record button prior to blasting. When the blast event is complete, press the stop button to cease operation. Data is saved to the internal memory of the unit.


8.04 Field Data

Record all pertinent information using the appropriate field datasheet.

Data recorded includes:

- Project Name, field personnel, date and time started/finished,
- UTM Coordinates of sampling station,
- Ground Cover type and terrain,
- sampling station weather on datasheet using the handheld wind meter,
- Instrument model,
- Sampling site observations and,
- Notable observations.

NOTE – complete a field data sheet even if blasting activities have been suspended. Note pertinent details to keep solid records of all blasting attempts.

		HOPE BAY SAFE OPERATING PROCEDURES	
Division:	Environment		
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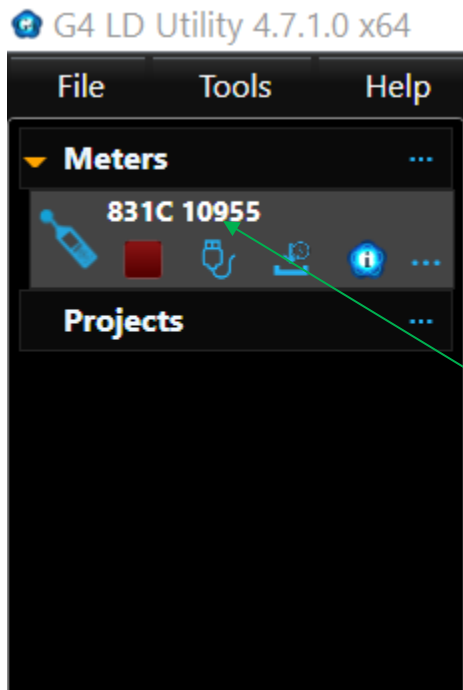
8.05 Retrieving Data from SoundMonitor 831C

Interfacing the noise meter requires installation of the G4 LD Utility software and a standard USB cable connecting to either a PC or laptop computer.


With software loaded, open G4 LD Utility application.

1. Connect the noise meter to the computer using a standard USB cable.

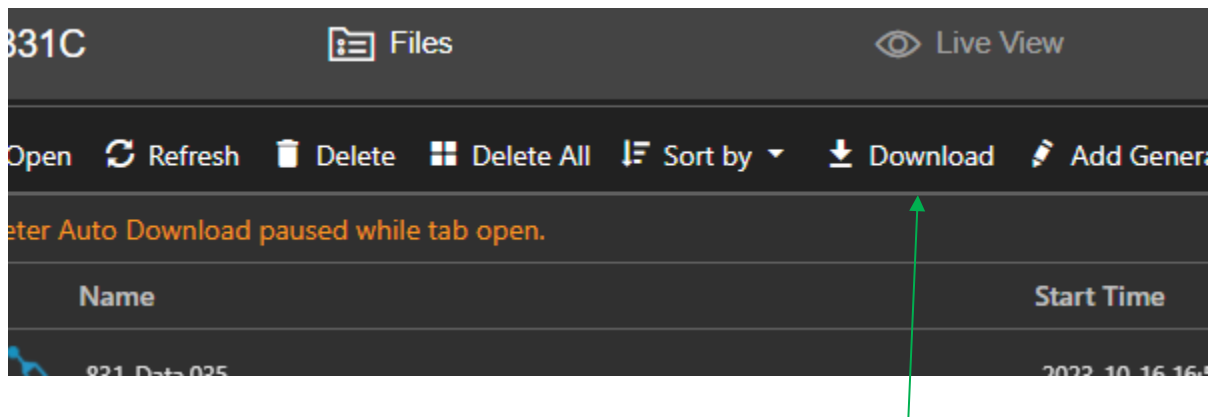
The connected meter model number will appear in the top left corner of the screen.



The model number of the meter appears to confirm connection.

 HOPE BAY SAFE OPERATING PROCEDURES			
Division:	Environment		
SOP #:	ENV-SOP-ES-031		
Subject:	Noise Monitoring Procedure		
Owner:	Hope Bay Environment	Effective Date:	December 1, 2023
Revision:		Replaces:	

2. Select the data files from the sampling event from the list on the right side of the screen. Once the file(s) are highlighted, select the 'Download' option to begin data transfer to the connected computer.
3. Navigate to the 'Downloads' folder on the PC to retrieve data.



9 APPROVED RECORD

NAME	POSITION	DATE	REV #	NOTES
Will Nalley	Senior Environmental Technician	December 1, 2023	0	Drafted and reviewed

APPENDIX D WILDLIFE CAMERA LOCATIONS AND CAMERA EFFORT BY MONTH, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023

APPENDIX D: WILDLIFE CAMERA LOCATIONS AND CAMERA EFFORT BY MONTH, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023

Camera No.	Position			Distance to Infrastructure (m)			Camera Bearing	Camera Type	ZOI and Control Location Relative to Project	Species Specific Monitoring Objective	Summary Camera Effort June 2016 - December 2018	Summary Camera Effort January 2019 - May 2022	2022												2023					Summary Camera Effort September 2021 - September 2022		
	Zone	Easting	Northing	2017	2018	2019-Current					Total	Total	June	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Total	Average	Standard Deviation	
1	13 W	432949	7558756	0	0	0	SE	Treatment	-	-	551	727	30	31	31	30	27	27	3	6	8	31	30	31	0	0	0	0	285	15.8333	14.54911	
2	13 W	432387	7553947	28	28	28	N	Treatment	-	Road Crossing Ramp	574	839	30	31	31	28	17	23	3	8	3	12	0	0	0	0	2	1	189	10.5	12.53348	
3	13 W	444031	7566975	11505	11505	11505	NW	Control	East	-	393	512	0	0	0	2	0	0	0	0	0	0	0	6	29	31	30	0	98	5.44444	11.39774	
4	13 W	444861	7564091	10991	10991	10991	W	Control	East	-	468	476	30	31	31	10	12	0	0	0	0	13	29	24	27	28	4	0	239	13.2778	13.30106	
5	13 W	450151	7565854	16481	16481	16481	E	Control	East	-	221	339	30	31	16	9	1	0	0	0	0	0	6	24	27	3	0	147	8.16667	11.7536		
6	13 W	448290	7567418	15679	15679	15679	E	Control	East	-	458	523	30	31	10	4	10	0	0	0	0	3	30	22	27	21	13	0	201	11.1667	12.28222	
7	13 W	446995	7560826	11697	11697	11697	N	Control	East	-	498	527	30	31	31	30	14	0	0	0	0	0	16	30	14	7	20	1	224	12.4444	13.1338	
8	13 W	446453	7567249	13905	13905	13905	W	Control	East	-	292	281	30	31	31	30	19	0	0	0	0	0	23	30	27	26	29	0	276	15.3333	14.4018	
9	13 W	421674	7551536	10998	10998	10998	S	Control	West	-	278	85	13	0	0	6	4	0	0	0	0	0	3	25	21	2	0	74	4.11111	7.653441		
10	13 W	429000	7563795	2581	2581	2581	SW	ZOI	West	-	685	705	30	31	31	30	31	21	0	2	11	31	13	3	29	25	30	0	318	17.6667	13.582	
11	13 W	434312	7561671	1313	1313	1313	SE	Treatment	-	-	572	914	30	31	31	30	31	19	0	1	0	7	19	28	30	26	0	309	17.1667	13.69092		
12	13 W	428170	7550169	4507	4507	4507	S	ZOI	West	-	285	325	30	31	31	21	29	30	1	4	22	31	30	31	22	18	24	0	355	19.7222	12.62493	
13	13 W	431162	7549789	1655	1655	1655	S	Treatment	-	-	484	913	30	31	31	30	30	26	4	0	0	24	29	31	28	28	31	0	353	19.6111	13.92897	
14	13 W	441096	7559506	5660	5660	5660	W	ZOI	East	-	430	320	30	31	31	29	27	6	0	0	0	15	30	31	30	27	30	1	318	17.6667	14.19611	
15	13 W	434048	7559949	439	439	439	S	Treatment	-	-	696	566	0	0	31	22	0	0	0	0	19	27	30	31	16	9	19	0	204	11.3333	12.79246	
16	13 W	445286	7563652	11147	11147	11147	NW	Control	East	-	456	401	30	31	31	30	0	0	0	0	0	0	6	26	26	30	1	211	11.7222	14.42549		
17	13 W	432414	7563015	132	67	67	NW	Treatment	-	-	606	805	30	31	31	23	0	0	0	0	0	0	1	30	31	30	0	207	11.5	14.81752		
18	13 W	432884	7563146	0	0	0	E	Treatment	-	Waste Management Facility	522	791	30	31	31	30	27	22	10	20	1	0	0	2	23	11	20	0	258	14.3333	12.81543	
19	13 W	433432	7562946	295	295	295	W	Treatment	-	-	455	655	30	31	31	30	25	20	0	0	10	29	30	30	29	30	15	0	340	18.8889	13.3544	
21	13 W	432902	7563215	0	0	0	S	Treatment	-	Waste Management Facility	131	683	30	31	31	30	30	21	0	0	0	0	0	3	4	0	0	0	180	10	13.90726	
22	13 W	435190	7562859	2040	2040	2040	SE	Treatment	-	ERM Fish Fence	356	877	8	0	0	9	22	15	0	0	0	0	0	3	28	20	12	0	117	6.5	9.173171	
23	13 W	440934	7562091	6601	6601	6601	E	ZOI	-	-	232	436	30	5	0	7	26	15	0	10	1	26	30	31	30	25	31	0	267	14.8333	13.36919	
24	13 W	432915	7546879	3540	3540	2827	SE	ZOI/Ladder	South	-	346	333	30	31	31	30	31	29	7	7	2	31	30	31	26	28	27	1	372	20.6667	13.17306	
25	13 W	439189	7561613	4911	4911	4911	SW	ZOI	East	-	527	458	30	31	31	14	31	29	0	0	16	31	19	0	28	31	9	0	300	16.6667	13.77124	
26	13 W	439511	7559524	4174	4174	4174	E	ZOI	East	-	514	185	23	27	18	30	28	30	9	0	0	0	0	4	30	27	0	0	226	12.5556	13.40422	
28	13 W	437525	7555177	1860	1758	1758	SE	Treatment	-	-	544	720	30	31	31	30	31	30	4	15	0	30	30	31	28	27	30	0	378	21	13.41641	
29	13 W	447664	7555608	11763	11701	11700	E	Control	East	-	518	797	30	31	31	30	31	16	0	6	12	31	30	22	30	27	10	0	337	18.7222	13.02398	
30	13 W	436434	7551376	3216	3216	2794	NE	ZOI	East	-	526	329	30	31	31	30	31	28	2	4	0	0	0	2	12	11	18	0	230	12.7778	13.59306	
31	13 W	447294	7558194	11554	11554	11532	SE	Control	East	-	690	383	0	0	0	7	31	16	0	0	0	30	24	28	16	10	20	0	182	10.1111	11.98474	
32	13 W	431386	7554959	982	982	982	E	Treatment	-	-	526	590	1	0	2	23	30	15	0	2	0	30	28	28	17	13	9	0	198	11	12.10736	
33	13 W	446370	7566101	13351	13351	13349	S	Control	East	-	291	582	30	31	19	9	31	14	0	0	0	0	9	20	14	14	21	19	231	12.8333	11.2994	
34	13 W	435945	7545070	6037	6037	5333	NE	ZOI/Ladder	South	-	568	706	8	0	0	1	21	13	0	0	0	24	29	3	26	24	25	1	175	9.72222	11.57485	
35	13 W	432743	7556706	57	57	57	E	Treatment	-	Road Crossing Ramp	532	636	30	31	31	25	23	18	5	5	4	3	0	0	0	0	1	1	177	9.83333	12.45344	
36	13 W	447689	7563809	13382	13382	13382	N	Control	East	-	342	125	0	5	18	30	23	28	1	0	0	9	30	31	13	0	0	0	188	10.4444	12.62687	
37	13 W	447868	7573293	17736	17736	17736	NE	Control	East	-	266	398	30	31	31	11	0	0	0	0	0	0	6	30	31	31	0	201	11.1667	14.46395		
39	13 W	439855	7553886	4524	4421	4421	NE	ZOI	East	-	539	205	30	31	31	30	28	14	3	4	0	31	30	31	21	13	23	0	320	17.7778	13.28226	
40	13 W	449306	7559369	13712	13712	13712	NW	Control	East	-	469	612	30	31	31	23	14	0	0	0	0	0	13	31	30	27	30	1	261	14.5	14.18885	
41	13 W	436856	7564792	4006	4006	4006	SE	ZOI	East	-	234	632	30	31	28	9	31	12	0	5	0	31	30	31	29	29	11	0	307	17.0556	13.8159	
42	13 W	432858	7561589	0	0	0	S	Treatment	-	-	663	870	30	31	31	30	31	30	10	11	16	31	29	31	26	24	27	0	388	21.5556	11.98147	
43	13 W	447488	7561980	12505	12505	12505	W	Control	East	-	538	569	30	31	31	30	29	30	23	7	20	27	30	31	28	19	16	0	382	21.2222	11.69492	
44	13 W	441011	7563691	7648	7648	7648	S	ZOI	East	-	615	867	30	31	31	30	30	22	0	0	8	31	30	31	30	29	31	1	365	20.2778	13.91912	
45	13 W	443663	7571970	13546	13546	13546	N	Control	East	-	289	85	2	0	0	0	0	0	0													

APPENDIX D: WILDLIFE CAMERA LOCATIONS AND CAMERA EFFORT BY MONTH, DORIS AND MADRID AREAS, JUNE 2016 TO SEPTEMBER 2023

Camera No.	Position			Distance to Infrastructure (m)			Camera Bearing	Camera Type	ZOI and Control Location Relative to Project	Species Specific Monitoring Objective	Summary Camera Effort June 2016 - December 2018	Summary Camera Effort January 2019 - May 2022	2022												2023					Summary Camera Effort September 2021 - September 2022														
	Zone	Easting	Northing	2017	2018	2019-Current					Total	Total	June	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Total	Average	Standard Deviation													
46	13 W	442904	7560551	7707	7707	7707	N	ZOI	East	-	249	574	30	31	31	30	16	4	0	0	0	0	25	29	14	8	20	1	239	13.2778	13.16772													
47	13 W	442470	7550873	8383	8275	8275	E	ZOI	East	-	338	622	30	31	31	30	27	26	0	0	0	30	30	26	0	0	0	0	261	14.5	14.98725													
48	13 W	443980	7554761	8182	8106	8106	NW	ZOI	East	-	211	520	30	31	31	30	16	0	0	0	0	1	30	27	21	17	0	0	234	13	13.92416													
49	13 W	445024	7565168	11713	11713	11713	S	Control	East	-	462	102	0	0	0	7	30	28	4	7	11	31	15	16	19	15	27	0	210	11.6667	11.44295													
50	13 W	434645	7553626	1998	1998	1998	NE	Treatment	-	-	408	402	30	31	31	30	31	22	0	0	0	0	0	1	3	0	3	0	182	10.1111	14.02892													
51	13 W	435488	7555990	16	16	0	E	Treatment	-	TIA	304	601	30	31	31	30	13	17	0	8	1	27	30	31	29	25	27	0	330	18.3333	13.23987													
52	13 W	434501	7559084	77	77	77	NW	Treatment	-	TIA	452	852	0	0	0	0	0	0	0	0	0	0	0	0	20	7	20	0	47	2.61111	6.536224													
53	13 W	431215	7559161	1096	1096	1096	W	Treatment	-	-	657	1026	30	31	31	30	29	24	13	16	7	31	30	31	28	21	29	0	381	21.1667	11.97178													
54	13 W	430564	7558687	1757	1757	1757	SE	Treatment	-	-	561	716	18	0	0	6	31	19	0	7	0	30	30	31	23	15	29	0	239	13.2778	13.09156													
55	13 W	428287	7554559	4039	4039	4039	N	ZOI	West	-	385	307	30	31	31	30	18	30	23	30	28	29	30	31	7	0	0	0	348	19.3333	13.68125													
56	13 W	419347	7547495	13650	13650	13650	N	Control	West	-	513	542	30	31	31	28	11	0	0	0	0	0	16	30	30	27	30	0	264	14.6667	14.43036													
57	13 W	427342	7552318	5324	5324	5324	SW	ZOI	West	-	317	586	30	31	31	30	30	30	1	0	15	31	30	30	17	9	21	0	336	18.6667	13.39008													
58	13 W	421708	7545207	12160	12160	12160	N	Control	West	-	212	633	30	31	31	25	0	0	0	0	0	0	0	3	25	19	28	0	192	10.6667	13.67264													
59	13 W	431411	7564176	265	265	265	E	Treatment	-	-	415	735	30	31	31	30	31	25	3	7	27	31	30	31	30	31	22	0	390	21.6667	12.86125													
60	13 W	433982	7564662	1441	1441	1441	S	Treatment	-	-	590	544	0	0	0	9	30	17	1	0	0	30	30	28	28	31	30	0	234	13	14.26225													
												Total			1363	1339	1320	1237	1200	861	130	192	242	890	1056	1120	1226	1046	1026	29														
												Average			23.9	23.5	23.2	21.7	21.1	15.1	2.32	3.43	4.32	15.9	18.9	20	21.9	18.7	18.3	0.52														
												Standard Deviation			11.4	13.2	12.7	10.8	11.3	11.5	4.99	5.87	7.56	14.2	13.1	12.9	9.26	10.5	11.3	2.54														

Notes:
Cells with dashes (-) indicate camera was not active for that month.

APPENDIX E CAMERA SUMMARY OF WILDLIFE IMAGES AND EVENTS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO SEPTEMBER 2023

APPENDIX E: CAMERA SUMMARY OF WILDLIFE IMAGES AND EVENTS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Number of Images and Events Recorded of Wildlife Species													
	Caribou				Grizzly Bear		Wolverine		Muskox		Other Wildlife			
	Motion		Timed		Motion		Motion		Motion		Motion		Timed	
	Images	Events	Images	Events	Images	Events	Images	Events	Images	Events	Images	Events	Images	Events
1	534	61	1	1							487	38	11	2
2	120	11									81	8	15	6
3	780	47			198	6	20	1			100	7		
4	167	10			290	9					120	6		
5	710	15			344	7	10	1			30	1		
6	420	8	1	1	339	7					11	2		
7	463	13			30	1	10	1			10	1	1	1
8	360	10			120	4	70	1			168	8	1	1
9	160	4			250	5					10	1		
10	487	24			247	8	10	1			130	11		
11	243	5	1	1	250	7					200	10		
12	170	14			160	9					130	10		
13	240	8	2	1	370	8	30	2						
14	241	11			110	3					112	6		
15	189	10			90	5					26	6		
16	200	16	1	1	140	6			20	1	80	5		
17	83	8			170	7					158	14	12	10
18	260	25									80	8		
19	154	16			50	3					50	2	1	1
21	904	57			60	4					590	40	5	2
22	96	7			670	29	40	2			117	11	0	1
23	638	13	8	2	555	12	20	2	72	2	160	12	13	2
24	940	68	1	1	30	1	10	1			90	7	16	16
25	50	3			562	10	10	1	1584	1	20	2		
26	788	63			93	4			69	1	193	10		
28	510	15			700	12			310	3	237	21		
29	600	13			110	4					31	4	3	3
30	250	12			430	6	140	2			100	4	1	2
31	40	1			10	1					30	3	4	3
32	620	38			300	10					341	12		
33	940	54			3540	18	80	6			30	3		

APPENDIX E: CAMERA SUMMARY OF WILDLIFE IMAGES AND EVENTS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Number of Images and Events Recorded of Wildlife Species													
	Caribou				Grizzly Bear		Wolverine		Muskox		Other Wildlife			
	Motion		Timed		Motion		Motion		Motion		Motion		Timed	
	Images	Events	Images	Events	Images	Events	Images	Events	Images	Events	Images	Events	Images	Events
34	90	6			60	2					370	13	1	1
35	60	6	0	0							409	35	8	7
36	50	4			90	3	50	5			20	2		
37	287	12			618	6			100	1	20	2		
39	20	1									12	2	13	1
40	170	5									80	2	4	2
41	26	4			280	6	12	2			79	9		
42	390	35	1	1							30	1	13	10
43	450	5			591	9	22	2			176	13	2	2
44	140	5			110	4			170	1	160	7		
45					240	5								
46	260	10			250	6					60	2		
47	230	11					11	2			16	2		
48	440	30	5	2	60	3					30	3	7	4
49	10	1			281	3								
50	30	4			160	2					60	3		
51	637	49			40	3					200	19	12	10
52	110	7	2	0	157	7					197	19	7	7
53	150	7			70	3			110	2	170	8		
54	228	11			359	13					244	14	1	1
55	142	7			30	1					50	4		
56	160	3			530	5	12	2			20	1	1	1
57	320	16			30	2	40	3			70	6		
58	10	1	0	1	798	27	10	0			113	10	3	4
59	700	13			400	10					50	3		
60														
TOTAL	17467	913	23	12	15372	326	607	37	2435	12	6558	453	155	100

APPENDIX F WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO SEPTEMBER 2023

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
Part 1. Camera Data for Caribou, Grizzly Bear, Wolverine, Muskox, and Nest Predators recorded on motion-triggered photos																	
1	Treatment	4/24/2022	1	16:02	16:05	M	1060	1079	20	2	Red Fox	2	NA	2	Walking	Tundra	
1	Treatment	7/4/2022	1	20:32	20:32	M	363	364	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/6/2022	2	7:47	7:47	M	386	393	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/6/2022	3	9:30	9:30	M	396	399	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/6/2022	4	17:25	17:25	M	409	411	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/8/2022	1	21:17	21:17	M	435	437	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/9/2022	1	3:45	3:45	M	445	454	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/10/2022	1	5:19	5:19	M	458	478	30	3	Caribou	3	NA	3	Walking	Tundra	
1	Treatment	7/10/2022	2	17:59	17:07	M	491	496	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/11/2022	2	21:09	21:09	M	534	538	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/11/2022	3	22:43	22:43	M	544	545	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/12/2022	1	0:47	0:47	M	554	562	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/12/2022	2	19:10	19:10	M	567	568	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/12/2022	3	21:03	21:03	M	577	577	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/13/2022	1	1:49	1:49	M	587	597	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/13/2022	2	7:34	7:34	M	607	616	20	2	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/14/2022	1	1:03	1:03	M	620	621	10	1	Caribou	1	NA	1	Walking	Tundra	
1	Treatment	7/17/2022	1	11:53	11:53	M	659	661	10	1	Caribou	1	NA	1	Walking	Tundra	
2	Treatment	7/3/2022	1	0:09	0:09	M	4897	4906	10	1	Caribou	3	NA	3	Grazing	Tundra	Truck triggered photo while driving
2	Treatment	7/4/2022	1	20:12	20:12	M	5723	5732	10	1	Caribou	1	NA	1	Walking	Road	Truck triggered photo while driving
2	Treatment	7/20/2022	1	3:58	3:59	M	9898	9907	10	1	Caribou	1	NA	1	Grazing	Tundra	
2	Treatment	7/21/2022	1	20:36	20:36	M	9954	9957	10	1	Caribou	1	NA	1	Walking	Tundra	
2	Treatment	8/2/2022	1	9:33	9:33	M	1908	1914	10	1	Caribou	1	NA	1	Walking	Tundra	
2	Treatment	8/3/2022	1	21:55	21:55	M	2584	2593	10	1	Caribou	1	NA	1	Walking	Tundra	
3	Control	5/26/2022	1	4:41	4:42	M	83	110	28	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
4	Control	10/4/2021	1	17:12	17:17	M	79	139	60	6	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
4	Control	7/3/2022	1	3:58	3:58	M	240	249	10	1	Caribou	2	1	3	Grazing	Tundra	Bear knocked the camera down
4	Control	7/8/2022	1	5:07	5:07	M	275	275	10	1	Caribou	1	NA	1	Walking	Tundra	
4	Control	7/23/2022	1	16:31	16:31	M	333	339	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
4	Control	7/24/2022	1	10:20	10:20	M	349	355	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
4	Control	9/3/2022	1	8:36	8:38	M	516	559	60	6	Grizzly Bear	2	NA	2	Walking	Tundra	
5	Control	6/9/2022	1	18:45	18:45	M	165	174	10	1	Caribou	1	NA	1	Walking	Tundra	
5	Control	6/23/2022	1	15:02	15:02	M	247	253	10	1	Caribou	1	NA	1	Walking	Tundra	
5	Control	6/30/2022	1	23:28	23:29	M	328	431	50	5	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
5	Control	8/4/2022	1	20:09	20:10	M	593	612	20	2	Caribou	NA	1	1	Walking	Tundra	
6	Control	9/8/2021	1	9:57	10:00	M	2048	2117	70	7	Caribou	1	0	1	Investigating camera	Tundra	
6	Control	9/12/2021	1	18:46	18:53	M	2133	2232	100	10	Caribou	1	0	1	Investigating camera	Tundra	
6	Control	9/12/2021	1	19:43	19:48	M	2233	2332	100	10	Caribou	1	0	1	Investigating camera	Tundra	
6	Control	7/10/2022	1	20:00	20:00	M	559	563	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
6	Control	7/18/2022	1	9:20	9:20	M	609	612	10	1	Caribou	1	NA	1	Walking	Tundra	
7	Control	4/28/2022	1	15:35	15:36	M	677	686	10	1	Fox	1	NA	1	Walking	Tundra	
7	Control	5/31/2022	1	9:21	9:21	M	65	89	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
7	Control	6/22/2022	1	13:39	13:39	M	164	173	10	1	Caribou	1	NA	1	Walking	Tundra	
7	Control	8/19/2022	1	9:58	9:58	M	395	398	10	1	Caribou	1	NA	1	Walking	Tundra	
7	Control	8/19/2022	2	12:35	12:35	M	408	415	10	1	Caribou	1	NA	1	Grazing	Tundra	
7	Control	9/1/2022	1	6:02	6:02	M	464	483	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
8	Control	4/30/2022	1	1:53	1:53	M	730	739	10	1	Arctic Fox	1	NA	1	Standing	Tundra	
8	Control	5/25/2022	1	12:34	12:34	M	40	61	30	3	Caribou	1	NA	1	Grazing	Tundra	
8	Control	5/31/2022	1	15:59	15:59	M	98	115	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
8	Control	6/7/2022	1	21:59	21:59	M	139	151	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
8	Control	6/7/2022	2	22:05	22:08	M	159	191	40	4	Caribou	1	NA	1	Investigating camera	Tundra	
9	Control	6/13/2022	1	10:46	10:48	M	121	138	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
10	ZOI	9/2/2021	1	19:10	19:10	M	487	496	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
10	ZOI	5/1/2022	1	0:39	0:40	M	581	600	20	2	Fox	1	NA	1	Investigating camera	Tundra	
10	ZOI	6/17/2022	1	7:00	7:00	M	123	142	20	2	Caribou	2	NA	2	Grazing	Tundra	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
10	ZOI	6/17/2022	2	18:29	18:29	M	146	167	22	3	Caribou	1	NA	1	Grazing	Tundra	
10	ZOI	6/25/2022	1	23:02	23:06	M	200	323	88	9	Caribou	1	1	2	Investigating camera	Tundra	
10	ZOI	7/5/2022	1	5:38	5:38	M	357	360	4	1	Caribou	1	NA	1	Walking	Tundra	
10	ZOI	7/8/2022	1	3:21	3:21	M	376	377	2	1	Caribou	1	NA	1	Walking	Tundra	
10	ZOI	7/18/2022	1	14:41	14:41	M	419	423	5	1	Caribou	1	NA	1	Walking	Tundra	
10	ZOI	8/14/2022	1	6:05	6:06	M	507	526	20	2	Caribou	1	NA	1	Standing	Tundra	
10	ZOI	8/14/2022	1	6:06	6:06	M	527	536	10	1	Caribou	2	NA	2	Standing	Tundra	
10	ZOI	8/27/2022	1	16:34	16:37	M	609	644	36	4	Caribou	NA	1	1	Grazing	Tundra	
11	Treatment	6/16/2022	1	20:26	20:26	M	114	116	3	1	Caribou	1	NA	1	Walking	Tundra	
11	Treatment	7/26/2022	2	10:35	10:40	M	381	410	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
12	ZOI	6/29/2022	1	12:52	12:55	M	185	202	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
12	ZOI	7/3/2022	1	1:34	1:35	M	222	229	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
12	ZOI	7/3/2022	1	5:15	5:15	M	232	234	10	1	Caribou	1	NA	1	Walking	Tundra	
12	ZOI	7/5/2022	1	1:38	1:38	M	248	253	10	1	Caribou	1	NA	1	Walking	Tundra	
12	ZOI	7/11/2022	1	5:35	5:35	M	276	280	10	1	Caribou	1	NA	1	Walking	Tundra	
12	ZOI	7/15/2022	1	0:02	0:02	M	308	311	10	1	Caribou	1	NA	1	Walking	Tundra	
12	ZOI	9/9/2022	1	23:56	23:56	M	529	538	10	1	Caribou	1	NA	1	Grazing	Tundra	
12	ZOI	9/10/2022	1	4:18	4:18	M	539	548	10	1	Caribou	1	NA	1	Walking	Tundra	
13	Treatment	9/8/2021	1	10:09	10:10	M	53	92	40	4	Grizzly Bear	1	0	1	Investigating camera	Tundra	
13	Treatment	3/24/2022	1	8:27	8:27	M	586	577	10	1	Wolverine	1	NA	1	Other	Tundra	
13	Treatment	3/28/2022	1	16:33	16:33	M	593	602	10	1	Red Fox	1	NA	1	Walking	Tundra	
13	Treatment	6/13/2022	1	12:50	15:54	M	97	136	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
13	Treatment	6/21/2022	1	15:25	15:25	M	179	182	10	1	Caribou	1	NA	1	Walking	Tundra	
13	Treatment	6/21/2022	2	16:45	16:45	M	189	198	10	1	Caribou	1	NA	1	Walking	Tundra	
13	Treatment	6/28/2022	3	7:55	7:55	M	217	219	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
13	Treatment	9/14/2022	1	13:37	13:38	M	465	503	40	4	Grizzly Bear	1	1	2	Grazing	Tundra	
14	ZOI	6/16/2022	1	11:30	11:45	M	209	225	20	2	Caribou	4	NA	4	Walking	Tundra	
14	ZOI	6/26/2022	1	13:47	13:47	M	462	471	10	1	Caribou	1	NA	1	Walking	Tundra	
14	ZOI	7/16/2022	1	22:14	22:14	M	662	663	10	1	Caribou	1	NA	1	Walking	Tundra	
14	ZOI	7/27/2022	1	3:10	3:10	M	702	707	10	1	Caribou	1	NA	1	Walking	Tundra	
14	ZOI	8/28/2022	1	21:38	21:38	M	811	818	10	1	Caribou	1	NA	1	Walking	Tundra	
14	ZOI	8/28/2022	2	21:39	21:43	M	821	952	120	12	Caribou	1	NA	1	Investigating camera	Tundra	
14	ZOI	9/8/2022	1	5:24	17:24	M	1011	1025	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
16	Control	6/14/2022	1	18:03	18:03	M	116	127	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
16	Control	7/21/2022	1	1:11	1:11	M	264	267	10	1	Caribou	1	NA	1	Walking	Tundra	
16	Control	8/3/2022	1	6:22	6:22	M	313	322	10	1	Caribou	1	NA	1	Walking	Tundra	
16	Control	9/9/2022	1	20:06	20:06	M	437	446	10	1	Caribou	1	NA	1	Grazing	Tundra	
17	Treatment	6/25/2022	1	11:01	11:01	M	640	649	10	1	Caribou	3	3	6	Grazing	Tundra	
17	Treatment	6/25/2022	2	11:02	11:02	M	650	651	2	1	Caribou	1	NA	1	Walking	Tundra	
18	Treatment	7/5/2022	1	13:11	13:11	M	8792	8792	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/7/2022	1	5:17	5:17	M	9635	9644	10	1	Caribou	2	NA	2	Walking	Road	
18	Treatment	7/8/2022	1	17:31	17:31	M	612	621	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/16/2022	1	19:37	19:37	M	2876	2882	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/16/2022	2	20:01	20:01	M	2886	2895	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/19/2022	1	22:25	22:25	M	4045	4053	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/20/2022	2	8:20	8:21	M	4055	4064	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/20/2022	3	19:03	19:03	M	4278	4287	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/21/2022	1	1:41	1:41	M	4298	4301	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/21/2022	2	5:36	5:36	M	4308	4317	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/21/2022	3	11:27	11:28	M	4438	4446	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/21/2022	4	13:45	13:45	M	4581	4588	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/21/2022	5	20:10	20:11	M	4931	4937	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/21/2022	6	20:21	20:21	M	4941	4944	10	1	Caribou	1	NA	1	Walking	Road	
18	Treatment	7/21/2022	7	22:46	22:46	M	4951	4960	10	1	Caribou	1	NA	1	Walking	Road	
19	Treatment	7/9/2022	1	1:04	1:04	M	189	198	10	1	Caribou	1	NA	1	Walking	Tundra	
19	Treatment	7/9/2022	2	2:50	2:50	M	199	201	10	1	Caribou	1	NA	1	Walking	Tundra	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
19	Treatment	7/19/2022	1	23:37	23:37	M	242	251	10	1	Caribou	1	NA	1	Walking	Tundra	
19	Treatment	7/25/2022	1	5:11	5:11	M	267	276	10	1	Caribou	1	NA	1	Grazing	Tundra	
19	Treatment	7/31/2022	1	11:29	11:29	M	315	316	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
19	Treatment	8/2/2022	1	3:51	3:51	M	341	347	10	1	Caribou	1	NA	1	Walking	Tundra	
19	Treatment	8/2/2022	2	10:27	10:27	M	351	355	10	1	Caribou	1	NA	1	Walking	Tundra	
19	Treatment	8/22/2022	1	20:12	20:12	M	434	464	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
21	Treatment	6/19/2022	1	21:53	21:53	M	4434	4443	10	1	Red Fox	1	NA	1	Walking	Road	
21	Treatment	7/4/2022	1	12:15	12:15	M	6068	6072	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/5/2022	1	8:22	8:22	M	6319	6321	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/5/2022	2	13:16	13:16	M	6382	6389	10	1	Caribou	2	NA	2	Walking	Road	
21	Treatment	7/5/2022	3	14:09	14:09	M	6452	6472	30	3	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/5/2022	4	17:59	17:59	M	6562	6564	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/5/2022	5	19:28	19:28	M	6572	6581	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/6/2022	1	20:53	20:53	M	6735	6738	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/7/2022	1	1:08	1:08	M	6745	6748	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/7/2022	2	4:11	4:11	M	6755	6771	20	2	Caribou	2	NA	2	Walking	Road	
21	Treatment	7/7/2022	3	8:31	8:31	M	6795	6804	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/7/2022	4	23:48	23:49	M	7168	7177	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/8/2022	1	4:59	5:00	M	7178	7187	10	1	Caribou	2	NA	2	Walking	Road	
21	Treatment	7/8/2022	2	19:39	19:39	M	7551	7560	10	1	Caribou	2	NA	2	Walking	Road	
21	Treatment	7/8/2022	3	21:03	21:03	M	7561	7572	20	2	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/8/2022	4	21:14	21:15	M	7581	7590	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/8/2022	5	21:36	21:36	M	7591	7592	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/8/2022	6	22:26	22:26	M	7601	7607	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/9/2022	1	1:06	1:06	M	7611	7620	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/9/2022	2	1:55	1:55	M	7621	7630	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/9/2022	3	2:57	2:58	M	7641	7680	40	4	Caribou	3	NA	3	Walking	Road	
21	Treatment	7/9/2022	4	4:03	4:03	M	7681	7684	4	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/9/2022	5	4:28	4:28	M	7691	7710	20	2	Caribou	2	NA	2	Walking	Road	
21	Treatment	7/9/2022	6	5:19	5:19	M	7711	7712	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/9/2022	7	17:33	17:33	M	7894	7895	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/9/2022	8	19:22	19:22	M	7914	7920	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/9/2022	9	21:24	21:24	M	7924	7933	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/10/2022	1	8:10	8:10	M	7974	7981	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/10/2022	2	16:12	16:12	M	8107	8116	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/10/2022	3	20:25	20:25	M	8147	8156	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/11/2022	4	0:48	0:48	M	8157	8166	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/11/2022	5	1:38	1:38	M	8177	8190	20	2	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/11/2022	6	23:36	23:36	M	8480	8483	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/12/2022	1	0:00	0:00	M	8490	8492	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/12/2022	2	1:29	1:29	M	8500	8509	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/12/2022	3	2:56	2:56	M	8510	8512	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/14/2022	1	1:54	1:54	M	8836	8845	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/14/2022	2	20:35	20:35	M	8869	8874	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/14/2022	3	21:47	21:47	M	8879	8880	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/14/2022	4	22:11	22:11	M	8889	8898	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/16/2022	1	14:45	14:46	M	9115	9124	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/16/2022	2	19:04	19:04	M	9175	9194	20	2	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/16/2022	3	19:41	19:41	M	9205	9213	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/16/2022	4	20:05	20:05	M	9215	9224	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/16/2022	5	20:49	20:49	M	9225	9229	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/17/2022	1	12:47	12:47	M	9278	9290	20	2	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/19/2022	1	15:26	15:26	M	9534	9553	20	2	Caribou	1	NA	1	Standing	Esker	
21	Treatment	7/20/2022	1	8:24	8:24	M	9605	9623	20	2	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/20/2022	2	13:12	13:12	M	9677	9682	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/20/2022	3	14:18	14:18	M	9697	9706	10	1	Caribou	2	NA	2	Walking	Road	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
21	Treatment	7/21/2022	1	11:03	11:04	M	9867	9878	20	2	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/21/2022	2	17:04	17:04	M	9980	9983	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/21/2022	1	21:05	21:05	M	1	10	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/21/2022	2	21:29	21:29	M	11	26	20	2	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/21/2022	3	22:50	22:50	M	31	37	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/21/2022	4	22:50	22:50	M	41	50	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/22/2022	9	21:20	21:20	M	324	329	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/23/2022	1	3:53	3:53	M	344	353	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/26/2022	1	14:38	14:38	M	736	739	10	1	Caribou	1	NA	1	Walking	Road	
21	Treatment	7/26/2022	2	20:15	20:15	M	776	785	10	1	Caribou	2	NA	2	Walking	Road	
21	Treatment	8/3/2022	1	22:32	22:32	M	1970	1972	10	1	Grizzly Bear	1	NA	1	Walking	Road	
21	Treatment	8/5/2022	1	18:53	18:53	M	2266	2275	10	1	Caribou	1	NA	1	Walking	Road	
22	Treatment	9/14/2021	1	15:27	15:27	M	713	722	10	1	Wolverine	1	0	1	Running	Tundra	
22	Treatment	9/14/2021	1	15:28	15:29	M	723	742	20	2	Wolverine	1	0	1	Investigating camera	Tundra	Likely the same wolverine as above
22	Treatment	5/10/2022	1	7:21	7:21	M	799	801	10	1	Fox	1	NA	1	Investigating camera	Tundra	
22	Treatment	7/26/2022	1	6:41	6:41	M	580	584	10	1	Grizzly Bear	1	NA	1	Walking	Tundra	
22	Treatment	7/26/2022	2	7:29	7:29	M	590	599	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
22	Treatment	8/14/2022	1	7:47	7:50	M	717	747	40	4	Grizzly Bear	1	NA	1	Walking	Tundra	throughout series, bear moves camera triggering photo bursts.
22	Treatment	8/21/2022	2	1:59	1:59	M	778	784	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
22	Treatment	8/24/2022	3	11:18	11:19	M	797	806	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
22	Treatment	8/25/2022	4	17:56	17:58	M	813	852	60	6	Grizzly Bear	1	NA	1	Investigating camera	Tundra	Possible this bear has frequented the area
22	Treatment	8/28/2022	5	16:14	16:14	M	862	871	10	1	Grizzly Bear	1	1	2	Investigating camera	Tundra	
22	Treatment	8/28/2022	6	17:58	17:58	M	872	881	10	1	Grizzly Bear	NA	1	1	Walking	Tundra	
22	Treatment	8/29/2022	7	15:59	16:01	M	895	914	20	2	Grizzly Bear	NA	1	1	Walking	Tundra	
22	Treatment	8/29/2022	8	16:02	16:02	M	915	924	10	1	Grizzly Bear	1	1	2	Walking	Tundra	
22	Treatment	9/3/2022	9	22:12	22:12	M	940	949	10	1	Grizzly Bear	1	NA	1	Walking	Tundra	
23	ZOI	9/10/2021	1	12:32	12:32	M	1441	1442	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	Knocks camera over
23	ZOI	10/7/2021	1	10:34	10:35	M	45	72	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
23	ZOI	11/11/2022	1	13:48	13:48	M	203	205	10	1	Red Fox	1	NA	1	Walking	Tundra	
23	ZOI	3/19/2022	1	12:36	12:36	M	627	633	10	1	Red Fox	1	NA	1	Walking	Tundra	
23	ZOI	3/23/2022	1	12:49	12:49	M	649	651	10	1	Fox	1	NA	1	Walking	Tundra	
23	ZOI	5/2/2022	1	2:55	2:55	M	786	795	10	1	Fox	1	NA	1	Running	Tundra	
23	ZOI	5/16/2022	1	0:14	0:14	M	868	869	10	1	Fox	1	NA	1	Walking	Tundra	
23	ZOI	6/7/2022	1	4:23	4:23	M	92	111	20	2	Caribou	1	NA	1	Walking	Tundra	investigating camera as well.
23	ZOI	6/23/2022	1	11:40	11:40	M	210	219	10	1	Caribou	1	NA	1	Feeding	Tundra	
23	ZOI	6/27/2022	5	21:28	21:28	M	235	244	10	1	Caribou	4	NA	4	Feeding	Tundra	
23	ZOI	7/5/2022	6	18:43	18:44	M	279	302	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
23	ZOI	9/4/2022	1	13:22	13:23	M	1022	1071	50	5	Grizzly Bear	1	NA	1	Investigating camera	Tundra	Appears a bear righted the camera from a fallen state
23	ZOI	9/10/2022	1	17:20	17:20	M	1090	1109	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	Possible to be same bear as seen previously
24	ZOI/Ladder	9/11/2021	1	12:24	12:24	M	556	575	20	2	Caribou	1	0	1	Walking	Tundra	Small horns, not sure if young, or female
24	ZOI/Ladder	9/11/2021	1	13:02	13:02	M	577	586	10	1	Caribou	1	0	1	Walking	Tundra	Caribou butt and back leg visible in image 577
24	ZOI/Ladder	9/23/2021	1	13:08	13:09	M	633	662	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
24	ZOI/Ladder	5/15/2022	1	0:45	0:45	M	704	704	1	1	Fox	1	NA	1	Standing	Tundra	
24	ZOI/Ladder	5/15/2022	1	6:09	6:09	M	714	714	1	1	Fox	1	NA	1	Standing	Tundra	
24	ZOI/Ladder	6/4/2022	1	1:54	1:54	M	118	125	10	1	Fox	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	6/7/2022	2	15:48	15:48	M	158	167	10	1	Caribou	NA	1	1	Walking	Tundra	Wolverine sitting, then rolling, and walking off.
24	ZOI/Ladder	6/7/2022	3	15:57	15:57	M	178	187	10	1	Wolverine	1	NA	1	Other	Tundra	
24	ZOI/Ladder	6/10/2022	1	11:06		M	194	203	10	1	Fox	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	6/30/2022	1	6:49	6:49	M	274	283	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	6/30/2022	2	23:24	23:24	M	287	296	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/5/2022	1	5:37	5:38	M	309	318	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/10/2022	1	3:52	3:52	M	344	353	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/10/2022	1	20:49	17:49	M	367	376	10	1	Caribou	NA	1	1	Walking	Tundra	
24	ZOI/Ladder	7/10/2022	2	20:56	20:56	M	377	386	10	1	Caribou	NA	1	1	Walking	Tundra	
24	ZOI/Ladder	7/11/2022	1	21:48	21:48	M	390	399	10	1	Caribou	1	NA	1	Running	Tundra	
24	ZOI/Ladder	7/16/2022	1	3:34	3:34	M	422	431	10	1	Caribou	1	NA	1	Running	Tundra	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
24	ZOI/Ladder	7/16/2022	2	10:43	10:43	M	432	441	10	1	Caribou	NA	1	1	Running	Tundra	
24	ZOI/Ladder	7/16/2022	3	21:45	21:45	M	445	454	10	1	Caribou	NA	1	1	Walking	Tundra	
24	ZOI/Ladder	7/16/2022	4	23:34	23:34	M	455	474	20	2	Caribou	NA	1	1	Walking	Tundra	maturity unknown
24	ZOI/Ladder	7/18/2022	1	16:52	12:45	M	481	490	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/19/2022	1	7:36	7:36	M	491	510	20	2	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/20/2022	1	1:56	1:56	M	514	523	10	1	Caribou	1	1	2	Walking	Tundra	
24	ZOI/Ladder	7/20/2022	2	8:14	8:14	M	524	533	10	1	Caribou	1	NA	1	Running	Tundra	
24	ZOI/Ladder	7/20/2022	3	21:45	21:45	M	538	546	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/24/2022	1	6:21	6:22	M	556	565	10	1	Caribou	1	NA	1	Running	Tundra	
24	ZOI/Ladder	7/25/2022	1	16:13	16:12	M	572	581	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/25/2022	2	17:20	17:20	M	582	591	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/26/2022	1	2:08	2:08	M	592	601	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	7/30/2022	1	12:56	12:48	M	637	656	20	2	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	8/2/2022	1	21:06	21:06	M	666	675	10	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	8/2/2022	2	21:26	21:26	M	676	685	10	1	Caribou	1	NA	1	Walking	Tundra	appears to be same adult observed August 2, 2022
24	ZOI/Ladder	8/10/2022	1	3:37	3:37	M	737	756	20	1	Caribou	1	NA	1	Walking	Tundra	
24	ZOI/Ladder	8/22/2022	1	19:49	19:49	M	796	825	30	3	Caribou	2	NA	2	Walking	Tundra	
25	ZOI	5/24/2022	1	11:30	15:16	M	70	312	240	24	Grizzly Bear	1	1	2	Investigating camera	Tundra	
25	ZOI	5/27/2022	1	13:23	13:23	M	322	331	10	1	Fox	1	NA	1	Walking	Tundra	
25	ZOI	6/7/2022	1	8:47	8:47	M	362	391	30	3	Caribou	1	NA	1	Investigating camera	Tundra	
25	ZOI	6/8/2022	1	22:26	22:26	M	398	407	10	1	Caribou	1	NA	1	Walking	Tundra	
25	ZOI	7/4/2022	1	6:22	6:22	M	583	592	10	1	Caribou	12	NA	12	Feeding	Tundra	Caribou interested in camera while other feed. Appears to have licked the camera before leaving.
25	ZOI	8/14/2022	1	14:46	14:47	M	779	788	2	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
25	ZOI	9/3/2022	1	7:10	7:11	M	856	905	50	5	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
28	Treatment	9/5/2021	1	8:53	20:55	M	846	895	50	5	Caribou	1	0	1	Investigating camera	Tundra	
28	Treatment	9/9/2021	1	7:51	7:52	M	915	944	30	3	Fox	1	0	1	Running	Tundra	
28	Treatment	5/26/2022	1	7:42	7:42	M	60	69	10	1	Fox	1	NA	1	Investigating camera	Tundra	
28	Treatment	6/14/2022	1	8:13	8:14	M	127	146	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
28	Treatment	6/24/2022	1	22:02	22:02	M	190	219	30	3	Caribou	1	NA	1	Investigating camera	Tundra	
28	Treatment	7/15/2022	1	17:41	17:43	M	303	362	60	6	Caribou	1	NA	1	Feeding	Tundra	
28	Treatment	7/20/2022	1	0:06	0:07	M	375	394	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
28	Treatment	7/24/2022	1	22:33	22:33	M	410	419	10	1	Caribou	NA	1	1	Running	Tundra	
28	Treatment	7/27/2022	1	0:02	0:04	M	426	455	20	2	Caribou	NA	1	1	Feeding	Tundra	
28	Treatment	7/28/2022	1	16:19	16:20	M	562	471	10	1	Caribou	NA	1	1	Walking	Tundra	
28	Treatment	8/21/2022	1	17:27	17:35	M	544	783	240	24	Muskox	8	3	11	Grazing	Tundra	This heard is likely same group that was observed along Windly road Km 4, and observed from helicopter mid summer.
29	Control	5/8/2022	1	1:21	1:21	M	694	701	10	1	Fox	1	NA	1	Walking	Tundra	
29	Control	6/22/2022	1	5:09	5:10	M	151	180	30	3	Caribou	1	NA	1	Feeding	Tundra	
29	Control	8/19/2022	1	22:25	22:25	M	348	357	10	1	Red Fox	1	NA	1	Walking	Tundra	
29	Control	9/6/2022	1	21:03	21:05	M	442	491	50	5	Caribou	2	NA	2	Investigating camera	Tundra	
29	Control	9/17/2022	1	18:41	18:41	M	525	544	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
30	ZOI	9/28/2021	1	3:22	3:23	M	1152	1161	10	1	Fox	1	0	1	Walking	Tundra	Arctic or red
30	ZOI	10/1/2021	1	7:27	7:27	M	97	106	10	1	Fox	1	NA	1	Running	Tundra	
30	ZOI	6/10/2022	1	11:59	11:59	M	106	115	10	1	Fox	1	NA	1	Walking	Tundra	
30	ZOI	7/11/2022	1	20:15	20:15	M	311	320	10	1	Fox	1	NA	1	Walking	Tundra	
30	ZOI	7/14/2022	1	23:36	23:36	M	330	339	10	1	Caribou	1	NA	1	Investigating camera	Tundra	Appears to see the camera and bolts.
30	ZOI	7/16/2022	1	11:11	11:13	M	343	402	60	6	Grizzly Bear	1	1	2	Investigating camera	Tundra	Presumed mother and cub -
30	ZOI	8/4/2022	1	7:57	20:22	M	460	469	10	1	Caribou	1	NA	1	Walking	Tundra	
30	ZOI	8/6/2022	1	21:19	21:19	M	479	488	10	1	Red Fox	1	NA	1	Walking	Tundra	
30	ZOI	8/11/2022	1	14:27	14:27	M	504	513	10	1	Caribou	1	NA	1	Walking	Tundra	
30	ZOI	8/16/2022	1	12:55	12:56	M	530	549	20	2	Common Raven	2	NA	2	Sitting	Tundra	
30	ZOI	8/13/2022	1	13:19	13:19	M	560	569	10	1	Common Raven	1	NA	1	Sitting	Tripod	
30	ZOI	8/13/2022	2	13:20	13:21	M	570	589	20	2	Common Raven	2	NA	2	Feeding	Tundra	
30	ZOI	9/3/2022	1	1:11	1:11	M	650	669	30	10	Caribou	11	NA	11	Walking	Tundra	
30	ZOI	9/15/2022	1	13:04		M	709	NA	70	7	Caribou	4	NA	4	Investigating camera	Tundra	Two caribou appears to have recently shed antler velvet

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
31	Control	4/23/2022	1	17:24	17:24	M	642	651	10	1	Fox	1	NA	1	Walking	Tundra	
31	Control	5/1/2022	1	22:59	23:00	M	676	685	10	1	Fox	1	NA	1	Running	Tundra	
32	Treatment	9/9/2022	1	20:45	20:47	M	10	59	50	5	Caribou	1	NA	1	Investigating camera	Tundra	
33	Control	9/13/2021	1	12:00	12:01	M	3297	3339	50	5	Grizzly Bear	1	0	1	Investigating camera	Tundra	
33	Control	10/14/2021	1	17:46	17:53	M	69	198	130	13	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
33	Control	12/6/2021	1	11:52	11:53	M	366	395	40	4	Caribou	5	1	6	Feeding	Tundra	
33	Control	3/5/2022	1	9:16	9:21	M	672	750	80	8	Wolverine	1	NA	1	Investigating camera	Tundra	
33	Control	3/22/2022	1	18:01	18:01	M	816	820	10	1	Red Fox	1	NA	1	Walking	Tundra	
33	Control	4/1/2022	1	0:13	0:14	M	883	898	20	2	Fox	1	NA	1	Feeding	Tundra	
33	Control	4/7/2022	1	1:28	1:28	M	921	923	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
33	Control	4/19/2022	1	22:30	22:30	M	1000	1008	10	1	Fox	1	NA	1	Walking	Tundra	
33	Control	4/19/2022	2	22:30	22:30	M	1018	1029	20	2	Fox	1	NA	1	Running	Tundra	
33	Control	4/24/2022	1	19:27	19:27	M	1045	1054	10	1	Red Fox	1	NA	1	Walking	Tundra	
33	Control	4/29/2022	1	14:27	14:27	M	1090	1097	10	1	Fox	1	NA	1	Walking	Tundra	
33	Control	5/1/2022	1	11:18	11:18	M	1103	1110	10	1	Fox	1	NA	1	Walking	Tundra	
33	Control	5/1/2022	1	11:01	23:01	M	1116	1122	10	1	Red Fox	1	NA	1	Walking	Tundra	
33	Control	5/4/2022	1	1:50	1:50	M	1172	1188	20	2	Arctic Fox	1	NA	1	Walking	Tundra	
33	Control	5/4/2022	1	10:11	10:11	M	1192	1197	10	1	Wolverine	1	NA	1	Walking	Tundra	
33	Control	5/17/2022	1	9:53	9:54	M	1242	1272	30	3	Caribou	NA	1	1	Walking	Tundra	
33	Control	5/26/2022	1	9:05	9:06	M	40	59	20	2	Fox	1	NA	1	Walking	Tundra	
33	Control	5/27/2022	1	6:30	6:31	M	63	72	10	1	Fox	1	NA	1	Walking	Tundra	
33	Control	6/6/2022	1	15:26	15:27	M	106	115	10	1	Caribou	1	NA	1	Feeding	Tundra	
33	Control	6/8/2022	1	1:55	2:04	M	119	388	270	27	Caribou	1	NA	1	Investigating camera	Tundra	Feeding and investigation camera
34	ZOI/Ladder	9/7/2021	1	21:57	21:57	M	472	481	10	1	Fox	1	0	1	Walking	Tundra	
34	ZOI/Ladder	3/22/2022	1	14:40	14:41	M	616	625	10	1	Red Fox	1	NA	1	Running	Tundra	
34	ZOI/Ladder	3/26/2022	1	19:57	19:57	M	638	638	10	1	Fox	1	NA	1	Walking	Tundra	
34	ZOI/Ladder	3/21/2022	1	16:25	16:26	M	663	672	10	1	Red Fox	1	NA	1	Hunting	Tundra	
34	ZOI/Ladder	4/7/2022	2	22:25	22:25	M	714	720	10	1	Fox	1	NA	1	Walking	Tundra	
34	ZOI/Ladder	4/12/2022	1	13:31	13:31	M	739	740	10	1	Red Fox	1	NA	1	Walking	Tundra	
34	ZOI/Ladder	4/28/2022	1	9:21	9:22	M	794	803	10	1	Fox	1	NA	1	Walking	Tundra	
34	ZOI/Ladder	6/7/2022	1	23:11	23:54	M	108	157	50	5	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
35	Treatment	7/20/2022	1	13:05	13:05	M	243	252	10	1	Caribou	1	NA	1	Walking	Tundra	Shows caribou using ramp allowing wildlife passage
35	Treatment	7/24/2022	1	0:49	0:49	M	532	541	10	1	Caribou	1	NA	1	Walking	Tundra	
35	Treatment	8/24/2022	1	13:52	13:52	M	9969	9987	10	1	Caribou	1	NA	1	Standing	Tundra	
35	Treatment	8/25/2022	1	11:07	11:08	M	150	159	10	1	Caribou	2	NA	2	Walking	Tundra	One of two animals use wildlife ramp to access Windy Road
36	Control	7/21/2022	1	19:19	19:19	M	24	33	10	1	Caribou	1	NA	1	Walking	Tundra	
36	Control	7/25/2022	1	0:21	0:22	M	43	52	10	1	Caribou	1	NA	1	Walking	Tundra	Two grizzly bears noted in images captured while camera was knocked down.
37	Control	10/12/2021	1	21:15	21:19	M	122	201	80	8	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
37	Control	5/18/2022	1	13:55	13:56	M	896	1231	350	35	Grizzly Bear	1	NA	1	Walking	Tundra	
37	Control	6/18/2022	1	3:41	3:46	M	162	261	100	10	Muskox	3	NA	3	Grazing	Tundra	Investigating camera as well.
37	Control	6/29/2022	1	21:18	21:18	M	348	367	20	2	Caribou	2	NA	2	Investigating camera	Tundra	
37	Control	7/19/2022	1	2:50	2:50	M	455	464	10	1	Caribou	1	NA	1	Walking	Tundra	
37	Control	8/11/2022	1	8:35	8:37	M	1004	1043	50	5	Grizzly Bear	1	NA	1	Investigating camera	Tripod	
37	Control	8/12/2022	1	4:30	4:30	M	1047	1056	10	1	Caribou	1	NA	1	Walking	Tundra	
37	Control	8/12/2022	2	12:20	12:21	M	1059	1108	40	4	Caribou	2	NA	2	Feeding	Tripod	
37	Control	8/17/2022	1	17:26	17:26	M	1125	1134	10	1	Caribou	1	NA	1	Feeding	Tundra	
37	Control	8/23/2022	1	21:58	22:02	M	1153	1172	20	2	Caribou	1	NA	1	Investigating camera	Tripod	
37	Control	8/26/2022	1	10:29	10:29	M	1229	1238	10	1	Caribou	NA	NA	NA	Investigating camera	Tundra	
37	Control	8/28/2022	1	8:22	8:24	M	1245	1284	40	4	Caribou	1	NA	1	Grazing	Tundra	
37	Control	9/5/2022	1	13:55	13:55	M	1322	1331	10	1	Caribou	1	NA	1	Walking	Tundra	appears to be same adult caribou noted early.
39	ZOI	5/10/2022	1	11:22	11:22	M	730	739	10	1	Red Fox	1	NA	1	Running	Tundra	
39	ZOI	10/20/2021	1	3:32	3:32	M	104	113	10	1	Red Fox	1	NA	1	Walking	Tundra	
40	Control	4/7/2022	1	16:20	16:20	M	624	633	10	1	Fox	1	NA	1	Walking	Tundra	
40	Control	4/26/2022	1	8:10	8:10	M	688	697	10	1	Red Fox	1	NA	1	Walking	Tundra	
40	Control	5/28/2022	1	13:55	13:57	M	100	182	90	9	Caribou	2	NA	2	Investigating camera	Tundra	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
41	ZOI	5/23/2022	1	8:36	8:36	M	47	48	2	1	Wolverine	1	NA	1	Walking	Tundra	
41	ZOI	7/14/2022	1	22:00	22:00	M	276	277	2	1	Caribou	1	NA	1	Walking	Tundra	
41	ZOI	7/27/2022	1	11:03	11:03	M	322	325	4	1	Caribou	1	NA	1	Investigating camera	Tundra	
41	ZOI	7/30/2022	1	19:01	19:01	M	344	353	10	1	Caribou	1	NA	1	Walking	Tundra	
41	ZOI	8/28/2022	1	9:27	9:28	M	438	459	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
42	Treatment	9/2/2021	1	9:10	9:10	M	496	515	20	2	Caribou	1	0	1	Investigating camera	Tundra	
42	Treatment	7/4/2022	1	5:35	5:35	M	176	178	10	1	Caribou	1	NA	1	Walking	Tundra	
42	Treatment	7/4/2022	2	14:37	14:37	M	189	191	10	1	Caribou	1	NA	1	Walking	Tundra	
42	Treatment	7/5/2022	1	1:53	1:54	M	199	208	10	1	Caribou	1	NA	1	Walking	Tundra	
42	Treatment	7/6/2022	1	21:45	21:45	M	215	222	10	1	Caribou	1	NA	1	Walking	Tundra	
42	Treatment	7/14/2022	1	3:39	3:39	M	246	249	10	1	Caribou	1	NA	1	Walking	Tundra	
42	Treatment	7/21/2022	1	6:39	6:39	M	277	279	10	1	Caribou	1	NA	1	Walking	Tundra	
42	Treatment	7/27/2022	1	0:10	0:10	M	305	309	10	1	Caribou	1	NA	1	Running	Tundra	
42	Treatment	8/6/2022	1	10:22	10:22	M	345	352	10	1	Caribou	1	NA	1	Walking	Tundra	
42	Treatment	8/9/2022	1	10:14	10:14	M	364	373	10	1	Caribou	1	NA	1	Walking	Tundra	
42	Treatment	8/9/2022	2	10:54	10:54	M	384	384	10	1	Caribou	1	NA	1	Walking	Tundra	
43	Control	10/13/2021	1	19:09	19:09	M	76	85	10	1	Fox	1	NA	1	Walking	Tundra	
43	Control	10/15/2021	1	13:51	13:51	M	92	101	10	1	Red Fox	1	NA	1	Walking	Tundra	
43	Control	10/15/2021	2	14:09	14:09	M	102	111	10	1	Fox	1	NA	1	Running	Tundra	
43	Control	5/1/2022	1	4:43	4:53	M	703	832	130	13	Caribou	3	1	3	Investigating camera	Tundra	An adult and a calf up in the face of the camera, while two other adults were feeding farther away
43	Control	5/9/2022	1	20:18	20:19		930	1126	197	20	Grizzly Bear	1	NA	1	Investigating camera	Tundra	Grizzly Bear seems to be playing
43	Control	9/16/2022	1	8:06	8:09	M	549	628	80	8	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
43	Control	7/3/2022	1	20:27	20:27	M	207	210	10	1	Caribou	2	NA	2	Walking	Tundra	
43	Control	7/9/2022	1	1:45	1:45	M	242	243	10	1	Fox	1	NA	1	Walking	Tundra	
43	Control	7/19/2022	1	5:27	5:28	M	282	311	30	3	Caribou	1	NA	1	Walking	Tundra	
44	ZOI	7/7/2022	1	1:28	1:28	M	682	691	10	1	Caribou	1	NA	1	Grazing	Tundra	
44	ZOI	7/9/2022	1	21:55	21:55	M	721	722	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
45	Control	6/2/2022	1	16:45	16:49	M	87	125	40	4	Grizzly Bear	1	1	2	Investigating camera	Tundra	
46	ZOI	8/29/2022	1	11:42	11:43	M	462	530	60	6	Caribou	1	NA	1	Investigating camera	Tundra	
46	ZOI	9/3/2022	1	9:55	9:55	M	546	578	40	4	Caribou	2	NA	2	Walking	Tundra	
46	ZOI	9/13/2022	1	10:28	10:29	M	616	637	40	4	Caribou	1	NA	1	Investigating camera	Tundra	
47	ZOI	9/9/2021	1	4:14	4:14	M	459	478	20	2	Caribou	2	0	2	Investigating camera	Tundra	
47	ZOI	3/30/2022	1	16:47	16:47	M	580	589	10	1	Fox	1	NA	1	Walking	Tundra	
47	ZOI	4/3/2022	1	13:58	13:58	M	602	611	10	1	Red Fox	1	NA	1	Walking	Tundra	
47	ZOI	5/2/2022	1	20:15	20:20	M	709	738	30	3	Red Fox	1	NA	1	Investigating camera	Tundra	
47	ZOI	7/7/2022	1	1:40	1:40	M	196	205	10	1	Caribou	2	NA	2	Walking	Tundra	
47	ZOI	7/12/2022	1	23:48	23:48	M	224	233	10	1	Caribou	1	NA	1	Walking	Tundra	
47	ZOI	7/31/2022	1	17:22	17:23	M	291	328	40	4	Caribou	2	NA	2	Grazing	Tundra	
47	ZOI	8/9/2022	1	22:58	22:58	M	358	367	10	1	Wolverine	1	NA	1	Walking	Tundra	
47	ZOI	8/25/2022	1	10:25	10:25	M	413	422	10	1	Caribou	1	NA	1	Walking	Tundra	
47	ZOI	9/1/2022	1	12:56	12:59	M	447	467	30	3	Caribou	1	NA	1	Bedded	Tundra	
47	ZOI	9/1/2022	2	13:05	13:05	M	477	486	10	1	Caribou	1	NA	1	Walking	Tundra	
47	ZOI	9/1/2022	3	14:13	14:13	M	489	496	10	1	Caribou	1	NA	1	Grazing	Tundra	
47	ZOI	9/2/2022	1	17:05	17:05	M	500	519	20	2	Caribou	1	NA	1	Walking	Tundra	
48	ZOI	6/14/2022	1	17:03	17:08	M	140	159	20	2	Caribou	3	NA	3	Investigating camera	Tundra	
48	ZOI	6/17/2022	1	19:47	19:47	M	169	180	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
48	ZOI	7/5/2022	1	14:52	14:52	M	283	285	10	1	Caribou	1	NA	1	Walking	Tundra	
48	ZOI	7/7/2022	1	4:59	4:59	M	316	323	10	1	Caribou	1	NA	1	Walking	Tundra	
48	ZOI	8/21/2022	1	21:03	21:04	M	464	494	40	4	Caribou	4	NA	4	Walking	Tundra	
48	ZOI	8/30/2022	1	14:53	14:53	M	535	550	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
48	ZOI	9/2/2022	1	18:42	18:43	M	560	579	20	2	Caribou	1	NA	1	Walking	Tundra	
48	ZOI	9/4/2022	1	13:29	13:29	M	586	595	10	1	Caribou	1	NA	1	Walking	Tundra	
48	ZOI	9/4/2022	2	13:51	13:51	M	606	619	20	2	Caribou	1	NA	1	Walking	Tundra	
48	ZOI	9/4/2022	11	14:16	14:17	M	626	648	30	3	Caribou	1	NA	1	Walking	Tundra	
49	Control	5/26/2022	1	3:50	3:58	M	63	242	180	18	Grizzly Bear	1	NA	1	Investigating camera	Tundra	

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Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
50	Treatment	5/22/2022	1	14:37	14:37	M	1320	1329	10	1	Red Fox	1	NA	1	Walking	Tundra	
50	Treatment	5/25/2022	1	22:09	22:10	M	159	179	21	3	Fox	1	NA	1	Investigating camera	Tundra	
50	Treatment	6/22/2022	2	16:43	16:43	M	1522	1530	9	1	Caribou	1	NA	1	Walking	Tundra	
50	Treatment	7/1/2022	3	2:43	2:43	M	1976	1980	5	1	Caribou	1	NA	1	Walking	Tundra	
50	Treatment	8/21/2022	4	19:12	19:12	M	4597	4603	7	1	Caribou	1	NA	1	Investigating camera	Tundra	
50	Treatment	8/21/2022	5	19:16	19:17	M	4607	4629	9	2	Caribou	1	NA	1	Walking	Tundra	
51	Treatment	7/5/2022	1	7:22	7:22	M	210	222	12	2	Caribou	1	NA	1	Investigating camera	Other	
51	Treatment	7/5/2022	2	18:32	18:32	M	226	229	4	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/6/2022	1	12:20	12:20	M	238	242	5	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/9/2022	NA	10:16	10:16	M	255	164	10	1	Grizzly Bear	1	1	2	Walking	Other	
51	Treatment	7/10/2022	1	1:04	1:04	M	268	277	10	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/10/2022	2	3:18	3:18	M	278	286	9	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/11/2022	1	3:58	3:58	M	291	293	3	1	Caribou	1	NA	1	Running	Other	
51	Treatment	7/11/2022	2	10:07	10:07	M	301	301	1	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/11/2022	3	23:49	23:49	M	314	317	5	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/12/2022	1	2:40	2:40	M	324	326	3	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/13/2022	1	3:46	3:46	M	337	346	10	1	Caribou	2	NA	2	Walking	Other	
51	Treatment	7/14/2022	1	1:44	1:44	M	350	354	5	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/14/2022	2	2:41	2:43	M	360	383	24	3	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/22/2022	1	23:44	23:44	M	467	472	6	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/23/2022	1	3:55	3:55	M	477	483	7	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/24/2022	1	0:39	0:39	M	530	533	4	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/24/2022	2	1:01	1:01	M	540	543	4	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/24/2022	3	1:50	1:50	M	550	554	5	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	7/24/2022	4	15:45	15:45	M	583	585	3	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	8/5/2022	1	17:21	17:21	M	969	971	3	1	Caribou	1	NA	1	Walking	Other	
51	Treatment	9/3/2022	1	20:18	20:19	M	3826	2829	4	1	Caribou	1	NA	1	Walking	Other	
53	Treatment	4/15/2022	1	22:05	22:05	M	1201	1210	10	1	Fox	1	NA	1	Walking	Tundra	
53	Treatment	6/17/2022	1	6:08	6:08	M	153	162	10	1	Caribou	6	NA	6	Bedded	Tundra	
53	Treatment	6/24/2022	1	10:45	10:46	M	204	213	10	1	Caribou	3	NA	3	Grazing	Tundra	
53	Treatment	8/19/2022	1	16:08	16:11	M	445	466	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
54	Treatment	6/17/2022	1	3:33	3:40	M	413	462	50	5	Caribou	6	NA	6	Grazing	Tundra	
55	ZOI	10/7/2021	1	15:01	15:02	M	95	114	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
55	ZOI	6/16/2022	1	15:42	15:43	M	103	142	40	4	Caribou	2	NA	2	Grazing	Tundra	
55	ZOI	6/18/2022	1	14:17	14:18	M	171	193	30	3	Caribou	1	NA	1	Investigating camera	Tundra	
55	ZOI	6/29/2022	1	22:09	22:10	M	252	291	40	4	Caribou	3	NA	3	Grazing	Tundra	
55	ZOI	7/3/2022	1	17:41	17:41	M	304	305	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
55	ZOI	7/4/2022	1	1:09	1:09	M	314	333	20	2	Caribou	2	NA	2	Grazing	Tundra	
55	ZOI	7/9/2022	1	0:39	0:39	M	349	358	10	1	Caribou	1	NA	1	Walking	Tundra	
55	ZOI	7/10/2022	1	10:54	10:54	M	362	363	10	1	Caribou	1	NA	1	Walking	Tundra	
55	ZOI	7/24/2022	1	20:54	20:55	M	427	436	10	1	Grizzly Bear	1	1	2	Investigating camera	Tundra	
55	ZOI	8/11/2022	1	0:56	0:56	M	498	512	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
55	ZOI	8/11/2022	2	3:56	15:58	M	518	577	60	6	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
55	ZOI	8/25/2022	1	7:18	7:18	M	621	622	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
56	Control	9/10/2021	1	11:30	12:00	M	768	769	2	2	Caribou	3	0	3	Grazing	Tundra	
56	Control	6/5/2022	1	6:38	6:38	M	407	416	10	1	Caribou	2	NA	2	Grazing	Tundra	
56	Control	8/18/2022	4	6:33	6:33	M	1179	1184	10	1	Caribou	1	NA	1	Walking	Tundra	
56	Control	8/20/2022	5	5:54	5:54	M	1195	1199	10	1	Caribou	1	NA	1	Walking	Tundra	
56	Control	8/31/2022	6	19:10	19:10	M	1241	1242	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
56	Control	9/8/2022	7	7:12	7:13	M	1272	1321	50	5	Caribou	3	NA	3	Grazing	Tundra	
56	Control	9/15/2022	8	21:18	21:19	M	1346	1386	50	5	Caribou	1	NA	1	Investigating camera	Tundra	
57	ZOI	4/21/2022	1	8:43	8:43	M	700	709	10	1	Wolverine	1	NA	1	Running	Tundra	
57	ZOI	7/2/2022	1	23:37	23:37	M	201	207	10	1	Caribou	1	NA	1	Walking	Tundra	
58	Control	10/24/2021	1	12:53	12:53	M	106	115	10	1	Wolverine	1	NA	1	Walking	Tundra	
58	Control	3/9/2022	1	9:53	9:57	M	521	540	20	2	Wolverine	1	NA	1	Walking	Tundra	
58	Control	3/12/2022	1	14:38	14:38	M	553	562	10	1	Fox	1	NA	1	Walking	Tundra	

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Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
58	Control	4/2/2022	1	16:47	16:59	M	626	665	40	4	Red Fox	1	NA	1	Investigating camera	Tundra	
58	Control	4/7/2022	1	21:08	21:08	M	681	690	10	1	Fox	1	NA	1	Walking	Tundra	
58	Control	4/11/2022	1	2:02	2:05	M	710	728	30	3	Fox	1	NA	1	Investigating camera	Tundra	
58	Control	7/4/2022	1	4:35	4:35	M	185	194	10	1	Caribou	3	0	3	Walking	Tundra	
58	Control	7/7/2022	1	2:00	2:00	M	204	205	10	1	Wolverine	1	0	1	Running	Tundra	
58	Control	7/17/2022	1	11:13	11:13	M	264	267	10	1	Grizzly Bear	NA	1	1	Walking	Tundra	
58	Control	8/21/2022	1	12:14	12:14	M	381	385	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
58	Control	9/3/2022	1	14:54	14:54	M	431	480	50	5	Caribou	1	NA	1	Walking	Tundra	
58	Control	9/6/2022	1	12:22	12:23	M	491	521	40	4	Caribou	2	NA	2	Investigating camera	Tundra	
58	Control	9/20/2022	1	12:26	12:26	M	571	577	10	1	Caribou	1	NA	1	Walking	Tundra	
59	Treatment	9/4/2021	1	1:09	1:36	M	860	889	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
59	Treatment	9/18/2021	1	2:14	2:15	M	952	981	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
59	Treatment	3/31/2022	1	17:02	17:02	M	606	615	10	1	Red Fox	1	NA	1	Other	Tundra	
59	Treatment	9/4/2022	2	7:17	7:21	M	730	770	50	5	Grizzly Bear	1	NA	1	Hunting	Tundra	
59	Treatment	6/9/2022	1	23:07	23:07	M	152	157	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
59	Treatment	6/13/2022	1	0:17	0:24	M	171	240	60	6	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
59	Treatment	9/4/2022	1	7:07	7:07	M	700	719	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
1	Treatment	11/1/2021	1	18:18	18:18	T											
6	Control	6/17/2022	NA	12:00	12:00	T	167	167	1	1	Caribou	1	NA	1	Walking	Tundra	
16	Control	8/2/2022	1	11:30	11:30	T	310	310	1	0	Caribou	1	NA	1	Grazing	Tundra	
23	ZOI	6/26/2022	3	11:30		T	209	NA	1	NA	Caribou	1	NA	1	Feeding	Tundra	
23	ZOI	6/26/2022	1	12:30		T	221	NA	NA	NA	Caribou	1	NA	1	Feeding	Tundra	
30	ZOI	6/21/2022	NA	11:30		T	148	NA	NA	NA	Muskox	8	NA	8	Walking	Tundra	
30	ZOI	6/21/2022	NA	12:00		T	149	NA	NA	NA	Muskox	8	NA	8	Walking	Tundra	
30	ZOI	8/4/2022	NA	11:30		T	470	NA	NA	NA	Grizzly Bear	1	1	2	Walking	Tundra	Presumed to have been observed 2022-07-16
30	ZOI	8/4/2022	NA	12:00		T	471	NA	NA	NA	Grizzly Bear	1	1	2	Walking	Tundra	Presumed to have been observed 2022-07-16
35	Treatment	8/25/2022	NA	11:30		T	160	NA	NA	NA	Caribou	1	NA	1	Walking	Road	
53	Treatment	6/17/2022	NA	11:30	11:30	T	163	NA	1	NA	Caribou	4	NA	4	Grazing	Tundra	
53	Treatment	6/17/2022	NA	12:00	12:00	T	164	NA	1	NA	Caribou	9	NA	9	Grazing	Tundra	
8		4/19/2023	1	1/0/1900	1/0/1900	M	79	80	2	1	Fox	1	NA	1	Running	Tundra	
9		10/4/2022	1	1/0/1900	1/0/1900	M	621	622	2	1	Common Raven	1	NA	1	Investigating camera	Tripod	
10		9/25/2022	1	1/0/1900	1/0/1900	M	45	71	27	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
10		3/10/2023	1	1/0/1900	1/0/1900	M	8055	8064	10	1	Caribou	1	NA	1	Grazing	Tundra	Changed young to adult - DB
12		10/5/2022	1	1/0/1900	1/0/1900	M	662	671	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
13		10/15/2022	1	1/0/1900	1/0/1900	M	1024	1043	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
13		5/25/2023	1	1/0/1900	1/0/1900	T	1728	1728	1	1	Caribou	1	NA	1	Grazing	Tundra	
13		5/25/2023	2	1/0/1900	1/0/1900	M	1729	1758	30	3	Caribou	6	NA	6	Grazing	Tundra	1 previously counted
13		5/25/2023	3	1/0/1900	1/0/1900	T	1759	1759	1	1	Caribou	1	NA	1	Grazing	Tundra	
15		3/12/2023	1	1/0/1900	1/0/1900	M	8454	8463	10	1	Fox	1	NA	1	Investigating camera	Tundra	
15		4/23/2023	1	1/0/1900	1/0/1900	M	487	496	10	1	Fox	1	NA	1	Walking	Tundra	
15		5/22/2023	1	1/0/1900	1/0/1900	M	1896	1906	10	2	Grizzly Bear	1	NA	1	Walking	Tundra	
23		9/25/2022	1	1/0/1900	1/0/1900	M	98	107	10	10	Wolverine	1	0	1	Running	Tundra	great photos
23		10/24/2022	1	1/0/1900	1/0/1900	M	1506	1547	46	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
23		10/26/2022	1	1/0/1900	1/0/1900	M	1624	1625	2	1	Fox	1	NA	1	Running	Tundra	Confirmed fox - DB
23		11/4/2022	1	1/0/1900	1/0/1900	M	2110	2128	19	2	Arctic Hare	1	NA	1	Other	Tundra	Hopping
23		11/4/2022	1	1/0/1900	1/0/1900	M	2131	2140	10	1	Arctic Hare	2	NA	2	Other	Tundra	hopping
23		3/7/2023	1	1/0/1900	1/0/1900	M	8034	8041	8	1	Fox	1	NA	1	Investigating camera	Tundra	
23		3/16/2023	1	1/0/1900	1/0/1900	M	8494	8494	1	1	Fox	1	NA	1	Running	Tundra	
23		4/9/2023	1	1/0/1900	1/0/1900	T	9623	9624	2	0	Caribou	6	NA	6	Walking	Tundra	
2		9/30/2022	1	1/0/1900	1/0/1900	T	1542	1551	10	1		NA	NA	NA	Flying	Road	This is a helicopter - DB
4		5/3/2023	1	1/0/1900	1/0/1900	M	653	721	7	70	Caribou	NA	2	2	Grazing	Tundra	
5		10/1/2022	1	1/0/1900	1/0/1900	M	478	481	4	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	Knocked out camera
6		9/27/2022	1	1/0/1900	1/0/1900	M	289	293	5	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
6		9/27/2022	2	1/0/1900	1/0/1900	M	29	300	2	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
6		5/16/2023	1	1/0/1900	1/0/1900	M	1495	1516	22	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	knocks camera over
7		4/23/2023	1	1/0/1900	1/0/1900	M	218	220	3	1	Fox	1	NA	1	Running	Tundra	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
7		5/11/2023	1	1/0/1900	1/0/1900	M	1108	1227	120	12	Caribou	NA	2	2	Investigating camera	Tundra	
7		5/15/2023	1	1/0/1900	1/0/1900	M	1404	1486	83	9	Caribou	1	NA	1	Other	Tundra	Scratching and walks away
7		5/21/2023	1	1/0/1900	1/0/1900	M	1786	1855	70	7	Caribou	1	1	2	Investigating camera	Tundra	Adult investigates camera stand. Young does not seem interested.
7		5/21/2023	2	1/0/1900	1/0/1900	M	1857	1866	10	1	Caribou	1	NA	1	Walking	Tundra	Following previous groups direction
7		5/26/2023	1	1/0/1900	1/0/1900	M	2095	2104	10	1	Wolverine	1	NA	1	Walking	Tundra	
8		4/15/2023	1	1/0/1900	1/0/1900	M	9859	9865	7	1	Arctic Hare	1	NA	1	Investigating camera	Tundra	Can only see ears.
23		4/9/2023	1	1/0/1900	1/0/1900	M	9628	9649	22	3	Caribou	1	NA	1	Investigating camera	Tundra	
23		4/9/2023	1	1/0/1900	1/0/1900	T	9659	9664	5	0	Caribou	4	NA	4	Other	Tundra	RESTING
23		4/10/2023	1	1/0/1900	1/0/1900	M	9734	9743	10	1	Wolverine	1	NA	1	Running	Tundra	
23		4/12/2023	1	1/0/1900	1/0/1900	M	9841	9842	2	1	Fox	1	NA	1	Walking	Tundra	
23		4/20/2023	1	1/0/1900	1/0/1900	M	201	204	4	1	Fox	1	NA	1	Walking	Tundra	
23		4/21/2023	1	1/0/1900	1/0/1900	M	266	271	6	1	Fox	1	NA	1	Investigating camera	Tundra	
23		4/26/2023	1	1/0/1900	1/0/1900	M	558	575	18	2	Fox	1	NA	1	Investigating camera	Tundra	
23		5/7/2023	1	1/0/1900	1/0/1900	M	1066	1077	5	2	Fox	2	NA	2	Walking	Tundra	
23		5/13/2023	1	1/0/1900	1/0/1900	M	1419	1424	6	1	Fox	1	NA	1	Walking	Tundra	
23		5/15/2023	1	1/0/1900	1/0/1900	M	1510	1549	22	5	Muskox	2	NA	2	Investigating camera	Tundra	
23		5/23/2023	1	1/0/1900	1/0/1900	M	1963	1982	14	2	Fox	1	NA	1	Running	Tundra	
23		5/24/2023	1	1/0/1900	1/0/1900	T	1986	1995	11	0	Tundra Swan	4	NA	4	Feeding	Tundra	
23		5/24/2023	1	1/0/1900	1/0/1900	T	2013	2014	2	0	Tundra Swan	2	NA	2	Swimming	Lake	
23		5/27/2023	1	1/0/1900	1/0/1900	M	2129	2131	3	1	Fox	1	NA	1	Running	Tundra	
24		5/20/2023	1	1/0/1900	1/0/1900	T	1512	1513	2	0	Canada Goose	2	NA	2	Standing	Tundra	Sandhill crane to canada goose - DB
24		5/21/2023	1	1/0/1900	1/0/1900	T	1523	1523	1	0	Bird	2	NA	2		Tundra	Unknown birds, probably ptarmigan - DB
24		5/21/2023	1	1/0/1900	1/0/1900	T	1559	1559	1	0	Canada Goose	2	NA	2	Standing	Tundra	Sandhill crane to canada goose - DB
24		5/23/2023	1	1/0/1900	1/0/1900	T	1652	1652	1	0	Canada Goose	2	NA	2	Standing	Tundra	Sandhill crane to canada goose - DB
24		5/24/2023	1	1/0/1900	1/0/1900	T	1660	1666	6	0	Canada Goose	2	NA	2	Standing	Tundra	Sandhill crane to canada goose - DB
24		5/24/2023	1	1/0/1900	1/0/1900	T	1668	1669	2	0	Canada Goose	3	NA	3	Standing	Tundra	Sandhill crane to canada goose - DB
24		5/24/2023	1	1/0/1900	1/0/1900	T	1746	1746	1	0	Canada Goose	1	NA	1	Standing	Tundra	
24		5/26/2023	1	1/0/1900	1/0/1900	T	1755	1756	2	0	Canada Goose	1	NA	1	Walking	Tundra	
25		3/9/2023	1	1/0/1900	1/0/1900	M	7994	8001	8	1	Fox	1	NA	1	Investigating camera	Tundra	
25		3/19/2023	1	1/0/1900	1/0/1900	M	8477	8485	8	1	Fox	1	NA	1	Walking	Tundra	
25		4/5/2023	1	1/0/1900	1/0/1900	M	9319	9343	17	3	Red Fox	1	NA	1	Investigating camera	Tundra	This is a red fox in perfect light and condition. Not sure why it needed review? - DB
25		4/12/2023	1	1/0/1900	1/0/1900	M	9649	9650	2	1	Fox	1	NA	1	Running	Tundra	
25		5/13/2023	1	1/0/1900	1/0/1900	M	1177	2888	1584	171	Muskox	8	4	12	Grazing	Tundra	These are musk ox - DB
26		5/21/2022	1	1/0/1900	1/0/1900	M	151	153	3	1	Fox	1	NA	1	Running	Tundra	
26		5/30/2022	1	1/0/1900	1/0/1900	M	1273	1275	3	1	Red Fox	1	NA	1	Walking	Tundra	
26		6/4/2022	1	1/0/1900	1/0/1900	M	1318	1406	91	30	Caribou	1	NA	1	Walking	Tundra	Caribou - DB
26		6/8/2022	1	1/0/1900	1/0/1900	M	1420	1428	9	4	Canada Goose	2	NA	2	Swimming	Lake	Geese - DB
26		6/10/2022	1	1/0/1900	1/0/1900	M	1453	1455	3	1	Canada Goose	2	NA	2	Standing	Tundra	
26		6/16/2022	1	1/0/1900	1/0/1900	M	1477	1564	91	33	Caribou	3	NA	3	Investigating camera	Tundra	
26		6/25/2022	1	1/0/1900	1/0/1900	M	25	210	77	28	Moose	2	NA	2	Investigating camera	Tundra	Good moose photos - DB
26		6/25/2022	1	1/0/1900	1/0/1900	M	217	245	25	10	Caribou	3	NA	3	Walking	Tundra	Good - DB
26		6/29/2022	1	1/0/1900	1/0/1900	M	244	246	3	1	Canada Goose	2	NA	2	Swimming	Lake	Good - DB
26		7/4/2022	1	1/0/1900	1/0/1900	M	256	258	3	1	Caribou	1	NA	1	Running	Tundra	Good - DB
26		7/4/2022	1	1/0/1900	1/0/1900	M	259	267	8	3	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/5/2022	1	1/0/1900	1/0/1900	M	1	4	4	2	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/5/2022	1	1/0/1900	1/0/1900	M	1	1	1	1	Caribou	1	NA	1	Running	Tundra	
26		7/6/2022	1	1/0/1900	1/0/1900	M	1	1	1	1	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/6/2022	1	1/0/1900	1/0/1900	M	4	4	1	1	Caribou	1	NA	1	Running	Tundra	Good - DB
26		7/6/2022	1	1/0/1900	1/0/1900	M	7	8	2	1	Caribou	1	NA	1	Running	Tundra	Good - DB
26		7/6/2022	1	1/0/1900	1/0/1900	M	10	15	6	2	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/7/2022	1	1/0/1900	1/0/1900	M	16	17	2	2	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/7/2022	1	1/0/1900	1/0/1900	M	19	21	3	1	Caribou	1	NA	1	Walking	Tundra	
26		7/8/2022	1	1/0/1900	1/0/1900	M	1	9	9	3	Caribou	1	NA	1	Walking	Tundra	
26		7/9/2022	1	1/0/1900	1/0/1900	M	1	11	10	3	Caribou	3	NA	3	Walking	Tundra	Good - DB
26		7/10/2022	1	1/0/1900	1/0/1900	M	4	8	5	2	Caribou	1	NA	1	Walking	Tundra	Good - DB

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Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
26		7/10/2022	1	1/0/1900	1/0/1900	M	10	15	6	2	Caribou	1	NA	1	Grazing	Tundra	Good - DB
26		7/16/2022	1	1/0/1900	1/0/1900	M	7	12	6	3	Caribou	1	NA	1	Walking	Tundra	
26		7/16/2022	1	1/0/1900	1/0/1900	M	16	20	5	2	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/20/2022	1	1/0/1900	1/0/1900	M	22	31	10	4	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/20/2022	1	1/0/1900	1/0/1900	M	34	38	5	2	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/21/2021	1	1/0/1900	1/0/1900	M	41	42	2	1	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/21/2022	1	1/0/1900	1/0/1900	M	46	53	8	3	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/21/2022	1	1/0/1900	1/0/1900	M	55	55	1	1	Caribou	1	NA	1	Running	Tundra	Good - DB
26		7/21/2022	1	1/0/1900	1/0/1900	M	58	60	3	1	Caribou	1	NA	1	Walking	Tundra	Good - DB
26		7/21/2022	1	1/0/1900	1/0/1900	M	61	67	7	3	Caribou	1	NA	1	Grazing	Tundra	Good - DB
26		7/25/2022	1	1/0/1900	1/0/1900	M	22	45	21	8	Canada Goose	4	NA	4	Grazing	Tundra	
26		7/25/2022	1	1/0/1900	1/0/1900	M	46	54	9	3	Canada Goose	3	NA	3	Walking	Tundra	
26		7/26/2022	1	1/0/1900	1/0/1900	M	55	56	2	1	Caribou	1	NA	1	Running	Tundra	
26		7/26/2022	1	1/0/1900	1/0/1900	M	58	63	6	2	Caribou	1	NA	1	Walking	Tundra	
26		19199	1	1/0/1900	1/0/1900	M	64	68	5	1	Caribou	1	NA	1	Walking	Tundra	
26		7/29/2022	1	1/0/1900	1/0/1900	M	70	73	4	2	Unknown	NA	NA	NA	Investigating camera	Tundra	Unknown - DB
26		7/30/2022	1	1/0/1900	1/0/1900	M	76	87	12	4	Caribou	1	NA	1	Walking	Tundra	
26		7/30/2022	1	1/0/1900	1/0/1900	M	92	92	1	1	Unknown	NA	NA	NA	Investigating camera	Tundra	Unknown - DB
26		8/2/2022	1	1/0/1900	1/0/1900	M	100	102	3	1	Caribou	1	NA	1	Walking	Tundra	
26		8/2/2022	1	1/0/1900	1/0/1900	M	103	104	2	1	Caribou	1	NA	1	Running	Tundra	
26		8/3/2022	1	1/0/1900	1/0/1900	M	106	116	11	4	Caribou	1	NA	1	Grazing	Tundra	
26		8/4/2022	1	1/0/1900	1/0/1900	M	121	123	3	1	Caribou	1	NA	1	Running	Tundra	
26		8/5/2022	1	1/0/1900	1/0/1900	M	124	135	12	4	Caribou	1	NA	1	Walking	Tundra	
26		8/5/2022	1	1/0/1900	1/0/1900	M	136	146	11	4	Caribou	1	NA	1	Grazing	Tundra	
26		8/5/2022	1	1/0/1900	1/0/1900	M	148	151	4	3	Caribou	1	NA	1	Walking	Tundra	
26		8/24/2022	1	1/0/1900	1/0/1900	M	16	44	26	10	Caribou	1	NA	1	Walking	Tundra	
26		8/24/2022	1	1/0/1900	1/0/1900	M	44	44	1	1	Bird	1	NA	1	Flying	Other	Changed from a peregrine falcon to a bird. It is a small songbird
26		9/11/2022	1	1/0/1900	1/0/1900	M	13	93	65	32	Caribou	3	NA	3	Investigating camera	Tundra	
26		9/27/2022	1	1/0/1900	1/0/1900	M	304	306	3	1	Grizzly Bear	1	NA	1	Walking	Tundra	
28		3/20/2023	1	1/0/1900	1/0/1900	M	8502	8509	7	1	Arctic Hare	1	NA	1	Running	Tundra	Good - DB
29		5/7/2023	1	1/0/1900	1/0/1900	M	1292	1301	10	1	Fox	1	NA	1	Walking	Tundra	
30		11/6/2022	1	1/0/1900	1/0/1900	M	2116	2135	20	2	Arctic Hare	1	NA	1	Sitting	Tundra	
31		5/13/2023	NA	1/0/1900		T	1086	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	
31		5/13/2023	NA	1/0/1900		T	1087	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Unsure there may be another bird further left in the photo, last photo of this ptarmigan. This is just shadow - DB
31		5/16/2023	NA	1/0/1900		T	1237	NA	1	NA	Ptarmigan	2	NA	2	Standing	Tundra	
31		5/26/2023	1	1/0/1900	1/0/1900	M	1726	1735	10	1	Canada Goose	2	NA	2	Grazing	Tundra	Moving left in the photos
32		9/29/2022	1	1/0/1900	1/0/1900	M	207	216	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
32		4/16/2023	1	1/0/1900	1/0/1900	M	3080	3090	10	1	Grizzly Bear	1	NA	1	Walking	Tundra	Unsure if what animal is present, and if it is an adult or young. Calling it an adult - DB
32		4/18/2023	1	1/0/1900	1/0/1900	M	3224	3233	10	1	Fox	1	NA	1	Walking	Tundra	
33		3/4/2023	1	1/0/1900	1/0/1900	M	7923	7932	10	1	Red Fox	1	NA	1	Walking	Tundra	
33		3/8/2023	1	1/0/1900	1/0/1900	M	8126	8135	10	1	Red Fox	1	NA	1	Running	Tundra	
33		3/16/2023	1	1/0/1900	1/0/1900	M	8511	8520	10	1	Wolverine	1	NA	1	Investigating camera	Tundra	
33		3/20/2023	1	1/0/1900	1/0/1900	M	8712	8731	20	2	Unknown	1	NA	1	Investigating camera	Tundra	Not 100% sure if it is a fox. Changed to unknown - DB
33		3/20/2023	2	1/0/1900	1/0/1900	M	8762	8771	10	1	Fox	1	NA	1	Investigating camera	Tundra	Not 100% sure if it is a fox. Changed to unknown - DB
33		3/26/2023	1	1/0/1900	1/0/1900	M	9022	9031	10	1	Arctic Hare	1	NA	1	Running	Tundra	
33		4/14/2023	1	1/0/1900	1/0/1900	M	9974	9983	10	1	Red Fox	1	NA	1	Walking	Tundra	
33		5/14/2023	1	1/0/1900	1/0/1900	M	1442	1531	90	9	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
34		3/8/2023	1	1/0/1900	1/0/1900	M	7684	7693	10	1	Red Fox	1	NA	1	Walking	Tundra	Photo a bit blurry due to snow cover
34		3/21/2023	1	1/0/1900	1/0/1900	M	8319	8338	20	1	Red Fox	1	NA	1	Running	Tundra	
36		11/28/2022	1	1/0/1900		M	3156	3175	20	2	Caribou	2	NA	2	Investigating camera	Tundra	Appears they could be heading behind the camera, possibly to the right.
36		4/26/2023	1	1/0/1900	1/0/1900	M	309	318	10	1	Wolverine	1	NA	1	Walking	Tundra	
36		4/29/2023	1	1/0/1900	1/0/1900	M	497	506	10	1	Wolverine	1	NA	1	Running	Tundra	
36		5/14/2023	1	1/0/1900	1/0/1900	M	1211	1220	10	1	Red Fox	1	NA	1	Running	Tundra	
39		3/30/2023	1	1/0/1900	1/0/1900	M	9003	9012	10	1	Arctic Hare	1	NA	1	Investigating camera	Tundra	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
39		4/14/2023	NA	1/0/1900		T	9749	NA	1	NA	Red Fox	1	NA	1	Walking	Tundra	Animal is far away from camera, not 100% sure if it is a fox. It is a fox - DB
39		5/26/2023	NA	1/0/1900		T	1872	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1873	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1874	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1875	NA	1	NA	Ptarmigan	2	NA	2	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1876	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1877	NA	1	NA	Ptarmigan	2	NA	2	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1878	NA	1	NA	Ptarmigan	2	NA	2	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1879	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1880	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1881	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1882	NA	1	NA	Ptarmigan	2	NA	2	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1883	NA	1	NA	Ptarmigan	2	NA	2	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
39		5/26/2023	NA	1/0/1900		T	1884	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	Hard to tell if it is a ptarmigan. It is a ptarmigan - DB
40		4/26/2023	1	1/0/1900	1/0/1900	M	394	403	10	1	Red Fox	1	NA	1	Running	Tundra	
40		5/7/2023	NA	1/0/1900		T	943	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	
41		9/25/2022	1	1/0/1900	1/0/1900	M	229	238	10	1	Grizzly Bear	1	NA	1	Walking	Tundra	
41		9/25/2022	2	1/0/1900	1/0/1900	M	240	339	100	10	Grizzly Bear	1	1	2	Investigating camera	Tundra	
41		9/5/2022	3	1/0/1900	1/0/1900	M	344	383	40	4	Grizzly Bear	NA	1	1	Investigating camera	Tundra	
41		11/1/2022	1	1/0/1900	1/0/1900	M	2153	2162	10	1	Red Fox	1	NA	1	Running	Tundra	
41		3/23/2023	1	1/0/1900	1/0/1900	M	8977	8986	10	1	Wolverine	1	NA	1	Investigating camera	Tundra	
42		4/20/2023	1	1/0/1900	1/0/1900	M	148	157	10	1	Red Fox	1	NA	1	Running	Tundra	
43		2/28/2023	1	1/0/1900	1/0/1900	M	7563	7572	10	1	Red Fox	1	NA	1	Walking	Tundra	
43		3/19/2023	1	1/0/1900	1/0/1900	M	8493	8502	10	1	Unknown	1	NA	1	Walking	Tundra	Unable to tell the species. Red fox to unknown - DB
43		4/13/2023	1	1/0/1900	1/0/1900	M	9698	9717	20	2	Ptarmigan	5	NA	5	Grazing	Tundra	
43		4/20/2023	1	1/0/1900	1/0/1900	M	38	57	20	2	Ptarmigan	3	NA	3	Walking	Tundra	
43		4/29/2023	1	1/0/1900	1/0/1900	M	488	497	10	1	Ptarmigan	1	NA	1	Walking	Tundra	
43		5/7/2023	1	1/0/1900	1/0/1900	M	913	972	60	6	Caribou	1	NA	1	Grazing	Tundra	Not sure if this is an adult or young. Adult - DB
43		5/19/2023	1	1/0/1900	1/0/1900	M	1522	1531	10	1	Wolverine	1	NA	1	Walking	Tundra	
43		5/19/2023	2	1/0/1900	1/0/1900	M	1535	1544	10	1	Wolverine	1	NA	1	Running	Tundra	
44		9/27/2022	NA	1/0/1900		T	156	NA	1	NA	Red Fox	1	NA	1	Standing	Tundra	
44		9/30/2022	1	1/0/1900	1/0/1900	M	318	357	40	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
44		4/29/2023	1	1/0/1900	1/0/1900	M	321	390	70	7	Caribou	2	NA	2	Investigating camera	Tundra	
44		5/21/2023	1	1/0/1900	1/0/1900	M	2395	2414	20	2	Muskox	8	NA	8	Grazing	Tundra	
44		5/21/2023	NA	1/0/1900		T	2415	NA	1	NA	Muskox	8	NA	8	Grazing	Tundra	
44		5/21/2023	2	1/0/1900	1/0/1900	M	2416	2475	60	6	Muskox	8	NA	8	Grazing	Tundra	
44		5/21/2023	NA	1/0/1900		T	2476	NA	1	NA	Muskox	2	NA	2	Grazing	Tundra	
44		5/21/2023	3	1/0/1900	1/0/1900	M	2477	2566	90	9	Muskox	8	NA	8	Grazing	Tundra	
46		9/28/2022	1	1/0/1900	1/0/1900	M	258	267	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
46		5/5/2023	1	1/0/1900	1/0/1900	M	788	797	10	1	Red Fox	1	NA	1	Running	Tundra	
47		3/2/2023	1	1/0/1900	1/0/1900	M	7671	7680	10	1	Red Fox	1	NA	1	Walking	Tundra	
47		3/11/2023	1	1/0/1900	1/0/1900	M	8105	8124	20	2	Red Fox	1	NA	1	Walking	Tundra	
48		5/17/2023	NA	1/0/1900		T	1299	NA	1	NA	Canada Goose	2	NA	2	Grazing	Tundra	
48		5/17/2023	NA	1/0/1900		T	1300	NA	1	NA	Canada Goose	2	NA	2	Grazing	Tundra	
48		5/18/2023	NA	1/0/1900		T	1357	NA	1	NA	Caribou	1	NA	1	Grazing	Tundra	
48		5/18/2023	NA	1/0/1900		T	1358	NA	1	NA	Caribou	1	NA	1	Grazing	Tundra	
48		5/18/2023	NA	1/0/1900		T	1359	NA	1	NA	Caribou	1	NA	1	Grazing	Tundra	
48		5/18/2023	NA	1/0/1900		T	1360	NA	1	NA	Caribou	1	NA	1	Grazing	Tundra	
48		5/18/2023	NA	1/0/1900		T	1361	NA	1	NA	Caribou	2	NA	2	Grazing	Tundra	
49		10/1/2022	1	1/0/1900	1/0/1900	M	460	549	90	9	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
49		4/18/2023	1	1/0/1900	1/0/1900	M	148	157	10	1	Caribou	1	NA	1	Walking	Tundra	
51		5/28/2023	NA	1/0/1900		T	3603	NA	1	NA	er White-fronted	1	NA	1	Standing	Other	
51		5/28/2023	NA	1/0/1900		T	3604	NA	1	NA	er White-fronted	1	NA	1	Standing	Other	
51		5/28/2023	NA	1/0/1900		T	3605	NA	1	NA	er White-fronted	1	NA	1	Standing	Other	
51		5/30/2023	NA	1/0/1900		T	3703	NA	1	NA	er White-fronted	1	NA	1	Standing	Other	

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Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
53		3/14/2023	1	1/0/1900	1/0/1900	M	8202	8211	10	1	Red Fox	1	NA	1	Walking	Tundra	
53		3/14/2023	2	1/0/1900	1/0/1900	M	8213	8222	10	1	Red Fox	1	NA	1	Running	Tundra	
53		5/18/2023	NA	1/0/1900		T	1336	NA	1	NA	Bird	1	NA	1	Sitting	Tundra	Looks like some sort of songbird sitting on tall grass. Songbird - DB
53		5/24/2023	NA	1/0/1900		T	1617	NA	1	NA	Ptarmigan	1	NA	1	Sitting	Tundra	
53		5/23/2023	NA	1/0/1900		T	1575	NA	1	NA	Unknown	1	NA	1	Sitting	Tundra	Looks like a songbird on tall grass. Songbird - DB
53		5/24/2023	NA	1/0/1900		T	1624	NA	1	NA	Ptarmigan	1	NA	1	Sitting	Tundra	
54		5/23/2023	1	1/0/1900	1/0/1900	M	2629	2638	10	1	Bird	1	NA	1	Flying	Tundra	Not sure what bird is present. Songbird - DB
54		5/23/2023	2	1/0/1900	1/0/1900	M	2640	2649	10	1	Bird	1	NA	1	Flying	Tundra	Not sure what bird is present. Songbird - DB
54		5/23/2023	3	1/0/1900	1/0/1900	M	2684	2693	10	1	Bird	1	NA	1	Standing	Tripod	Not sure what bird is present. Songbird - DB
54		5/24/2023	1	1/0/1900	1/0/1900	M	2767	2776	10	1	Bird	1	NA	1	Standing	Tripod	Not sure what bird is present. Songbird - DB
54		5/23/2023	1	1/0/1900	1/0/1900	M	2840	2849	10	1	Bird	1	NA	1	Flying	Tripod	Not sure what bird is present. Songbird - DB
55		9/30/2022	1	1/0/1900	1/0/1900	M	282	321	40	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
55		11/22/2022	1	1/0/1900	1/0/1900	M	2874	2923	50	5	Caribou	1	NA	1	Grazing	Tundra	
55		11/25/2022	1	1/0/1900	1/0/1900	M	3064	3073	10	1	Unknown	1	NA	1	Investigating camera	Tundra	Only can see an ear, not sure what animal is present. Unknown - DB
57		5/19/2023	NA	1/0/1900		T	3509	NA	1	NA	Canada Goose	5	NA	5	Flying	Tundra	
59		10/30/2022	NA	1/0/1900		T	1009	NA	1	NA	Unknown	1	NA	1	Standing	Tundra	Cannot tell what bird is present. Looks like it may be a raptor - DB
59		10/30/2022	NA	1/0/1900		T	1010	NA	1	NA	Unknown	1	NA	1	Standing	Tundra	Cannot tell what bird is present. Looks like it may be a raptor - DB
59		4/28/2023	NA	1/0/1900		T	25	NA	1	NA	Ptarmigan	1	NA	1	Standing	Tundra	
60		3/4/2023	1	1/0/1900	1/0/1900	M	7883	7892	10	1	Red Fox	1	NA	1	Walking	Tundra	
16		7/23/2023	1	1/0/1900	1/0/1900	M	4	20	20	2	Caribou	NA	1	1	Feeding	Tundra	
16		7/26/2023	1	1/0/1900	1/0/1900	M	1	13	20	2	Caribou	NA	1	1	Feeding	Tundra	
16		8/7/2023	1	1/0/1900	1/0/1900	M	13	17	30	3	Unknown	NA	NA	NA	Investigating camera	Tripod	Unknown animal - suspected grizzly. Probably a wolverine, can not confirm - DB
16		8/8/2023	1	1/0/1900	1/0/1900	M	2	14	20	2	Muskox	1	NA	1	Investigating camera	Tripod	
16		8/12/2023	1	1/0/1900	1/0/1900	M	10	12	10	1	Grizzly Bear	NA	NA	NA	Investigating camera	Tundra	Unsure of age
16		8/16/2023	2	1/0/1900	1/0/1900	M	45	52	10	1	Unknown	NA	NA	NA	Investigating camera	Tripod	Unknown animal
16		8/27/2023	1	1/0/1900	1/0/1900	M	13	22	10	1	Caribou	1	NA	1	Walking	Tundra	
17		6/15/2023	1	1/0/1900	1/0/1900	M	336	345	10	1	Unknown	NA	NA	NA	Investigating camera	Tripod	Unsure of species
17		6/26/2023	2	1/0/1900	1/0/1900	M	486	498	20	2	Caribou	3	NA	3	Walking	Tundra	
17		7/13/2023	1	1/0/1900	1/0/1900	M	64	74	11	2	Caribou	1	NA	1	Walking	Tundra	
17		7/13/2023	2	1/0/1900	1/0/1900	M	84	93	10	1	Caribou	2	NA	2	Walking	Tundra	
17		7/15/2023	3	1/0/1900		M	140	NA	10	1		NA	NA	NA			
17		7/13/2023	1	1/0/1900	1/0/1900	M	64	74	11	2	Cackling Goose	1	NA	1	Walking	Tundra	
17		7/5/2023	1	1/0/1900	1/0/1900	M	14	14	1	1	Unknown	NA	NA	NA			Suspected caribou
17		7/7/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Road	
18		7/5/2023	1	1/0/1900	1/0/1900	M	14	1	10	1	Caribou	NA	NA	NA	Walking	Tripod	Species unknown
18		7/7/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Road	
19		6/29/2023	1	1/0/1900	1/0/1900	M	6	15	10	1	Caribou	2	NA	2	Walking	Tundra	
19		7/9/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
51		7/22/2023	1	1/0/1900	1/0/1900	M	17	216	200	20	Caribou	1	NA	1	Grazing	Other	
3		6/4/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Ptarmigan	1	NA	1	Walking	Tundra	
3		6/22/2023	1	1/0/1900	1/0/1900	M	32	81	50	5	Caribou	2	1	3	Grazing	Tundra	
3		7/1/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
3		7/2/2023	1	1/0/1900	1/0/1900	M	17	46	30	3	Caribou	2	NA	2	Walking	Tundra	
3		7/3/2023	1	1/0/1900	1/0/1900	M	50	59	10	1	Caribou	1	NA	1	Walking	Tundra	
3		7/7/2023	1	1/0/1900	1/0/1900	M	79	88	10	1	Caribou	1	NA	1	Grazing	Tundra	
3		7/7/2023	1	1/0/1900	1/0/1900	M	1	30	30	3	Caribou	3	NA	3	Walking	Tundra	
3		7/10/2023	1	1/0/1900	1/0/1900	M	37	56	10	1	Caribou	2	NA	2	Walking	Tundra	
3		7/11/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
3		7/12/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
3		7/16/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
3		7/17/2023	1	1/0/1900	1/0/1900	M	11	30	20	2	Caribou	2	NA	2	Walking	Tundra	
3		7/22/2023	1	1/0/1900	1/0/1900	M	7	16	10	1	Caribou	NA	1	1	Walking	Tundra	
3		7/26/2023	1	1/0/1900	1/0/1900	M	29	38	10	1	Caribou	1	NA	1	Grazing	Tundra	
3		7/27/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Grazing	Tundra	
3		8/1/2023	1	1/0/1900	1/0/1900	M	4	63	60	6	Grizzly Bear	1	NA	1	Investigating camera	Tundra	

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4		6/12/2023	1	1/0/1900	1/0/1900	M	22	81	60	6	Caribou	NA	1	1	Investigating camera	Tundra	
4		6/18/2023	1	1/0/1900	1/0/1900	M	13	22	10	1	Unknown	1	NA	1	Investigating camera	Tundra	Cannot tell what is present
4		7/10/2023	1	1/0/1900	1/0/1900	M	1	30	30	3	Caribou	1	NA	1	Walking	Tundra	
4		8/5/2023	1	1/0/1900	1/0/1900	M	7	16	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
5		6/2/2023	1	1/0/1900	1/0/1900	M	4	53	50	5	Caribou	2	NA	2	Grazing	Tundra	
5		6/22/2023	1	1/0/1900	1/0/1900	M	4	113	100	10	Caribou	2	NA	2	Sitting	Tundra	
5		6/25/2023	1	1/0/1900	1/0/1900	M	4	303	300	30	Caribou	7	NA	7	Grazing	Tundra	Not sure on the age of the caribou
5		7/2/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
5		7/6/2023	1	1/0/1900	1/0/1900	M	7	16	10	1	Caribou	1	NA	1	Walking	Tundra	
5		7/7/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
5		7/21/2023	1	1/0/1900	1/0/1900	M	4	33	30	3	Unknown	1	NA	1	Investigating camera	Tundra	Cannot determine what animal is present
5		8/4/2023	1	1/0/1900	1/0/1900	M	1	80	80	8	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
6		8/7/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
7		7/10/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
7		7/24/2023	1	1/0/1900	1/0/1900	M	1	20	20	2	Caribou	1	NA	1	Walking	Tundra	
7		7/30/2023	1	1/0/1900	1/0/1900	M	1	20	20	2	Caribou	1	NA	1	Walking	Tundra	
7		8/13/2023	1	1/0/1900	1/0/1900	M	1	40	40	4	Caribou	2	NA	1	Investigating camera	Tundra	
8		5/28/2023	1	1/0/1900	1/0/1900	M	30	100	70	7	Wolverine	1	NA	1	Walking	Tundra	
8		5/29/2023	1	1/0/1900	1/0/1900	M	1	50	50	5	Caribou	1	NA	1	Investigating camera	Tundra	
8		6/17/2023	1	1/0/1900	1/0/1900	M	4	113	100	10	Caribou	1	NA	1	Grazing	Tundra	
8		6/26/2023	1	1/0/1900	1/0/1900	M	1	70	70	7	Caribou	3	2	5	Grazing	Tundra	
8		6/26/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Red Fox	1	NA	1	Walking	Tundra	
8		6/30/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Red Fox	1	NA	1	Running	Tundra	
8		7/15/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Red Fox	1	NA	1	Running	Tundra	
8		7/17/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Fox	1	NA	1	Walking	Tundra	
8		7/26/2023	1	1/0/1900	1/0/1900	M	21	40	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
8		8/13/2023	1	1/0/1900	1/0/1900	M	10	19	10	1	Bird	1	NA	1	Flying	Tundra	Not sure what bird is present
8		8/20/2023	1	1/0/1900	1/0/1900	M	40	49	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
8		8/27/2023	1	1/0/1900	1/0/1900	M	13	82	70	7	Waterfowl	30	20	40	Grazing	Tundra	Not sure what waterfowl, rough estimation on amount of birds
8		8/28/2023	1	1/0/1900	1/0/1900	M	86	95	10	1	Fox	1	NA	1	Running	Tundra	
9		6/9/2023	1	1/0/1900	1/0/1900	M	12	71	60	6	Caribou	NA	2	2	Investigating camera	Tundra	
9		6/12/2023	1	1/0/1900	1/0/1900	M	7	116	100	10	Grizzly Bear	1	1	2	Investigating camera	Tundra	
9		7/18/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
9		7/19/2023	1	1/0/1900	1/0/1900	M	14	23	10	1	Caribou	1	NA	1	Walking	Tundra	
9		8/5/2023	1	1/0/1900	1/0/1900	M	4	83	80	8	Grizzly Bear	1	1	2	Investigating camera	Tundra	
10		6/9/2023	1	1/0/1900	1/0/1900	M	13	32	20	2	Caribou	3	NA	3	Grazing	Tundra	
10		6/13/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Red Fox	1	NA	1	Hunting	Tundra	
10		6/16/2023	1	1/0/1900	1/0/1900	M	7	86	80	8	Caribou	3	NA	3	Walking	Tundra	
10		6/20/2023	1	1/0/1900	1/0/1900	M	99	108	10	1	Caribou	1	NA	1	Walking	Tundra	Not 100% sure what is present
10		6/21/2023	1	1/0/1900	1/0/1900	M	112	151	40	4	Caribou	8	NA	8	Walking	Tundra	
10		6/28/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
10		7/5/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	2	NA	2	Walking	Tundra	
10		7/7/2023	1	1/0/1900	1/0/1900	M	17	26	10	1	Caribou	1	NA	1	Walking	Tundra	
10		8/3/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
10		8/11/2023	1	1/0/1900	1/0/1900	M	27	66	40	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
10		8/12/2023	1	1/0/1900	1/0/1900	M	73	102	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
10		8/25/2023	1	1/0/1900	1/0/1900	M	139	198	60	6	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
11		6/23/2023	NA	1/0/1900		T	42	NA	1	NA	Caribou	1	NA	1	Walking	Tundra	
11		6/23/2023	1	1/0/1900	1/0/1900	M	44	123	80	8	Caribou	NA	2	2	Investigating camera	Tundra	
11		6/24/2023	1	1/0/1900	1/0/1900	M	124	203	80	8	Caribou	1	NA	1	Investigating camera	Tundra	
11		6/24/2023	2	1/0/1900	1/0/1900	M	207	276	70	7	Caribou	1	NA	1	Investigating camera	Tundra	
11		8/9/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Bird	1	NA	1	Flying	Tundra	Not sure on the bird
11		8/22/2023	1	1/0/1900	1/0/1900	M	63	72	10	1	Bird	1	NA	1	Flying	Tundra	Not sure on the bird
12		6/20/2023	1	1/0/1900	1/0/1900	M	13	22	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
12		6/26/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	NA	1	1	Walking	Tundra	
12		7/7/2023	1	1/0/1900	1/0/1900	M	13	32	20	2	Caribou	2	NA	2	Walking	Tundra	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
12		7/9/2023	1	1/0/1900	1/0/1900	M	39	58	20	2	Caribou	1	NA	1	Walking	Tundra	
12		7/10/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Running	Tundra	
12		7/20/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
12		8/4/2023	1	1/0/1900	1/0/1900	M	1	40	40	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
12		8/16/2023	1	1/0/1900	1/0/1900	M	16	35	20	2	Caribou	1	1	2	Grazing	Tundra	
12		8/17/2023	1	1/0/1900	1/0/1900	M	39	48	10	1	Canada Goose	21	NA	21	Walking	Tundra	
14		6/12/2023	1	1/0/1900	1/0/1900	M	70	79	10	1	Waterfowl	1	NA	1	Flying	Tundra	Unsure what bird present
14		7/1/2023	1	1/0/1900	1/0/1900	M	24	33	10	1	Caribou	1	NA	1	Walking	Tundra	
14		7/26/2023	1	1/0/1900	1/0/1900	M	3	12	10	1	Caribou	1	NA	1	Walking	Tundra	
14		7/31/2023	1	1/0/1900	1/0/1900	M	11	30	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
14		8/5/2023	1	1/0/1900		M	1	6	6	10	Caribou	1	NA	1	Walking	Tundra	
14		8/14/2023	1	1/0/1900		M	10	14	5	10	Caribou	1	NA	1	Walking	Tundra	
15		6/15/2023	1	1/0/1900	1/0/1900	M	1	1	1	1	Unknown	NA	NA	NA	Investigating camera	Tripod	
15		6/16/2023	2	1/0/1900	1/0/1900	M	13	16	10	1	Caribou	1	NA	1	Walking	Tundra	
15		6/23/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Cackling Goose	1	NA	1	Investigating camera	Tundra	
15		6/25/2023	1	1/0/1900	1/0/1900	M	2	79	78	8	Caribou	1	1	2	Feeding	Tundra	
15		6/25/2023	1	1/0/1900	1/0/1900	M	1	64	56	7	Caribou	NA	NA	NA	Feeding	Tundra	unable to classify life stage
15		6/29/2023	1	1/0/1900	1/0/1900	M	1	4	3	1	Caribou	1	NA	1	Investigating camera	Tripod	
15		7/4/2023	1	1/0/1900	1/0/1900	M	1	5	5	1	Caribou	1	NA	1	Walking	Tundra	
15		7/17/2023	1	1/0/1900	1/0/1900	M	1	5	5	1	Caribou	1	NA	1	Walking	Tundra	
15		7/26/2023	1	1/0/1900	1/0/1900	M	1	2	2	1	Caribou	1	NA	1	Investigating camera	Tripod	
15		7/29/2023	1	1/0/1900	1/0/1900	M	1	1	1	1	Unknown	NA	NA	NA	Investigating camera	Tripod	
15		8/6/2023	1	1/0/1900	1/0/1900	M	7	7	1	1	Unknown	NA	NA	NA	Sitting	Tundra	unknown bird - suspected raven
15		8/6/2023	2	1/0/1900	1/0/1900	M	1	1	1	1	Unknown	NA	NA	NA	Investigating camera	Tripod	unknown bird species
15		8/7/2023	3	1/0/1900	1/0/1900	M	79	80	2	1	Unknown	NA	NA	NA	Sitting	Tundra	two unidentified birds - suspected ravens
16		5/29/2023	1	1/0/1900	1/0/1900	M	41	42	10	1	Unknown	NA	NA	NA	Investigating camera	Tripod	unable to determine species. Suspected raven.
19		7/9/2023	2	1/0/1900	1/0/1900	M	29	38	10	1	Caribou	NA	1	1	Feeding	Tripod	
19		7/17/2023	1	1/0/1900	1/0/1900	M	3	12	10	1	Caribou	NA	1	1	Walking	Tundra	
19		7/20/2023	1	1/0/1900	1/0/1900	M	10	12	10	1	Caribou	1	NA	1	Walking	Tundra	
19		7/22/2023	1	1/0/1900	1/0/1900	M	74	77	4	1	Caribou	1	NA	1	Walking	Tundra	
22		6/26/2023	1	1/0/1900	1/0/1900	T	NA	NA	NA	NA	Unknown	NA	NA	NA	Flying	Tundra	unknown avian species.
22		6/30/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Grizzly Bear	1	1	2	Walking	Tundra	
22		7/7/2023	1	1/0/1900	1/0/1900	M	1	23	20	2	Caribou	1	NA	1	Walking	Tundra	
22		7/7/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
22		7/11/2023	1	1/0/1900	1/0/1900	M	11	16	6	1	Caribou	NA	1	1	Feeding	Tundra	
22		7/13/2023	1	1/0/1900	1/0/1900	M	1	20	20	2	Caribou	1	NA	1	Feeding	Tundra	suspected same animal previously noted.
22		7/17/2023	1	1/0/1900	1/0/1900	M	11	14	10	1	Caribou	1	NA	1	Walking	Tundra	suspected same animal previously noted
22		7/8/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Feeding	Tundra	unknown life stage, or if previously counted.
22		8/2/2023	1	1/0/1900	1/0/1900	M	1	2	10	1	Grizzly Bear	1	NA	1	Walking	Tundra	
22		8/8/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Grizzly Bear	1	NA	1	Walking	Tundra	lifestage unknown, unsure if previously noted
22		8/8/2023	1	1/0/1900	1/0/1900	M	1	30	30	3	Grizzly Bear	1	2	3	Investigating camera	Tundra	
22		8/12/2023	1	1/0/1900	1/0/1900	M	2	3	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tripod	
22		8/13/2023	1	1/0/1900	1/0/1900	M	28	28	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tripod	unsure if adult or young, unsure if previously noted
22		8/15/2023	1	1/0/1900	1/0/1900	M	40	49	20	2	Grizzly Bear	1	NA	1	Walking	Tripod	unsure if previously noted
22		8/15/2023	2	1/0/1900	1/0/1900	M	50	54	10	1	Grizzly Bear	NA	NA	NA	Investigating camera	Tripod	unsure of life stage or previously noted
22		8/15/2023	3	1/0/1900	1/0/1900	M	63	66	10	1	Grizzly Bear	1	NA	1	Walking	Tundra	unsure if previously noted
23		6/5/2023	1	1/0/1900	1/0/1900	M	4	41	40	4	Caribou	2	NA	2	Grazing	Tundra	suspected peary caribou
23		6/13/2023	2	1/0/1900	1/0/1900	M	88	95	10	1	Fox	1	NA	1	Walking	Tundra	
23		6/22/2023	1	1/0/1900	1/0/1900	M	35	145	91	12	Caribou	2	NA	2	Feeding	Tundra	
23		6/23/2023	2	1/0/1900	1/0/1900	M	158	207	51	5	Caribou	3	NA	3	Feeding	Tundra	unsure two of the three animals have been previously noted.
23		7/7/2023	1	1/0/1900	1/0/1900	M	1	4	4	1	Caribou	NA	1	1	Walking	Tundra	
23		7/14/2023	1	1/0/1900	1/0/1900	M	16	16	1	1	Bird	NA	NA	NA			species unknown
23		7/14/2023	2	1/0/1900	1/0/1900	M	27	66	39	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
23		8/5/2023	1	1/0/1900	1/0/1900	M	17	66	50	5	Muskox	1	NA	1	Investigating camera	Tundra	
23		8/12/2023	1	1/0/1900	1/0/1900	M	7	46	40	4	Caribou	1	NA	1	Walking	Tundra	
23		8/15/2023	1	1/0/1900	1/0/1900	M	63	92	30	3	Caribou	1	NA	1	Investigating camera	Tundra	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
23		8/18/2023	1	1/0/1900	1/0/1900	M	102	111	10	1	Red Fox	1	NA	1	Walking	Tundra	
23		8/21/2023	1	1/0/1900	1/0/1900	M	124	193	70	7	Grizzly Bear	1	1	2	Investigating camera	Tundra	
23		8/22/2023	1	1/0/1900	1/0/1900	M	226	345	120	12	Grizzly Bear	1	3	4	Investigating camera	Tundra	Not sure how many young and adults are captured in the photos
23		8/27/2023	1	1/0/1900	1/0/1900	M	362	531	170	17	Caribou	1	NA	1	Investigating camera	Tundra	
24		6/20/2023	1	1/0/1900	1/0/1900	M	16	25	10	1	Caribou	3	NA	3	Walking	Tundra	
24		6/22/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	2	NA	2	Walking	Tundra	
24		7/1/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/2/2023	1	1/0/1900	1/0/1900	M	17	26	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/2/2023	2	1/0/1900	1/0/1900	M	27	36	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/3/2023	1	1/0/1900	1/0/1900	M	37	46	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/4/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/9/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/10/2023	1	1/0/1900	1/0/1900	M	17	26	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/12/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/13/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/13/2023	2	1/0/1900	1/0/1900	M	21	30	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/15/2023	1	1/0/1900	1/0/1900	M	47	56	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/16/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/16/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/16/2023	3	1/0/1900	1/0/1900	M	21	40	20	2	Caribou	1	NA	1	Walking	Tundra	
24		7/16/2023	4	1/0/1900	1/0/1900	M	41	50	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/17/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/17/2023	2	1/0/1900	1/0/1900	M	21	30	10	1	Caribou	2	NA	2	Walking	Tundra	
24		7/19/2023	1	1/0/1900	1/0/1900	M	21	30	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/23/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/25/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
24		7/26/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
24		8/4/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
24		8/15/2023	1	1/0/1900	1/0/1900	M	17	26	10	1	Caribou	1	NA	1	Grazing	Tundra	
25		7/31/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Unknown	1	NA	1	Investigating camera	Tundra	Cannot conclude what is present
25		8/9/2023	1	1/0/1900	1/0/1900	M	58	107	50	5	Grizzly Bear	1	NA	1	Investigating camera	Tundra	Camera knocked over
26		5/30/2023	1	1/0/1900	1/0/1900	M	145	213	69	23	Muskox	1	NA	1	Investigating camera	Tundra	
26		5/30/2023	2	1/0/1900	1/0/1900	M	214	216	3	1	Red Fox	1	NA	1	Walking	Tundra	
26		6/15/2023	1	1/0/1900	1/0/1900	M	241	249	9	3	Caribou	1	NA	1	Walking	Tundra	
26		6/19/2023	1	1/0/1900	1/0/1900	M	253	270	18	6	Caribou	1	NA	1	Walking	Tundra	
26		6/20/2023	1	1/0/1900	1/0/1900	M	271	282	12	4	Caribou	3	NA	3	Grazing	Tundra	
26		6/24/2023	1	1/0/1900	1/0/1900	M	295	315	20	7	Caribou	2	NA	2	Walking	Tundra	
26		6/24/2023	2	1/0/1900	1/0/1900	M	316	330	15	5	Caribou	2	NA	2	Walking	Tundra	
26		6/26/2023	1	1/0/1900	1/0/1900	M	337	345	9	3	Caribou	1	NA	1	Walking	Tundra	
26		6/26/2023	2	1/0/1900	1/0/1900	M	349	351	3	1	Caribou	1	NA	1	Walking	Tundra	
26		6/30/2023	1	1/0/1900	1/0/1900	M	355	357	3	1	Caribou	1	NA	1	Walking	Tundra	
26		7/2/2023	1	1/0/1900	1/0/1900	M	358	372	15	5	Caribou	1	NA	1	Walking	Tundra	
26		7/2/2023	2	1/0/1900	1/0/1900	M	373	381	9	3	Caribou	1	NA	1	Walking	Tundra	
26		7/2/2023	3	1/0/1900	1/0/1900	M	382	384	3	1	Caribou	1	NA	1	Walking	Tundra	
26		7/2/2023	4	1/0/1900	1/0/1900	M	385	390	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/2/2023	5	1/0/1900	1/0/1900	M	391	396	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/3/2023	1	1/0/1900	1/0/1900	M	397	399	3	1	Caribou	1	NA	1	Walking	Tundra	
26		7/4/2023	1	1/0/1900	1/0/1900	M	412	417	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/5/2023	1	1/0/1900	1/0/1900	M	418	423	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/5/2023	2	1/0/1900	1/0/1900	M	424	429	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/6/2023	1	1/0/1900	1/0/1900	M	433	447	15	5	Caribou	1	NA	1	Walking	Tundra	
26		7/6/2023	2	1/0/1900	1/0/1900	M	448	456	9	3	Caribou	1	NA	1	Walking	Tundra	
26		7/7/2023	1	1/0/1900	1/0/1900	M	457	480	24	8	Caribou	1	NA	1	Walking	Tundra	
26		7/7/2023	2	1/0/1900	1/0/1900	M	481	486	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/7/2023	3	1/0/1900	1/0/1900	M	487	492	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/7/2023	4	1/0/1900	1/0/1900	M	493	498	6	2	Caribou	1	NA	1	Walking	Tundra	

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Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
26		7/10/2023	1	1/0/1900	1/0/1900	M	505	510	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/11/2023	1	1/0/1900	1/0/1900	M	511	555	45	15	Moose	1	NA	1	Investigating camera	Tundra	
26		7/11/2023	2	1/0/1900	1/0/1900	M	556	561	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/12/2023	1	1/0/1900	1/0/1900	M	562	573	12	4	Caribou	1	NA	1	Walking	Tundra	
26		7/14/2023	1	1/0/1900	1/0/1900	M	574	582	9	3	Caribou	1	NA	1	Walking	Tundra	
26		7/14/2023	2	1/0/1900	1/0/1900	M	586	591	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/14/2023	3	1/0/1900	1/0/1900	M	595	600	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/19/2023	1	1/0/1900	1/0/1900	M	601	615	15	5	Caribou	1	NA	1	Walking	Tundra	
26		7/19/2023	2	1/0/1900	1/0/1900	M	616	621	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/19/2023	3	1/0/1900	1/0/1900	M	622	627	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/20/2023	1	1/0/1900	1/0/1900	M	631	642	12	4	Caribou	1	NA	1	Walking	Tundra	
26		7/21/2023	1	1/0/1900	1/0/1900	M	646	648	3	1	Fox	1	NA	1	Walking	Tundra	
26		7/22/2023	1	1/0/1900	1/0/1900	M	649	696	48	16	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
26		7/25/2023	1	1/0/1900	1/0/1900	M	697	702	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/26/2023	1	1/0/1900	1/0/1900	M	704	708	6	2	Caribou	1	NA	1	Walking	Tundra	
26		7/27/2023	1	1/0/1900	1/0/1900	M	721	732	12	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
28		6/5/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Muskox	15	NA	15	Grazing	Tundra	
28		6/11/2023	1	1/0/1900	1/0/1900	M	16	55	40	4	Caribou	1	NA	1	Investigating camera	Tundra	
28		6/12/2023	1	1/0/1900	1/0/1900	M	59	168	110	11	Grizzly Bear	1	3	4	Investigating camera	Tundra	
28		6/16/2023	1	1/0/1900	1/0/1900	M	8	37	30	3	Caribou	1	NA	1	Investigating camera	Tundra	
28		7/7/2023	1	1/0/1900	1/0/1900	M	19	28	10	1	Caribou	1	NA	1	Walking	Tundra	
28		7/21/2023	1	1/0/1900	1/0/1900	M	9	68	60	6	Muskox	11	2	13	Investigating camera	Tundra	
28		7/27/2023	1	1/0/1900	1/0/1900	M	2	11	10	1	Caribou	1	NA	1	Running	Tundra	
28		8/4/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Fox	1	NA	1	Running	Tundra	
28		8/14/2023	1	1/0/1900	1/0/1900	M	20	29	10	1	Caribou	1	NA	1	Running	Tundra	
28		8/28/2023	1	1/0/1900	1/0/1900	M	16	105	90	9	Grizzly Bear	1	2	3	Investigating camera	Tundra	Bear moved camera
28		8/31/2023	1	1/0/1900	1/0/1900	M	115	144	30	3	Caribou	1	NA	1	Grazing	Tundra	
29		6/2/2023	1	1/0/1900	1/0/1900	M	42	51	10	1	Caribou	1	NA	1	Grazing	Tundra	
29		6/22/2023	1	1/0/1900	1/0/1900	M	39	68	30	3	Caribou	1	NA	1	Investigating camera	Tundra	
29		6/25/2023	1	1/0/1900	1/0/1900	M	110	119	10	1	Caribou	2	NA	2	Grazing	Tundra	
29		7/2/2023	1	1/0/1900	1/0/1900	M	22	31	10	1	Caribou	1	NA	1	Walking	Tundra	
29		7/29/2023	1	1/0/1900	1/0/1900	M	1	40	40	4	Grizzly Bear	1	2	3	Investigating camera	Tundra	
29		8/1/2023	1	1/0/1900	1/0/1900	M	4	43	40	4	Grizzly Bear	1	1	2	Investigating camera	Tundra	
29		8/7/2023	1	1/0/1900	1/0/1900	M	13	42	30	3	Caribou	1	NA	1	Grazing	Tundra	
30		5/27/2023	1	1/0/1900	1/0/1900	M	34	43	10	1	Red Fox	1	NA	1	Walking	Tundra	
30		5/28/2023	1	1/0/1900	1/0/1900	M	44	53	10	1	Canada Goose	4	NA	4	Grazing	Tundra	
30		6/27/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
30		7/7/2023	1	1/0/1900	1/0/1900	M	1	80	80	8	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
30		7/16/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Running	Tundra	
30		7/17/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Fox	1	NA	1	Running	Tundra	
30		8/6/2023	1	1/0/1900	1/0/1900	M	1	110	110	11	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
30		8/21/2023	1	1/0/1900	1/0/1900	M	1	40	40	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
30		8/25/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Grazing	Tundra	
32		6/2/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Bird	1	NA	1	Flying	Tundra	Not sure what bird is present, could also be an insect
32		6/8/2023	1	1/0/1900	1/0/1900	M	10	19	10	1	Caribou	2	NA	2	Grazing	Tundra	
32		6/9/2023	1	1/0/1900	1/0/1900	M	20	29	10	1	Caribou	1	NA	1	Walking	Tundra	
32		6/14/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	2	NA	2	Grazing	Tundra	
32		6/18/2023	1	1/0/1900	1/0/1900	M	76	85	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
32		6/29/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
32		6/29/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
32		6/30/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Running	Tundra	
32		7/4/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
32		7/4/2023	2	1/0/1900	1/0/1900	M	14	23	10	1	Caribou	1	NA	1	Grazing	Tundra	
32		7/8/2023	1	1/0/1900	1/0/1900	M	1	30	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
32		7/10/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
32		7/15/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	

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Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
32		7/15/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
32		7/21/2023	1	1/0/1900	1/0/1900	M	1	20	20	2	Caribou	5	NA	5	Grazing	Tundra	
32		7/21/2023	2	1/0/1900	1/0/1900	M	64	73	10	1	Caribou	1	NA	1	Walking	Tundra	
32		7/23/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
32		7/27/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
32		8/4/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Grazing	Tundra	
32		8/6/2023	1	1/0/1900	1/0/1900	M	1	20	20	2	Caribou	2	NA	2	Grazing	Tundra	
32		8/15/2023	1	1/0/1900	1/0/1900	M	11	80	70	7	Caribou	1	NA	1	Investigating camera	Tundra	
32		8/15/2023	1	1/0/1900	1/0/1900	M	81	90	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
33		6/19/2023	1	1/0/1900	1/0/1900	M	20	29	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
33		6/24/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	2	NA	2	Grazing	Tundra	
33		6/24/2023	2	1/0/1900	1/0/1900	M	21	40	20	2	Caribou	1	1	2	Grazing	Tundra	
33		6/30/2023	1	1/0/1900	1/0/1900	M	1	20	20	2	Caribou	1	NA	1	Walking	Tundra	
33		7/4/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Running	Tundra	
33		7/5/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/5/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/6/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/7/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/7/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/7/2023	3	1/0/1900	1/0/1900	M	21	30	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/7/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/7/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/8/2023	1	1/0/1900	1/0/1900	M	21	30	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/13/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/14/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/16/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/16/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/16/2023	3	1/0/1900	1/0/1900	M	21	30	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/17/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/17/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
33		7/20/2023	1	1/0/1900	1/0/1900	M	1	20	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
33		7/22/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
33		8/5/2023	1	1/0/1900	1/0/1900	M	11	70	60	6	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
33		8/9/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Wolverine	1	NA	1	Walking	Tundra	
33		8/16/2023	1	1/0/1900	1/0/1900	M	9	29	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
33		8/18/2023	1	1/0/1900	1/0/1900	M	1	50	50	5	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
33		8/21/2023	1	1/0/1900	1/0/1900	M	1	30	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
34		6/6/2023	1	1/0/1900	1/0/1900	M	4	33	30	3	Caribou	1	NA	1	Investigating camera	Tundra	
34		7/3/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
34		7/10/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
34		7/15/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
34		7/29/2023	1	1/0/1900	1/0/1900	M	1	30	30	3	Unknown	1	NA	1	Investigating camera	Tundra	Unable to tell what animal is present
34		8/13/2023	NA	1/0/1900		T	6	NA	1	NA	er White-fronted	6	NA	6	Walking	Tundra	
34		8/27/2023	1	1/0/1900	1/0/1900	M	46	65	20	2	Caribou	2	NA	2	Walking	Tundra	
36		6/6/2023	1	1/0/1900	1/0/1900	M	24	33	10	1	Caribou	1	NA	1	Walking	Tundra	
36		6/14/2023	1	1/0/1900	1/0/1900	M	34	73	40	4	Grizzly Bear	2	NA	2	Investigating camera	Tundra	
37		8/25/2023	1	1/0/1900	1/0/1900	M	2294	2383	90	9	Caribou	1	NA	1	Investigating camera	Tundra	
39		6/11/2023	1	1/0/1900	1/0/1900	M	7	26	20	2	Caribou	2	NA	2	Grazing	Tundra	
39		7/29/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Fox	1	NA	1	Running	Tundra	Not 100% sure if it is a fox. It is a fox - DB
40		8/1/2023	1	1/0/1900	1/0/1900	M	14	23	10	1	Caribou	1	NA	1	Running	Tundra	
40		8/29/2023	1	1/0/1900	1/0/1900	M	61	70	10	1	Caribou	1	NA	1	Walking	Tundra	
40		8/31/2023	1	1/0/1900	1/0/1900	M	80	119	40	4	Caribou	1	NA	1	Investigating camera	Tundra	
41		7/5/2023	1	1/0/1900	1/0/1900	M	22	31	10	1	Caribou	1	NA	1	Walking	Tundra	
41		7/27/2023	1	1/0/1900	1/0/1900	M	45	54	10	1	Unknown	1	NA	1	Investigating camera	Tundra	Either a grizzly bear of a caribou
41		8/15/2023	1	1/0/1900	1/0/1900	M	22	41	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
42		6/29/2023	NA	1/0/1900		T	3	NA	1	NA	Caribou	2	NA	2	Walking	Tundra	

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42		7/2/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Running	Tundra	
42		7/3/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Running	Tundra	
42		7/14/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
42		7/14/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
42		7/19/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
42		7/24/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
42		7/24/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
42		7/25/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
42		7/25/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
43		8/4/2023	1	1/0/1900	1/0/1900	M	4	113	110	11	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
43		8/6/2023	1	1/0/1900	1/0/1900	M	1	40	40	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
43		8/22/2023	1	1/0/1900	1/0/1900	M	31	40	10	1	Bird	1	NA	1	Standing	Tripod	Not sure what bird is present
44		6/21/2023	1	1/0/1900	1/0/1900	M	85	124	40	4	Caribou	4	NA	4	Grazing	Tundra	
44		6/27/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
46		7/31/2023	1	1/0/1900	1/0/1900	M	1	40	40	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
46		8/13/2023	1	1/0/1900	1/0/1900	M	1	50	50	5	Caribou	1	NA	1	Investigating camera	Tundra	
46		8/17/2023	1	1/0/1900	1/0/1900	M	10	19	10	1	Caribou	1	NA	1	Walking	Tundra	
46		8/20/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
46		8/21/2023	1	1/0/1900	1/0/1900	M	24	43	20	2	Caribou	2	NA	2	Walking	Tundra	
46		8/26/2023	1	1/0/1900	1/0/1900	M	10	19	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
48		6/11/2023	NA	1/0/1900		T	7	NA	NA	NA	Caribou	4	NA	4	Grazing	Tundra	
48		6/22/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	2	NA	2	Grazing	Tundra	
48		7/1/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/3/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/6/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/7/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/7/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/10/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/12/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Grazing	Tundra	
48		7/13/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/13/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/15/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
48		7/23/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
50		8/30/2023	1	1/0/1900	1/0/1900	M	11	160	150	15	Grizzly Bear	1	2	3	Investigating camera	Tundra	
51		6/10/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Walking	Other	
51		6/22/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Grizzly Bear	1	1	2	Walking	Other	
51		6/27/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		6/29/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		6/20/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		6/30/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Other	
51		6/30/2023	3	1/0/1900	1/0/1900	M	21	30	10	1	Caribou	1	NA	1	Walking	Other	
51		7/7/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Fox	1	NA	1	Running	Other	
51		7/12/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		7/12/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Other	
51		7/17/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		7/21/2023	1	1/0/1900	1/0/1900	M	7	16	10	1	Caribou	1	NA	1	Walking	Other	
51		7/22/2023	2	1/0/1900	1/0/1900	M	220	229	10	1	Caribou	1	NA	1	Walking	Other	
51		7/23/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		7/24/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Red Fox	1	NA	1	Walking	Other	
51		7/24/2023	2	1/0/1900	1/0/1900	M	14	23	10	1	Caribou	1	NA	1	Walking	Other	
51		7/28/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		7/29/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		8/7/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Other	
51		8/7/2023	2	1/0/1900	1/0/1900	M	11	30	20	2	Caribou	1	NA	1	Walking	Other	
51		8/11/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	2	NA	2	Walking	Other	
51		8/19/2023	1	1/0/1900	1/0/1900	M	67	96	30	3	Caribou	2	NA	2	Walking	Other	

APPENDIX F: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, DORIS AND MADRID AREAS, SEPTEMBER 2021 TO AUGUST 2023

Camera No.	Camera Type	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
53		7/15/2023	1	1/0/1900	1/0/1900	M	1	20	20	2	Caribou	1	NA	1	Grazing	Tundra	
53		8/20/2023	1	1/0/1900	1/0/1900	M	47	56	10	1	Bird	1	NA	1	Flying	Tundra	Not sure what bird is present
54		6/2/2023	1	1/0/1900	1/0/1900	M	14	23	10	1	Bird	1	NA	1	Flying	Tundra	Not sure what bird is present
54		6/9/2023	1	1/0/1900	1/0/1900	M	40	69	30	3	Caribou	4	NA	4	Grazing	Tundra	
54		7/13/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Walking	Tundra	
54		7/15/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
54		7/21/2023	1	1/0/1900	1/0/1900	M	1	40	40	4	Common Raven	1	NA	1	Flying	Tundra	
54		8/1/2023	1	1/0/1900	1/0/1900	M	1	10	10	1	Caribou	1	NA	1	Grazing	Tundra	
56		8/8/2023	1	1/0/1900	1/0/1900	M	1	30	30	3	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
57		6/22/2023	1	1/0/1900	1/0/1900	M	1	30	30	3	Caribou	1	NA	1	Investigating camera	Tundra	
58		7/8/2023	1	1/0/1900	1/0/1900	M	32	41	10	1	Caribou	1	NA	1	Walking	Tundra	
58		8/1/2023	1	1/0/1900	1/0/1900	M	4	23	20	2	Caribou	1	NA	1	Grazing	Tundra	
58		8/18/2023	1	1/0/1900	1/0/1900	M	22	41	20	2	Caribou	1	NA	1	Investigating camera	Tundra	
58		8/21/2023	1	1/0/1900	1/0/1900	M	61	70	10	1	Caribou	1	NA	1	Walking	Tundra	
59		6/7/2023	1	1/0/1900	1/0/1900	M	82	121	40	4	Grizzly Bear	1	NA	1	Investigating camera	Tundra	
59		6/11/2023	1	1/0/1900	1/0/1900	M	113	122	10	1	Bird	1	NA	1	Flying	Tundra	Unable to tell what bird is present
59		6/11/2023	2	1/0/1900	1/0/1900	M	139	148	10	1	Bird	1	NA	1	Flying	Tundra	Don't know what bird is present
59		6/14/2023	1	1/0/1900	1/0/1900	M	21	34	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tripod	Unsure of life stage
59		6/16/2023	1	1/0/1900	1/0/1900	M	14	107	100	10	Grizzly Bear	1	NA	1	Investigating camera	Tripod	
59		6/16/2023	2	1/0/1900	1/0/1900	T	124	NA	NA	NA	Grizzly Bear	1	1	2	Walking	Tundra	
59		6/16/2023	3	1/0/1900	1/0/1900	M	125	143	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tripod	
59		6/22/2023	1	1/0/1900	1/0/1900	M	44	51	10	1	Grizzly Bear	1	NA	1	Investigating camera	Tripod	unsure of lifestage
59		6/28/2023	1	1/0/1900		T	20	NA	1	1	Wolverine	1	NA	1	Feeding	Tundra	
59		6/28/2023	2	1/0/1900		M	21	30	10	1	Wolverine	1	NA	1	Feeding	Tundra	
59		7/2/2023	1	1/0/1900	1/0/1900	M	1	1	10	1	Unknown	NA	NA	NA	Flying	Tundra	appears to be an owl, but maybe just a goose.
59		7/10/2023	1	1/0/1900			13	NA	NA	NA	Caribou	1	NA	1	Walking	Tundra	unsure of life stage
59		7/22/2023	1	1/0/1900	1/0/1900	T	8	NA	NA	NA	Caribou	NA	NA	NA	Feeding	Tundra	unable to determine life stage
59		7/24/2023	1	1/0/1900	1/0/1900	T	23	NA	NA	NA	Unknown	NA	NA	NA	Swimming	Lake	unable to discern species or number
59		8/1/2023	1	1/0/1900	1/0/1900	M	52	60	10	1	Unknown	NA	NA	NA	Feeding	Tundra	unsure of species
59		8/5/2023	1	1/0/1900	1/0/1900	T	70	NA	NA	NA	Bird	NA	NA	NA	Sitting	Tundra	one unknown species
60		6/8/2023	1	1/0/1900	1/0/1900	M	20	48	30	3	Caribou	1	NA	1	Feeding	Tundra	
60		6/2/2023	1	1/0/1900	1/0/1900	M	47	54	10	1	Caribou	1	NA	1	Investigating camera	Tundra	
60		7/10/2023	1	1/0/1900	1/0/1900	M	37	46	10	1	Caribou	1	NA	1	Walking	Tundra	unsure of life stage
60		7/11/2023	1	1/0/1900	1/0/1900	M	11	20	10	1	Unknown	NA	NA	NA	Investigating camera	Tripod	unknown species
60		7/14/2023	1	1/0/1900	1/0/1900	M	4	13	10	1	Caribou	1	NA	1	Feeding	Tundra	
60		7/16/2023	1	1/0/1900	1/0/1900	M	1	1	10	1	Caribou	1	NA	1	Investigating camera	Tripod	
60		7/17/2023	2	1/0/1900	1/0/1900	M	11	17	10	1	Caribou	1	NA	1	Running	Tundra	
60		7/24/2023	1	1/0/1900	1/0/1900	M	23	32	10	1	Red Fox	1	NA	1	Walking	Tundra	
60		7/27/2023	1	1/0/1900	1/0/1900	M	3	15	20	2	Caribou	1	NA	1	Feeding	Tundra	
60		7/27/2023	2	1/0/1900	1/0/1900	M	23	32	10	1	Caribou	1	NA	1	Walking	Tundra	
60		8/4/2023	1	1/0/1900	1/0/1900	M	10	10	10	1	Caribou	1	NA	1	Walking	Tundra	enters frame at last photo of first trigger.
60		8/4/2023	2	1/0/1900	1/0/1900	M	11	20	10	1	Caribou	1	NA	1	Walking	Tundra	
60		8/12/2023	1	1/0/1900	1/0/1900	M	10	23	20	2	Caribou	1	NA	1	Investigating camera	Tripod	
60		8/15/2023	2	1/0/1900	1/0/1900	M	43	101	60	6	Grizzly Bear	1	1	3	Investigating camera	Tripod	
60		8/16/2023	3	1/0/1900	1/0/1900	M	105	154	50	5	Grizzly Bear	2	NA	2	Investigating camera	Tripod	
60		8/25/2023	4	1/0/1900	1/0/1900	M	179	198	20	2	Grizzly Bear	1	NA	1	Investigating camera	Tripod	
60		8/27/2023	5	1/0/1900	1/0/1900	M	208	218	20	2	Caribou	1	NA	1	Walking	Tundra	

APPENDIX G WILDLIFE INTERACTIONS, INCIDENTS, AND MORTALITIES RECORDED AT THE PROJECT IN 2023

APPENDIX G: WILDLIFE INTERACTIONS, INCIDENTS, AND MORTALITIES RECORDED AT THE PROJECT IN 2023

Incident Date (DD/MM/YY)	Incident Type	Species	Event Description	Immediate Response Actions	Corrective/ Preventative Actions Generated	External Regulatory Bodies Notified
05/20/2023	Wildlife Mortality	Wolverine	Only head remained. Based on location away from infrastructure, cause of death is natural cause. Report provided to authorities.	Carcass left for natural decomposition.	N/A	N/A
05/28/2023	Wildlife Interaction	Grizzly Bear	A single adult was diverted using a drone into the tundra away from the road.	Diverted from area with drone.	N/A	N/A
05/29/2023	Wildlife Interaction	Grizzly Bear	An individual entered the waste sorting area in Robert's Bay throughout the night and tore apart the waste receptacles.	Waste was cleaned up and waste management protocols were investigated.	N/A	N/A
06/05/2023	Wildlife Interaction	Grizzly Bear	Adult female and cub was diverted by drone from the airport towards Doris Mountain.	Diverted from area with drone.	NA	NA
06/16/2023	Wildlife Interaction	Grizzly Bear	One adult female and one cub were diverted for six minutes from the site footprint using a helicopter.	Diverted from area with helicopter.	N/A	N/A
06/26/2023	Wildlife Interaction	Grizzly Bear	One adult female and three cubs were diverted using a drone from the camp footprint towards Madrid area.	Diverted from area with drone.	N/A	N/A
07/08/2023	Wildlife Interaction	Grizzly Bear	One adult female and one cub diverted by helicopter two times towards the Doris Bridge on the TLR.	Diverted from area with helicopter.	N/A	N/A
07/09/2023	Wildlife Interaction	Unspecified Ptarmigan species	A single adult flushed from nest by site personnel. Nest had four eggs inside.	Personnel left area immediately.	N/A	N/A
07/19/2023	Wildlife Interaction	Caribou	Caribou on airstrip prior to plane arrival.	Diverted from area with pickup.	NA	NA
11/18/2023	Wildlife Mortality	Unspecified Shearwater Species	Individual found on site unable to move, the cause of death is believed to be of natural causes as the individual was located immobile and later found deceased and scavenged by ravens.	Carcass removed from site and left for natural decomposition.	N/A	N/A
11/25/2023	Wildlife Mortality	Red Fox	One of the foxes was dead and being carried by the other. Dropped the carcass on the camp road where it was seen. Fox returned a few minutes later and picked up the carcass and ran off into the tundra.	Carcass left for natural decomposition.	N/A	N/A

APPENDIX H HOPE BAY INCIDENTAL WILDLIFE OBSERVATIONS 2023

APPENDIX H: HOPE BAY INCIDENTAL WILDLIFE OBSERVATIONS 2023

No.	Date (DD-MM-YYYY)	Sited From (ground, air)	Species Name (e.g. caribou)	Species Description	Total # Inds.	# A	# M	# F	# Y	# U	Activity	Location Description (e.g. east shore of Patch Lake)	Habitat Type	Comments (behavior: e.g., observed nest, chicks, den etc.)
1	1/1/2023	Ground	Caribou		9					9	Bedding, feeding	In TIA, across from Powder Mag	Tundra/Water	
2	1/2/2023	Ground	Muskox		25					25	Resting	Between km 7 and 8, Windy Lake, west side on slope	Tundra/Water	
3	1/8/2023	Ground	Ptarmigan		7					7	Walking	Environment lab drive way	Site	
4	1/10/2023	Ground	Ptarmigan		1					1	Walking	near old core shack at road	Site	
5	1/15/2023	Ground	Arctic Hare		1	1					Resting	TIA near Aqua Dam	Tundra	
6	1/15/2023	Ground	Arctic Fox		1						Scrounging	Near BBQ at kitchen	Site	
7	1/20/2023	Ground	Arctic Hare		1	1					Walking	Km 7 Windy Road	Tundra	
8	2/11/2023	Ground	Red Fox		1						Hunting/scrounging	New WTP location, at office shack	Tundra	
9	2/12/2023	Ground	Ptarmigan		5					5	Flying	Km 6, Windy Road	Tundra	
10	2/13/2023	Ground	Red Fox		1					1	Walking	Km 6 Winy Road	Tundra	
11	2/13/2023	Ground	Caribou		7					7	Feeding, resting	Doris Lake, east side, near Doris Creek	Water/Tundra	
12	2/15/2023	Ground	Ptarmigan		5					5	Walking, resting, flying	Environmental Lab	Site	
13	2/16/2023	Ground	Ptarmigan		3					2	Walking	Environmental Lab	Site	
14	2/22/2023	Ground	Red Fox		1					1	Walking	Walking on roof of main camp	Site	
15	2/23/2023	Ground	Moose		3			1	2		Walking	Km 4 Windy Road	Tundra	
16	2/26/2023	Ground	Ptarmigan		21					21	Walking	Behind Nuna Shop at Windy	Tundra	
17	2/27/2023	Ground	Ptarmigan		1					1	Flying	Roadway behind camp	Site	
18	3/3/2023	Ground	Ptarmigan		12					12	Walking	Roadway by Geotech	Site	Crossing the road towards Doris Mountain
19	3/4/2023	Ground	Ptarmigan		10					10	Walking	Roadway beside Enviro Lab	Site	Crossing the road
20	3/4/2023	Ground	Red Fox	Vulpes, Vulpes	1					1	Hunting	KM 3 Windy road	Tundra	Hunting 500 meters off the east side
21	3/23/2023	Ground	Red Fox		1	1					Hunting digging	Km 6 Windy Road	Tundra	
22	3/23/2023	Ground	Ptarmigan		1						Walking	old core shack crossing camp road	Site	
23	3/24/2023	Ground	Red Fox		1	1					Walking	south of Madrid CWP	Tundra	
24	3/25/2023	Ground	Red Fox		1						Walking	Patch Lake	Lake	
25	3/26/2023	Ground	Ptarmigan		7					7	Walking	coreshack, crossing Windy Road	Site	
26	3/26/2023	Ground	Red Fox		2		1	1			Fornicating	Nuna Shop	Site	
27	3/26/2023	Ground	Red Fox		1					1	Walking	on Diversion berm heading west	Site	
28	3/27/2023	Ground	Wolverine		1					1	Bounding	Heading east from Windy Road KM 5	Tundra	
29	3/27/2023	Ground	Moose		1			1			Walking	Shore of Spider lake	Tundra	This was observed during the Fat truck recovery at Boston
30	3/31/2023	Ground	Ptarmigan		8					8	Walking, resting, preening	Environmental Lab	Site	

No.	Date (DD-MM-YYYY)	Sited From (ground, air)	Species Name (e.g. caribou)	Species Description	Total # Inds.	# A	# M	# F	# Y	# U	Activity	Location Description (e.g. east shore of Patch Lake)	Habitat Type	Comments (behavior: e.g., observed nest, chicks, den etc.)
31	4/1/2023	Ground	Red fox		1					1	Walking	Rob's Bay	Tundra	
32	4/1/2023	Ground	Red Fox		1					1	Walking	km 6.5 Windy road	Tundra	Walking along of the road
33	4/2/2023	Ground	Red Fox		1					1	Walking	Mine Dry entrance	Site	
34	4/2/2023	Ground	Ptarmigan		5					5	Flying/perched	New WTP location	Site	
35	4/7/2023	Ground	Eagle		2					2	Soaring	on East side of Doris Mountain	Site	No discernable colouring due to altitude of flight
36	4/11/2023	Ground	Red Fox		1					1	Walking	roof of main camp	Site	
37	4/11/2023	Ground	Ptarmigan		9					9	Walking	Patch Lake	Lake	
38	4/12/2023	Ground	Eagle		1				1		Flying	From east, heading past helipad	Site	believed to be juvenile golden eagle
39	4/12/2023	Ground	Cross Fox		1					1	Walking	East side Windy Road, near KM4	Tundra	
40	4/14/2023	Ground	Caribou		7					7	Walking	Proximate to Aqua Dam headed towards the EWTP	Lake	Crossing the TIA
41	4/27/2023	Ground	Arctic Hare	Lepus Articus	1					1	Resting	Environmental Lab	Site	Resting
42	4/27/2023	Ground	Arctic Hare	Lepus Articus	1					1	Resting	Environmental Office	Site	Resting
43	5/4/2023	Ground	Gull		1					1	Flying	Quarry 2	Site	
44	5/4/2023	Ground	Ground squirrel		1					1	Walking	Patch Lake	Lake	
45	5/5/2023	Ground	Snowy owl		1					1	Flying	KM2 Windy lake	Tundra	
46	5/6/2023	Ground	Geese		6					6	Flying	West of main camp	Tundra	No discernable colouring due to altitude of flight
47	5/6/2023	Ground	Goose		1					1	Flying	West of main camp	Tundra	No discernable colouring due to altitude of flight
48	5/6/2023	Ground	American robin		1					1	Flying	Doris Creek bridge	Tundra	
49	5/7/2023	Ground	Grizzly bear		1	1				1	Walking	Patch lake, close to Rig 3	Lake	
50	5/8/2023	Ground	Ground squirrel		1					1	Running/walking	North Dam	Tundra	
51	5/9/2023	Ground	Sandhill Crane		6					6	Walking	West side of airstrip	Tundra	
52	5/10/2023	Ground	Snow bunting		12					12	Flying	Km 4, Windy Road	Tundra	
53	5/10/2023	Ground	Arctic fox		1					1	Deceased	found beside rear door to Kitchen on top of snow bank	Site	
54	5/20/2023	Ground	Grizzly bear		2	1			1		Walking	200 meters south of the south dam walking slowly west	tundra	
55	5/22/2023	Ground	Grizzly bear		2	1		1	1		Walking	At KM 2 on Windy Road crossing heading west walking calmly @11:45	tundra	
56	5/23/2023	Ground	Grizzly bear		1						Walking	Windy pumphouse walking west	Lake	seen at 9:30
57	5/23/2023	Ground	Geese		2					2	Swimming	Behind batch plant	tundra	Reported, unidentified geese sized birds
58	5/23/2023	Ground	Sandhill Crane		1					1+	Feeding	Km 4 Windy Road	Tundra	Flock reported but no confirmed number.
59	5/25/2023	Air	Muskox		6	6				6	Feeding	While exploring ELU area	Tundra	Feeding and started running when the helicopter approached.
60	6/1/2023	Ground / air	Grizzly bear		1					1	Foraging	Around Madrid south beside drill	Tundra	Feeding and started running when the helicopter approached - but no deterrences

No.	Date (DD-MM-YYYY)	Sited From (ground, air)	Species Name (e.g. caribou)	Species Description	Total # Inds.	# A	# M	# F	# Y	# U	Activity	Location Description (e.g. east shore of Patch Lake)	Habitat Type	Comments (behavior: e.g., observed nest, chicks, den etc.)
61	6/3/2023	Ground	Caribou		3					3	Grazing	200m off west side of Windy road at KM 7	Tundra	3 Caribou reported grazing off the road no impact to traffic
62	6/3/2023	Ground	Caribou		3	2			1		Grazing	few hundred m off the Windy road at km 8.	Tundra	3 Caribou reported grazing off the road no impact to traffic,
63	6/4/2023	Ground	Musk OX		18						Grazing	Dust fall station TIA 3	Tundra	Grazing one albino?
64	6/4/2023	Ground	Grizzly bear		1					1	Hunting	KM4.5 on Windy in the rock cut	Tundra	Looking for bird eggs in the cliffs.
65	6/4/2023	Ground	Arctic Hare	Lepus Articus	2					2	Frolicking	Running over the road on TLR	Tundra/Site	Chasing each other...
66	6/5/2023	Ground	Caribou		2			2			Grazing	Few hundred meters west of km 8 on Windy road	Tundra	
67	6/7/2023	Ground	Wolf		1	1					Walking	Blindhill 1.5 KM on Windy Road, walking towards Doris Lake	Tundra	
68	6/7/2023	Ground	Caribou		1	1					Walking	Km 8 Windy Road	Tundra	
69	6/7/2023	Ground	Caribou		1	1					Walking	Km 2 East side Windy Road (50 yards from road)	Tundra	
70	6/11/2023	Air	Grizzly bear		2			1	1		Walking	West side of Windy lake	Tundra	Walking. Exploration team changed their plans to avoid interacting with them.
71	6/13/2023	Ground	Caribou		3		2	1			Resting	Km3 on east side of Windy Road	Tundra	Resting. More than 100m off the road
72	6/13/2023	Ground	Caribou		1			1			Running/walking	Km 5 on west side of windy road. Headed north	Tundra	More than 100m off the road
73	6/13/2023	Ground	Caribou		3		2	1			Walking	Between km 5 and 6 on windy road.	Site	
74	6/16/2023	Ground	Red Fox		1	1					Walking	Next to the core shack	Site	
75	6/16/2023	Ground	Caribou		1	1					Grazing	km3 on windy road. 100m off the road	Tundra	
76	6/17/2023	Ground	Peregrine falcon		1					1	Flying/squawking	Doris mountain area	Site	
77	6/17/2023	Ground	Arctic hare		1					1	Hopping/resting	behind camp, by ENV shack	Site	
78	6/18/2023	Air	Swans		2					2	Resting	Directly east of Airstrip on lake shoreline	Tundra	
79	6/19/2023	Ground	Eagle		1					1	Soaring	Madrid area	Tundra	
80	6/19/2023	Ground	American robin		1					1	Singing	near powerhouse	Site	
81	6/20/23	Ground	Caribou		1					1	Walking	Windy Rd Km 3	Tundra	
82	6/21/2023	Ground	Grizzly bear		2	1			1		Walking	East of Vent Raise	Site	
83	6/21/2023	Air	Caribou		16					16	Walking	East of Windy Road	Tundra	
84	6/21/23	Ground	Red Fox		1	1					Running/ walking	Running over the road on TLR heading west	Site	
85	6/21/23	Ground	Caribou		16					16	Foraging/ walking	South of Madrid CWP	Tundra	Some walking west, others just grazing
86	6/22/2023	Ground	Caribou		2					2	Walking	~200m west of Windy Road Km3	Tundra	
87	6/22/2023	Ground	Arctic hare		1					1	Hopping/sitting	Rob's Bay laydown	Site	
88	6/22/2023	Ground	Grizzly bear		1					1	Walking	Km3 Windy road, west side	Tundra	
89	6/22/2023	Ground	Caribou		7					7	Walking	west of Doris Mountain	Tundra	
90	6/22/2023	Ground	Canada goose		1					1	Foraging	Km 5 Windy Road, West side	Tundra	
91	6/22/23	Ground	Grizzly bear		1	1					Walking	East side Windy Road, between km 6 and 7	Tundra	
92	6/22/23	Ground	Caribou		7					7	Walking	West side Windy Road, between km 5 and 6	Tundra	

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93	6/23/2023	Ground	Caribou		3					3	Foraging/ walking	KM 3 Windy road	Tundra	
94	6/23/2023	Ground	Caribou		6					6	Foraging/ walking	Km 7 Windy Road	Tundra	
95	6/23/2023	Ground	Caribou		1					1	Walking	Site road, near LRP	Site	
96	6/23/23	Ground	Caribou		2					2	Grazing	Rob's Bay, north of command center	Site	
97	6/23/23	Ground	Caribou		5					5	Grazing/walking	West side of camp road across from Geotech laydown	Site	
98	6/24/23	Ground	Grizzly bear		1	1					Walking	200 yards West side Windy Road, near km 7	Tundra	
99	6/26/23	Ground	Caribou		6	6					Walking	By explosives storage on TLR heading south	Site	One caribou stopped to graze away from the rest of the herd
100	6/26/23	Ground	Caribou		3	2	1	1	1		Walking/foraging	south of Doris camp, north of Doris Lake	Site	Heading towards TLR
101	6/26/23	Ground	Grizzly bear		1					1	Walking/foraging	North east of camp at Geology prospector location	Tundra	Called in on #41 - helicopter dispatched and field crew removed. Second crew in vicinity was alerted to the bear presence over the radio as a warning to keep a look out
102	6/26/23	Ground	Swan		1					1	Swimming	Patch Lake	Lake	
103	6/26/23	Ground	Caribou		1				1		Walking	Windy Road, Km 1 on road heading north	Roadway	
104	6/27/23	Ground	Caribou		1	1					Walking/foraging	By the Doris portal	site	
105	6/27/23	Ground	Caribou		1	1					Walking/foraging	West of Windy Road near Blind hill km 1.5 south	Tunda	
106	6/27/23	Ground	Sandhill Crane		1	1					Walking	East side of Windy Road near km 5	Tundra	
107	6/27/23	Ground	Grizzly bear		1	1					Walking	Near Windy Pumphouse heading North	Site	Gone before wildlife response team arrived
108	6/27/23	Ground	Caribou		2					2	Walking/running	on camp road by mobile shop moving toward helipad	Site	
109	6/27/23	Ground	Caribou		1					1	Walking	TLR Road	Site	
110	6/27/23	Ground	Grizzly bear		1	1					Walking	On Windy road heading west near km 7	Site	
111	6/28/23	Ground	Grizzly bear		1					1	Walking/running	Windy Road Km6/7 heading west	Tundra	
112	6/28/23	Ground	Caribou		1					1	Grazing/walking	South Apron	Site	
113	6/28/23	Ground	Caribou		2	2					Walking	Blindhill 1.5 KM on Windy Road, walking towards Doris Lake	Tundra	
114	6/29/23	Ground	Caribou		4					4	Walking, grazing	Mobile shop area, Main camp road and associated tundra	Site	
115	6/29/23	Ground	Sandhill Crane		2					2	Standing, grazing	Windy Rd Km 4, east side	Tundra	
116	6/29/23	Ground	Caribou		1	1					Walking	Doris Bridge on TLR	Site	
117	6/29/23	Ground	Caribou		3	3					Walking	Near water treatment plant heading south towards helipad	Site	
118	6/30/23	Ground	Caribou		1					1	Walking	TIA Interim Dike	Site	
119	7/1/23	Ground	Caribou		1	1					Walking	Madrid area	Site	Walking south along road
120	7/1/23	Ground	Caribou		1	1					Walking	Windy road near km 3, heading west	Tundra	
121	7/1/23	Ground	Caribou		1	1					Walking	Main camp road near landfarm, heading west	Site	

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122	7/1/23	Ground	Caribou		1		1				Grazing/walking	South end of the airstrip	Tundra	
123	7/1/23	Ground	Caribou		1	1					Resting	South of the Multi tank farm in Robs Bay	Site	
124	7/1/23	Ground	Arctic hare		1					1	Hopping	behind upper UG laydown	Site	
125	7/1/23	Ground	Peregrine falcon		1					1	Flying/perched	west of main camp road across from ENV lab	Site	
126	7/1/23	Ground	Caribou		1		1				Resting	Camp between A-B wind	Site	Resting in the shade
127	7/2/23	Ground	Caribou		1					1	Walking	North end of air strip	Site	
128	7/2/23	Ground	Caribou		1		1				Running	Bling corner TIA	Site	
129	7/3/23	Ground	Caribou		1	1					Walking	Walking south on TLR	Site	
130	7/3/23	Ground	Grizzly bear		2	1		1	1		Resting	Laying down by Doris Bridge	Site	
131	7/3/23	Ground	Caribou		1					1	Standing	Vent Raise	Site	
132	7/3/23	Ground	Caribou		2					1	Walking	Mine laydown	Site	
133	7/3/23	Ground	Arctic hare		1					1	Bounding	West of Rob's Bay multi tank farm	Site	
134	7/4/23	Ground	Grizzly bear		2			1	1		Foraging	Doris Bridge on TLR	Tundra	Called few times during the days. No deterrence required.
135	7/5/23	Ground	Caribou		1	1					Resting	Doris fuel farm	Site	
136	7/5/23	Ground	Caribou		1	1					Walking	Doris fuel farm	Site	
137	7/5/23	Ground	Caribou		1	1					Walking	North dam	Site	Heading west
138	7/5/23	Ground	Grizzly bear		3	1			2		Walking	Rob's Bay, near discharge jetty	Site	Walking around
139	7/6/23	Ground	Caribou		1	1	1				Grazing/walking	Near Geotech laydown, on east side of road	Site	
140	7/6/23	Ground	Caribou		1						Eating	13U 432900 7558713	Tundra	Feeding about 50ft from road
141	7/6/23	Ground	Caribou		1						Eating	432869 755313	Tundra	Caribou about 400ft from the road
142	7/6/23	Ground	Caribou		1						Eating	432733 7555795	Tundra	300ft from the road
143	7/6/23	Ground	SandHill crane		4						Walking	432702 7555675	Tundra	Mated pair with 2 young
144	7/6/23	Ground	Siksik		1						Standing	432967 7551962	Site	windy Road
145	7/7/23	Ground	Caribou		1	1					Grazing	North of diversion berm	Tundra	
146	7/8/23	Ground	Sandhill Crane		2	2	1	1			Grazing	Windy road KM 4	Wetland	
147	7/8/23	Ground	Sandhill Crane		2	2	1	1			Walking	Windy Lake	tundra	
148	7/8/23	Ground	Caribou		1					1	Grazing	South of site	Tundra	
149	7/8/23	Ground	Caribou		1	1	1				Grazing	Drill south of Madrid	Tundra	
150	7/9/23	Ground	Caribou		1				1		Walking	Close to warehouse area on Doris Camp	Site	
151	7/9/23	Ground	Caribou		1						Eating	Tundra	Tundra	
152	7/9/23	Ground	Caribou		1	1	1				Walking	Main road of camp	Roadway	Caribou walking North down main road
153	7/9/23	Ground	Caribou		1	1	1				Eating	Tundra	Tundra	
154	7/9/23	Air	Golden Eagle		1					1	Flying	Tundra	Tundra	
155	7/10/23	Ground	Caribou		2					2	Grazing/walking	Around Doris camp	Site	

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156	7/10/23	Ground	Caribou		2		1	1	2		Grazing	10 km south of Madrid	Tundra	During archeology work
157	7/10/23	Ground	Muskox		1					1	Walking	10 km south of Madrid	Tundra	During archeology work
158	7/10/23	Ground	SandHill crane		4	2	1	1	2		Walking	Km 4 Windy Road	Tundra	
159	7/10/23	Ground	Caribou		3						Hanging out	Seacan of tires	Site	Caribous hanging out on a seacan of tires beside the old coreshack
160	7/10/23	Ground	Caribou		2						Walking	Madrid pit	Tundra	2 caribous walking on Madrid pit
161	7/10/23	Ground	Caribou		1						Running	Tundra	Tundra	
162	7/10/23	Ground	Caribou		2					2	Eating	Tundra	Tundra	
163	7/10/23	Ground	Caribou		2					2	Walking	West of core shack	Site	
164	7/11/23	Ground	Caribou		1	1					Resting	On Madrid CWP	Site	
165	7/11/23	Ground	Caribou		1					1	Walking	In camp near Rec room door	Site	
166	7/11/23	Ground	Caribou		1	1					Walking	In camp near ENVR Lab	Site	Went behind seacans
167	7/12/23	Ground	Muskox		1					1	Walking	Windy Road	Tundra	
168	7/12/23	Ground	Caribou		2				2	2	Running	Tundra	Tundra	
169	7/12/23	Ground	Caribou		2		2		2		Walking	On the road behind the camp	Site	
170	7/12/23	Ground	Caribou		3						Eating/walking	unknown	Tundra/unvegetated	3 caribou meaning around tundra s+wy mine.t also in the mine area,
171	7/12/23	Ground	Arctic Hare		1						Hiding	Robs Bay	Site	
172	7/13/23	Ground	Caribou		2				2		Walking/resting	North end of air strip	Site/Tundra	Left over the North rock cut prior to plane landing. Did not require to be diverted but were monitored from trucks
173	7/13/23	Ground	Caribou	Looks like a deer	1		1				Running	Geotech shop area	Roadway	
174	7/14/23	Ground	Caribou		1				1		Grazing/hanging out	North Dam	Site/Tundra	
175	7/14/23	Ground	Grizzly Bear		2	1		1	1		Roaming	KM 7.25 windy road	Tundra	
176	7/14/23	Ground	Muskox		13						Eating	North East of windy lake	Shoreline	
177	7/14/23	Ground	Caribou		1						Running	East side of windy road 1.5km	Tundra	
178	7/14/23	Ground	Arctic Hare	Grey/ Bram with white feet	1						Walking	East side of mine near access road to parking lot	Site	
179	7/14/23	Ground	Caribou		1						Walking	Coreshack/Helipad	Site	Caribou walked from helicopter to coreshack entrance @ 6:40pm
180	7/14/23	Ground	Muskox		10+						Eating	433825 7551072	Tundra	Herd located around 434057 7550979
181	7/14/23	Ground	Caribou		1						Standing	Tire area next to old coreshack	site	
182	7/14/23	Ground	Caribou		1						Laying down	Madrid tower Road	Site	
183	7/14/23	Ground	Siksik		1						Eating	433107 7549824	Tundra/Shrubs	
184	7/14/23	ground	Caribou		1						Walking	432789 7558382	Tundra	
185	7/14/23	Ground	Grizzly Bear		2						Walking	432797 7552217	Tundra	

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186	7/14/23	Ground	Caribou		1						Walking	432929 7559005	Site	Camp cold coreshack yard
187	7/15/23	Ground	Caribou		2					2	Grazing	Off the helipad in the tundra	Tundra	
188	7/15/23	Ground	Ravens		4					4	Resting	At the powerhouse	Site	
189	7/15/23	Ground	Caribou		1				1	1	Walking	On the road at the vent raise. Heading east	Site	
190	7/15/23	Ground	Arctic Hare		1						Running	Between Doris camp and Quarry	Site	
191	7/15/23	Ground	Caribou		2						Walking	Tundra	Tundra	
192	7/15/23	Ground	Caribou	Dark grey fur	1						Walking	by mech slope on mine dry road	Site	Walking in road from mech shop to coreshack intersection
193	7/15/23	Ground	Caribou		1						Walking	432662 7557128	Roadway	
194	7/15/23	Ground	Siksik		1						Walking	433306 7550583	Roadway	
195	7/15/23	Ground	Caribou		1						Eating	432602 7555351	Tundra	
196	7/15/23	Ground	Muskox		10+						Eating/walking	434387 7551614	Tundra	
197	7/15/23	Ground	Caribou		2						Eating	433034 7558855	Tundra	
198	7/15/23	Ground	Ermine		1	1				1	Walking	Core Pad Quarry 2	Site	
199	7/15/23	Ground	Caribou		1		1				Eating	Mine access road by heli pad	Tundra/Site	Travelle between North shore of Doris lake and the heli pad
200	7/15/23	Ground	Caribou		1	1	1				Sleeping	Old shop in windy camp	Site	Large bull
201	7/15/23	Ground	Caribou		1					1	Drinking	Along Windy road near km 3 bridge	Open water	
202	7/15/23	Ground	Caribou		1	1	1				Eating	km 1,5 on Windy road	Tundra	
203	7/16/23	Ground	Muskox		5					5	Walking	East of km 5	Tundra	Spotted by archaeology crew in the field
204	7/16/23	Ground	Caribou		1					1	Walking	East of km 5	Tundra	Spotted by archaeology crew in the field
205	7/16/23	Ground	Hare		1					1	Running	Disappeared under G wing	Site	
206	7/17/23	Ground	Caribou		2	2					Walking	On road next to WTP, heading North	Site	
207	7/17/23	Ground	Ravens		7	7					Eating/walking	Mechanic shop	Site	Seen multiple times in the day
208	7/17/23	Air	Muskox		6					6	Standing	1 km East of Windy road at km 5	Tundra	
209	7/17/23	Ground	Caribou		1	1	1				Walking	Mechanic shop	Site	Seemed to be limping
210	7/17/23	Ground	Caribou		2		1	1			Walking/eating	Mine access road. Walking on heli pad and north of Doris Lake	Tundra/Site	
211	7/17/23	Ground	Caribou		1					1	Walking	On tundra near the core shack receiving area	Tundra	
212	7/17/23	Ground	Caribou		1					1	Walking	Between the geotech laydown and camp	Tundra	
213	7/17/23	Ground	Caribou		1					1	Eating	Across the road from the geotech laydown	Tundra	
214	7/18/23	Ground	Caribou		2					2	Walking	On camp road heading north toward batch plant	Site	
215	7/18/23	Ground	Caribou		4					4	Walking	Heading North along the camp road at the geotech shop	Site	
216	7/18/23	Ground	Caribou		1					1	Walking		Site	Old coreshack yard. Seen to be limping.
217	7/18/23	Ground	Ducks		30					30	Swimming	Near drill rig #1 on the SW side of Patch Lake	Open water	

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218	7/18/23	Ground	Caribou		1	1	1				Walking	Between UG parking and the mill	Site	
219	7/19/23	Ground	Caribou		2	2	1			1	Walking	Site road West of camp, walking North	Site	
220	7/19/23	Ground	Caribou		1	1	1				Walking/resting	Geotech laydown/URP	Site	
221	7/19/23	Ground	Caribou		1	1	1				Resting	Parking space in between the camp entrance and the public phone booths	Site	
222	7/19/23	Ground	Ptarmigan		2	1			1		Walking/resting	Doris Creek, approx. 20 m south of the Hydro station	Site	
223	7/20/23	Ground	Caribou		1	1				1	Walking/resting	North of the stockpile, between the camp pad and Doris	Tundra	
224	7/20/23	Ground	Caribou		1					1	Eating	Between km5 and 6 on Windy road, about 1000 ft West.	Tundra	
225	7/20/23	Air	Grizzly Bear		2	1		1	1		Walking	HB25 on the river - Quantec site	Tundra	On the shoreline of the river.
226	7/20/23	Ground	Caribou		2					2	Walking/eating	Windy Lake outflow	Tundra	One was on the West side of the river and the other on the east side. Approx 500m out form the river in both cases
227	7/21/23	Ground	Muskox		1					1	Walking	15km South of Doris Camp	Tundra	Lone muskox walking across tundra
228	7/21/23	Ground	Wolf		1	1					Walking	Walking close to Rig 4, spotted by drillers at night	Tundra	
229	7/22/23	Ground	Caribou		1	1				1	Walking	Km 5 on windy road, 10 m off the road surface on the West wide	Tundra	
230	7/22/23	Ground	Seal		1					1	Resting	At the beach on a small island by Discovery	Shoreline	
231	7/24/23	Ground	Caribou		1	1	1				Walking	Ogama lake outflow hydro location	Tundra	
232	7/24/23	Ground	Golden eagle		1	1				1	Flying	Ogama lake outflow hydro location	Tundra	
233	7/25/23	Ground	Red Fox		1	1				1	Walking	Walking outside the front of camp in between the cabins	Site	
234	7/25/23	Ground	Red Fox		1	1				1	Walking	Walking around the mine dry area	Site	
235	7/26/23	Ground	Red Fox		1	1				1	Walking	Walking from the WH to the coreshack	Site	
236	7/26/23	Ground	Caribou		1					1	Walking	mobile shop area	Site	
237	7/26/23	Air	Swan		2					2	Swimming	On lake just south of Windy Lake	Open water	
238	7/26/23	Ground	caribou		1	1						Doris Camp	Site	
239	7/27/23	Ground	Caribou		3	2	1	1	1		Walking	Heading west on TLR into underground laydown	Site	
240	7/27/23	Ground	Caribou		1	1				1	Walking	On TLR heading south near Interim Dike	Site	
241	7/27/23	Ground	Eagle		1	1				1	Feeding/soaring	Robert's Lake Outflow	Tundra	
242	7/27/23	Ground	caribou		1	1						Robert's Bay	Site	
243	7/28/23	Ground	Caribou		1	1				1	Walking	Front of camp between camp and the cabins	Site	
244	7/28/23	Ground	SandHill crane		3					3	Feeding, standing	Windy Rd KM6	Tundra	
245	7/28/23	Ground	Ground squirrel		1					1	Running	Geotech laydown by smoke shack	Site	
246	7/28/23	Ground	Arctic Hare		1				1		Bounding	start of TLR up to lower UG laydown	Site	

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247	7/28/23	Ground	Caribou		1	1					Standing	South Apron	Site	
248	7/28/23	Ground	Caribou		1	1					Standing	Warehouse laydown	Site	
249	7/28/23	Ground	Caribou		4	4					Grazing/walking	East side TLR	Tundra	
250	7/28/23	Ground	Caribou		1	1					Walking	In camp southeast of powerhouse	Site	
251	7/28/23	Ground	Caribou		1	1					Grazing	west of Doris Mountain, just along road	Site	
252	7/28/23	Ground	Caribou		1					1	Walking	Walking along ridge west of TLR and Vent Raise	Site	
253	7/28/23	Ground	Caribou		1					1	Eating	West of the helipad at Doris	Site	
254	7/28/23	Ground	caribou		3	3						Windy Road	Tundra	
255	7/29/23	Ground	Caribou		2	2	2				Eating	200m South-West of the vent raise along Doris mountain	Tundra	
256	7/29/23	Ground	Caribou		1	1	1				Walking	Km2 Windy road	Tundra	
257	7/29/23	Ground	Caribou		1	1		1			Standing	Close to communication tower at Madrid	Tundra	
258	7/29/23	Ground	Ptarmigan		9	1			8		Walking	West side of TLR on way to Powder Mag	Tundra	
259	7/29/23	Ground	Canada goose		1					1	Feeding	TIA, west side	Tundra/Site	
260	7/29/23	Ground	Song bird		2					2	Deceased	Madrid sump 2	Site	Unable to identify species of bird
261	7/29/23	Ground	Caribou	Brown with antlers	1	1	1				Standing	Resting in the shade beneath the crusher in Quarry 2	Site	
262	7/29/23	Ground	caribou		3	3						Windy Road	Tundra	
263	7/30/23	Ground	Caribou		1	1				1	Walking	At windy Camp	Tundra/Site	
264	7/30/23	Ground	Caribou		1				1	1	Walking	At Madrid waste rock storage	Tundra/Site	
265	7/30/23	Ground	Caribou		3					3	Walking	At the Rob's Bay tank farm	Site	
266	7/30/23	Ground	Bald eagle		1					1	Feeding/soaring	Robert's Lake Outflow	Tundra	
267	7/30/23	Ground	caribou		1				1			Madrid rock dump	Site	Lone calf laying down in dump area where helicopters may be dumping loads (informed Agnico environmental team), after continuing invasive plant surveys, later observed the calf reunited with its mother on Windy Road
268	7/30/23	Ground	caribou		2			1	1			road towards Windy Lake Camp	Site	Mother and calf (assumed same calf as above) reunited on Windy road and seen running towards Windy Lake Camp
269	7/31/23	Ground	Wolf		1	1				1	Walking	At quarry D, looking to avoid the bugs	Site	
270	7/31/23	Air	Swan		7	2	1	1	5		Swimming	Pond west of Rig 10, north of camp and Doris Mountain	Tundra	
271	7/31/23	Ground	Caribou		1	1				1	Walking	Main road to airport east of Geotech shop	Site	
272	7/31/23	Ground	caribou		3	3						Windy Road	Tundra	
273	7/31/23	Ground	fox		2	2						Windy Lake Camp	site	
274	7/31/23	Ground	wolf		1	1						Windy Road	Site	
275	8/1/23	Ground	Fox		1					1	Walking	Doris Camp, admin area	Site	Unable to identify Arctic or red

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276	8/1/23	Ground	Caribou		2				2		Resting	In shade between the sea-cans and the shacks in front of camp	Site	
277	8/1/23	Ground	Fox		1	1					Chasing artic hare	On road near Landfarm	Site	
278	8/1/23	Ground	Artic Hare		1	1					Being chased by red fox	On road near Landfarm	Site	
279	8/1/23	Ground	Wolf		1					1	Walking	Inside Quarry D	Site	
280	8/1/23	Ground	caribou		3	3						Doris Camp	site	
281	8/1/23	Ground	fox		1	1						Doris Camp	tundra	
282	8/2/23	Ground	Caribou		1	1					Walking	On road near at Rob's Bay near boat launch	Site	
283	8/2/23	Ground	Caribou		1	1					Walking	On road near Geotech laydown heading south	Site	
284	8/2/23	Ground	Caribou		1					1	Eating	beside road between camp and Geotech laydown	Site	
285	8/3/23	Ground	Caribou		1	1					Standing	By buildings at south apron	Site	
286	8/5/23	Ground	Grizzly		1					1	Chasing caribou	Tundra close to the south dam at the TIA	Tundra	
287	8/5/23	Ground	Sand Hill crane		4	2	1	2	2		Walking	at km 4 on Windy road	Tundra	
288	8/5/23	Ground	Sand Hill crane		2	1			1		Learning to fly	Km 5 on windy road	Tundra	
289	8/5/23	Ground	Lapland Longspur		15					15	Flying/landing	South Dam	Site	
290	8/5/23	Ground	Canada Goose		5					5	Swimming	Patch Lake, visible from Naartok Pit	Site	
291	8/5/23	Ground	Grizzly Bear		1					1	Walking, foraging, hunting	South Dam and TIA	Site	
292	8/5/23	Ground	Caribou		3					3	Resting, walking/evading capture	South Dam and TIA	Site	
293	8/5/23	Ground	Arctic hare		1					1	Running	on road behind Mill	Site	
294	8/5/23	Ground	Caribou		3					3	Eating/walking	Tailings Area aby South Damn	Site	
295	8/5/23	Ground	Siksik		1					1	Standing	200m west of core shack	Tundra	
296	8/6/23	Ground	Caribou		1					1	Feeding	West side of camp road beside Doris Mountain	Site	
297	8/6/23	Ground	Fox		1					1	Walking	Rob's Bay -cross fox	Site	
298	8/6/23	Ground	Gulls		2					2	Resting, flying	Rob's Bay	Site	
299	8/6/23	Ground	Caribou		1					1	Walking	Discover Target Areas ~5km west of camp	Tundra	very friendly and curious
300	8/6/23	Ground	Arctic Fox		1					1	Walking	Rob's bay (beside boat launch)	Tundra	
301	8/7/23	Ground	Fox		1	1					Walking, hunting	East side of TLR near Interim Dike	Site	
302	8/7/23	Ground	Hare		1	1					Running	On road near Doris Fuel farm	Site	
303	8/7/23	Ground	Fox		1					1	Walking	Top of hill near boat launch	Tundra	
304	8/8/23	Ground	Fish		1					1	Dead in the water	West shore of Patch lake	Water	A geotech driller reported seeing a dead fish in the water.
305	8/8/23	Ground	Caribou		1	1					Walking	90m west of new geo office	Tundra	
306	8/10/23	Ground	Caribou		1	1					Walking	On windy road near km 8	Site	

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307	8/10/23	Ground	Caribou		2	1		1	1		Walking	On Madrid CWP	Site	
308	8/10/23	Ground	Caribou		1	1					Walking	Near Naartok Pit heading north	Site	
309	8/11/23	Ground	Ptarmigan		2					2	Walking	Beside road @ Rob's Bay	Tundra	
310	8/12/23	Ground	Geese		5					5	Flying	Flying east near the North Dam	Sky	
311	8/20/23	Ground	Muskox		1	1	1				Foraging	Close to South Dam	Tundra	
312	8/20/23	Ground	Muskox		1					1	Foraging	Imniagut lake	Tundra	
313	8/21/23	Ground	Arctic Hare	Lepus Articus	1					1	Sitting	Road beside heli pad	Site	Sitting on road
314	8/23/23	Ground	Caribou		2	2	2				Foraging	South of the TIA south dam	Tundra	
315	8/23/23	Ground	Geese		10					10	Resting	Small lake with no name East of TIA	Water	
316	8/25/23	Ground	Fox	Brown	1					1	Walking, running	TLR West of Vent Raise	Tundra	North of road at top of hill
317	8/25/23	Ground	Grizzly		2			1		1	Walking	Airstrip	Tundra	
318	8/25/23	Ground	Peregrine Falcon		1	1					Chasing a crow	Air north of Doris Camp	Sky	
319	8/26/23	Ground	Peregrine Falcon		1					1	Standing on rock looking around	Outcrop north of Doris camp	Tundra	
320	8/27/23	Ground	Caribou		3	3	2			1	Foraging	North East of EWTP	Tundra	
321	8/27/23	Ground	Caribou		2	2				2	Resting/grazing	500 m off the East side of Windy Road at km 7	Tundra	
322	8/29/23	Sea	Northern Fulmar	adult	2	2					Rafting in water		Sea	
323	8/29/23	Sea	Northern Fulmar		2						Flying		Sea	
324	8/29/23	Sea	Polmarine Jaeger		1						Flying		Sea	
325	8/29/23	Sea	Northern Fulmar		1						Flying		Sea	
326	8/29/23	Sea	Harbour Seal		1						Travelling		Sea	
327	8/29/23	Sea	Bearded Seal		2						Travelling		Sea	
328	8/30/23	ground	Black Guillemot		3						Rafting in water		Sea	
329	8/30/23	ground	Northern Fulmar	Adult	1	1					Flying		Sea	
330	8/30/23	Sea	Northern fulmar		5						Resting on ocean surface		Sea	
331	8/30/23	Sea	Herring Gull		4						Flying		Sea	
332	8/30/23	Sea	Northern fulmar		1						Flying		Sea	
333	8/31/23	Ground	SandHill crane		3	2			1		Walking	Windy Camp/edge of Windy Lake	Site/Tundra	
334	8/31/23	Ground	Rough legged hawk		1	1					Hunting	Km 6 on Windy road (flying)	Site/Tundra	
335	8/31/23	Ground	Fox		1				1		Walking	Core box laydown at km 7 on windy road	Site	
336	8/31/23	Ground	Caribou		2	2	2				Feeding	South of the south dam at the TIA	tundra	
337	8/31/23	Air	Grizzly		1	1					Foraging	CM60, East of Roberts Bay	Tundra	
338	8/31/23	Air	Grizzly		1	1					Foraging	CM55, close to Hope Bay	Tundra	
339	8/31/23	ground	Common Loon	Adult	15	15					Flying		Sea	

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340	8/31/23	ground	Long Tail Duck	Adult	1	1					Rafting in water		Sea	
341	8/31/23	Sea	Hooded seal	adult	1	1					Travelling		Sea	
342	8/31/23	Sea	Hooded seal	Adult	1	1					Travelling		Sea	
343	9/1/23	Ground	Caribou		7	7	7				Walking	KM 4.5 East, Windy road, 500m from the road	Tundra	
344	9/2/23	Ground	Arctic hare		1	1				1	Resting/walking	Outside new coreshack on West side	Site	
345	9/3/23	Ground	Caribou		2	1		1	1		Walking	Tundra on the TLR	Tundra	
346	9/4/23	Air	Caribou		2	2					Resting	Km 8 windy road	Tundra	
347	9/4/23	ground	Common Loon		unknown						Flying	Hope Bay	Sea	
348	9/5/23	Air	Caribou		4	4					Resting	25km South East of Camp	Tundra	
349	9/5/2023	Water	Seal		1					1	Swimming	Rob's Bay	Water	unsure if harp or bearded seal
350	9/5/23	air	Caribou		4	4					Resting	25km South East of Camp	Tundra	
351	9/5/23	air	Caribou		4	4					Resting	25km South East of Camp	Tundra	
352	9/6/23	Air	Moose		1	1		1			Sleeping/resting	13W 434612 7532896	Wetland	Moose was sleeping/laying down in the bushes
353	9/6/23	Air	Caribou		2	2					Resting	Eastern shore of Patch lake	Tundra	
354	9/6/23	Ground	Geese		10					10	Flying	At Rob's Bay	Sky	Flying east
355	9/6/23	Ground	Geese		5					5	Sitting	Rob's Bay west of discharge jetty	Water	
356	9/6/2023	Ground	Caribou		2					2	Walking/eating	Between the TLR and the TIA	Tundra	
357	9/6/23	Air	Caribou		2	2					Resting	Eastern shore of Patch lake	Tundra	
358	9/7/2023	Ground	Arctic fox		1					1	Walking	Boston camp	Site	
359	9/7/23	Air	Grizzly		3	1			2		Foraging	1km north of windy lake	Tundra	
360	9/7/23	Air	Grizzly		3	1			2		Foraging	1km north of windy lake	Tundra	
361	9/8/2023	Ground	Peregrine falcon		3					3	Flying	Madrid area	Tundra	
362	9/8/23	Air	Caribou		2	2					Walking	2km south of Heli pad	Tundra	
363	9/8/23	Air	Caribou		2	2					Walking	2km south of Heli pad	Tundra	
364	9/8/2023	Ground	SandHill crane		12					12	Flying	Patch lake area, heading south	Tundra	
365	9/8/2023	Ground	Eagle		3					3	Soaring	Doris Creek area	Tundra	
366	9/8/23	Sea	Whale		1						Diving		Sea	Diving without tail outside the water. Only back out of the water.
367	9/9/2023	Ground	Bear		2	1		1	1		Walking/feeding	East side of Doris Creek, heading north along the hill	Tundra	
368	9/9/23	Air	Grizzly		4	1					Walking	1km north of windy lake	Tundra	
369	9/9/2023	Ground	Raptor		1					1	Standing	West side of the double bridge on Windy road	Tundra	Raptor - black with white on top of it's wings, near where the wings meet the body
370	9/9/2023	Ground	Caribou		2					2	Walking/eating	East of the Madrid waste rock pile	Tundra	
371	9/10/2023	Air	Caribou		3	3					Resting	TIA, on tailings by south dam	Site	

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372	9/10/23	Air	Grizzly		4	1					Walking	2km south of Heli pad	Tundra	
373	9/10/2023	Air	Swans		3					3	Resting	Patch Lake	Water	
374	9/10/2023	Ground	Canada Goose		25					25	Flying	Ogama Lake	Tundra	
375	9/10/2023	Ground	Pacific Loon		3					3	Vocalizing, swimming	Immniaguit Lake	Water	
376	9/11/2023	Ground	Canada Goose		60					60	Flying	Km7 Windy Road	Tundra	
377	9/11/23	Air	Grizzly		4	1		1	3		Walking	South end of Doris lake	Tundra	
378	9/12/2023	Air	Swans		3					3	Swimming/flying	East of Glenn Lake	Tundra	
379	9/12/2023	Ground	Eagle		1				1		Flying	Robert's Lake Outflow - presumed juvenile based on dark colouration	Tundra	
380	9/12/23	Sea	Canadian Geese		10						Flying		Sea	V-formation
381	9/13/2023	Air	Grizzly Bear		4	1			3		Walking	Eastside of Patch Lake	Tundra	
382	9/13/23	ground	Pomarine Jaeger		1						Flying		Sea	
383	9/14/2023	Air	Muskox		12					12	Walking/feeding	South of Patch Lake	Tundra	
384	9/15/2023	Ground	Ducks		8					8	Swimming	Tailings lake	Site	
385	9/15/2023	Ground	Eagle		1					1	Flying	north of North Dam over bedrock	Site	
386	9/16/2023	Ground	Ducks		4					4	Swimming	Tailings lake	Site	
387	9/17/2023	Ground	Muskox		9					9	Walking/feeding	South Dam	Tundra	
388	9/17/2023	Ground	Ducks		2					2	Swimming	Tailings lake	Site	
389	9/18/2023	Ground	Mouse		1					1	Scurrying	inside smoke shack	Site	
390	9/19/2023	Ground	Snow bunting		50					50+	Flying	Rob's Bay Jetty	Site	
391	9/20/2023	Ground	Geese		50					50+	Flying	approaching north end of Windy Lake	Lake	
392	9/20/2023	Ground	Geese		50					50+	Flying	South end of Windy Lake	Lake	
393	9/20/2023	Ground	Peregrine falcon		1					1	Flying	West side of Windy Lake	Lake	
394	9/20/2023	Ground	Muskox		17					17+	Eating, walking	Head resting and eating in willow patch	Tundra	
395	9/21/2023	Ground	Ground squirrel		1					1	Bounding	Km 8 Windy Road	Tundra	
396	9/21/2023	Ground	Ground squirrel		1					1	Bounding	East side of TIA on TLR	Site	
397	9/21/2023	Ground	Muskox		21					21	Resting/feeding	West side of TIA	Site	
398	9/23/2023	Ground	Muskox		20					20	Resting/feeding	Near ETWP	Site	
399	9/23/2023	Air	Grizzly Bear		4	1		1	3		Foraging	south of the southern tip of Doris Laqke	Tundra	
400	9/24/2023	Ground	Geese		30					~30	Flying	West of EWTP over tundra	Tundra	
401	9/25/2023	Ground	Ground squirrel		1					1	Standing, walking	Blind Corner on TLR	Site	
402	9/26/2023	Ground	Ptarmigan		5					5	Standing, walking	Quarry 2 across from burn pad	Site	
403	9/26/2023	Ground	Arctic Hare		1					1	Bounding	Power house	Site	
404	9/26/2023	Ground	Red Fox		1					1	Hunting, walking	Reclaim jetty	Site	

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405	9/27/23	Air	Grizzly		4	1		1	3		Walking	1 mile North of windy lake	Tundra	
406	9/27/23	Air	Grizzly		4	1		1	3		Walking	1/2 km East of Drill 4	Tundra	
407	9/27/2023	Ground	Ptarmigan		16					16	Walking	Underground parking lot	Site	
408	9/27/2023	Ground	Grizzly Bear		3	1			2		North of Windy Lake Walking		Tundra	
409	9/28/2023	Air	Muskox		20+					20+	Grazing/walking	South of camp	Tundra	
410	9/29/2023	Air	Muskox		20+					20+	Grazing	South of the south dam, east of Patch lake	Tundra	
411	9/29/23	Ground	Arctic Hare		1					1	Walking	On pad at core shack	Site	
412	9/30/2023	Ground	Muskox		20+					20+	Walking/grazing	South east side of Patch Lake	Tundra	
413	10/5/23	Ground	Muskox		22					22	Resting/grazing	North east of KM 7 Windy road	Tundra	
414	10/7/23	Ground	Muskox		20					20	Walking/resting	on East side of km 6 Windy road	Tundra	
415	10/7/23	Ground	Ptarmigan		15					15	Walking/resting	LRP gate	Site	
416	10/7/2023	Air	Muskox		22	22					Resting	2 Miles north of patch lake	Tundra	
417	10/8/23	Ground	Caribou		1					1	Walking	Km 5 on Windy Road	Tundra	
418	10/8/23	Ground	Caribou		1					1	Walking	Km 8 on Windy Road	Tundra	
419	10/8/23	Ground	Muskox		20					20	Walking	Km 6 Windy Road	Tundra	
420	10/9/23	Ground	Muskox		20					20	Walking	KM 3 Windy road	Tundra	
421	10/9/2023	Air	Red Fox		1	1					Hunting	.5km South of heli pad	Tundra	
422	10/12/23	Ground	Arctic Hare		1	1					Resting	Robs Bay behind crusher	Site	
423	10/13/23	Ground	Muskox		20					20	Walking	KM 1, east side of Windy road	Tundra	
424	10/14/23	Ground	Ptarmigan		25					25	Flying/resting	North side of North Dam	Tundra	
425	10/25/23	Ground	Arctic Hare		1					1	Bounding	along Diversion berm, south on main camp road.	Site	
426	10/26/23	Ground	Raven		1					1	Walking	Madrid portal area	Tundra	
427	10/27/23	Ground	Ptarmigan		30					30	Flying	Km6 Windy Road	Tundra	
428	10/27/23	Ground	Raven		1					1	Flying	flying west over tundra near Env Lab	Tundra	
429	10/29/23	Ground	Fox		1	1					Walking	Equipment laydown yard toward warehouse	Camp	
430	11/4/23	Ground	Fox		1	1					Walking	Site services parking lot across from ERT garage	Camp	
431	11/5/23	Ground	Raven		1	1					Flying	Quarry 2	Site	
432	11/5/23	Ground	Ptarmigan		8					8	Flying	Windy road km 2 blind hill	Site	
433	11/8/23	Ground	Ptarmigan		3					3	Flying	access road to 730 at Rob's Bay	Site	
434	11/11/23	Ground	Red Fox		1					1	Walking	In camp near warehouse	Site	
435	11/12/23	Ground	Red Fox		1					1	Walking	Equipment laydown area	site	
436	11/12/23	Ground	Red Fox		1					1	Walking	TLR powder Meg	Tundra	
437	11/16/23	Ground	Muskox		20					20	Resting	Robs Bay	Tundra	

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438	11/18/23	Ground	Raven		1					1	Hunting	Tundra west of the road of Windy road and toad to TLR	Tundra	Raven hunt and killed a smaller bird.
439	11/18/23	Ground	Arctic Hare		1	1					Running	Near mill, heading east	Site	
440	11/23/23	Ground	Fox		1	1					Walking	Near Km 2 on Windy Road	Tundra	
441	11/23/23	Ground	Arctic Hare		1	1					Running	Doris Multi tank farm	Site	
442	11/24/23	Ground	Red Fox		1	1					Hunting	Near batch plant, by core boxes	Site	
443	11/27/23	Ground	Red Fox		1	1					Walking	Climbing hill by A wing	site	
444	11/27/23	Ground	Muskox		20					1	Grazing	Near km 5 on Windy Road	Tundra	
445	12/10/23	Ground	Arctic Hare		1	1					Resting	Patch Lake ice entrance	Lake	
446	12/16/23	Ground	Red Fox		1	1					Hunting, walking	Behind camp, by Electrical Shack	Site	
447	12/24/23	Ground	Caribou		15					15	Walking	South of EWTP	Site	
448	12/27/23	Ground	Arctic Hare		1	1					Running	South of airstrip access road near Geotech laydown	Site	
449	12/27/23	Ground	Arctic Hare		1	1					Resting	Rob's Bay under bridge stacker	Site	
450	12/29/23	Ground	Arctic Hare		1	1					Running	South Apron	Site	
451	12/29/23	Ground	Arctic Hare		1	1					Running	End of Windy Road where Major is storing equipment	Site	
452	12/30/23	Ground	Red Fox		1	1					Walking	km 7 on Windy road - East side of road	Tundra	

Inds = Individuals, A = Adults, M = Males, F = Females, Y = Young (e.g. calves, chicks), U = Unknown

Note: Please record every observation of a species even if it is already listed, if the specific species is unknown describe its colouration, size, etc.fi

APPENDIX I SUMMARY OF WILDLIFE RECORDED INCIDENTALLY BY BIOLOGISTS AT THE PROJECT, 1996 TO 2023

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Species Group	Species	Baseline/Pre-development (Pre-FEIS Submission)		Pre-Development (Post-FEIS submission)	Construction	Care and Maintenance	Construction	Operations	Care and Maintenance	No. Years Recorded ¹
		1996-2000 ³	2001-2005 ³	2006-2008 ³	2009-2012 ³	2013-2014 ³	2015-2017 ³	2018-2021 ³	2022-2023 ³	
Mammals	Arctic Fox	3	3	2	4	1		2		15
	Arctic Ground Squirrel	2	1		3	2		2		10
	Arctic Hare	1			3	2		3		9
	Bearded Seal	1			1		2			4
	Caribou	1	1	3	4	2	2	4	1	18
	Grizzly Bear	4	5	3	4	2	2	3		23
	Grey Wolf	3	5	3	4	2	1	1	1	20
	Least Weasel	1			3	1		1		6
	Muskox	1		2	4	2	2	3		14
	Red Fox	2	2	2	4	2	1	3		16
	Ringed Seal	2		1	4	2	3	1		13
	Sik Sik							2		2
	Snowshoe Hare							1		1
	Wolverine	3	2	3	4	1	1	2		16
	Unknown Fox				3	1	1	1	1	7
Unknown Seal						1	1		2	
Total Mammal Species²		12	7	8	12	11	8	13	2	
Upland Breeding Bird	American Golden-plover				1				1	2
	American Pipit	1	1		2	1	1	1	1	8
	American Robin					1		2		3
	American Tree Sparrow		1		3	1	1		1	7
	Common Redpoll		1		3				1	5
	Baird's Sandpiper	1			1					2
	Gray-cheeked Thrush		1							1
	Harris' Sparrow				1				1	2
	Hoary Redpoll				4	1				5
	Horned Lark		1		3	1	1	1		7
	Lapland Longspur	1	1		4	1	3	1	1	12
	Least Sandpiper		1		2	1	1	1		6
	Pectoral Sandpiper				2					2
	Rock Ptarmigan				3	1	1			5
	Red-necked Phalarope	1	1		1	2		1		6
	Savannah Sparrow	1	1		3	1	2	1	1	10
	Semipalmated Sandpiper		1		2	1		1	1	6
	Semipalmated Plover				2		1			3
	Snow Bunting	1			2			1		4
	White-crowned Sparrow	1	1		3	1	2	1	1	10
	Willow Ptarmigan		1		4	1				6
Wilson's Snipe			1	2	1	1			5	
Unknown Ptarmigan	1		2	4	1	1	3		12	
Unknown Redpoll	1			2	1	2	4		10	
Unknown Sandpiper						1			1	
Unknown Shorebird	1			2	2				5	
Total Upland Breeding Bird Species²		7	12	1	20	14	10	10	9	

APPENDIX I: SUMMARY OF WILDLIFE RECORDED INCIDENTALLY BY BIOLOGISTS AT THE PROJECT, 1996 TO 2023

Species Group	Species	Baseline/Pre-development (Pre-FEIS Submission)		Pre-Development (Post-FEIS submission)	Construction	Care and Maintenance	Construction	Operations	Care and Maintenance	No. Years Recorded ¹
		1996-2000 ³	2001-2005 ³	2006-2008 ³	2009-2012 ³	2013-2014 ³	2015-2017 ³	2018-2021 ³	2022-2023 ³	
Waterbird	American Green-winged Teal					2	1			3
	Arctic Tern	3			3			1		7
	Brant Goose				1					1
	Common Goldeneye						1			1
	Canada Goose	2	1	2	4	2	3	3	1	18
	Common Eider				1	1		1		3
	Common Loon		1		3				1	5
	Common Merganser				1	1				2
	Gadwall				1	1				2
	Greater White-fronted Goose	2	1	1	4	2	2	3	1	17
	Greater Scaup		1	1	3	2	1	1		9
	Glaucous Gull	2	1		2	2	1	1		9
	Herring Gull	3			2	1	1	1	1	9
	King Eider	1			1	2	1	1		6
	Lesser Scaup			1		1				2
	Long-tailed Duck	1	1	1	4	2	1	2	1	13
	Long-tailed Jaeger	2			1			1		4
	Mallard							2		2
	Northern Pintail	1		1	3	2	1	2		10
	Parasitic Jaeger	3			1	1				5
	Pacific Loon	2	1	1	4	2	3	2	1	16
	Red-breasted Merganser	3	1	1	3	2	2	1	1	14
	Red-throated Loon	1	1		3	2	1	1	1	10
	Sandhill Crane	1	1	1	3	2	3	4		15
	Snow Goose	2	1		4	1	1	3		12
	Thayer's Gull					1				1
	Tundra Swan	2	1	1	4	2	2	3	1	16
	White-winged Scoter					1	1			2
	Yellow-billed Loon				2	1	2			5
	Unknown Duck				1	2	1	1		5
Unknown Eider					1				1	
Unknown Goose				2	2	1	3		8	
Unknown Gull			1	4	2	2			9	
Unknown Loon					1	1	1		3	
Unknown Scaup					1				1	
Sub-total Waterbird Species²		16	12	11	23	23	18	18	9	

APPENDIX I: SUMMARY OF WILDLIFE RECORDED INCIDENTALLY BY BIOLOGISTS AT THE PROJECT, 1996 TO 2023

Species Group	Species	Baseline/Pre-development (Pre-FEIS Submission)		Pre-Development (Post-FEIS submission)	Construction	Care and Maintenance	Construction	Operations	Care and Maintenance	No. Years Recorded ¹
		1996-2000 ³	2001-2005 ³	2006-2008 ³	2009-2012 ³	2013-2014 ³	2015-2017 ³	2018-2021 ³	2022-2023 ³	
Raptor	Bald Eagle			1	2			1		4
	Common Raven	2	1	1	4	2	2	3		15
	Golden Eagle	3	1	2	4	2	1	3		16
	Gyr Falcon			2	1	2	1	2		8
	Northern Harrier	1			1		1			3
	Peregrine Falcon	1	1	2	4	2	1	2		13
	Rough-legged Hawk	2	1	2	4	2	2	4		17
	Short-eared Owl	1		1	3	2		1		8
	Snowy Owl	2			1			2		5
	Unknown Falcon						1			1
	Unknown Raptor				3	1		1		6
Sub-total Raptor Species²		12	4	7	9	6	6	8	0	
Total Wildlife Species²		47	35	27	64	54	42	49	18	

Notes:

¹ The total number of years where the species or species sign (e.g., tracks, nests, evidence of use) was observed

² Total counts do not include counts of "unknowns"

³ Numbers indicate how many years species were recorded in

APPENDIX J SUMMARY OF THE HOPE BAY PROJECT WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2011 - 2023



APPENDIX J: SUMMARY OF THE HOPE BAY PROJECT WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2011 - 2023

Species Group	Species	Conservation Status ¹			2011		2012		2013		2014		2015		2016		2017	
		Territorial Rank	COSEWIC	SARA Schedule 1	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records
Mammal	Arctic Fox	Apparently Secure			6	6	2	2			7	7	9	9	8	8	6	6
	Arctic Ground Squirrel	Secure			9	6	7	5	9	5	32	4	2	1			64	14
	Arctic Hare	Secure			5	5	8	8	4	4	5	5	3	3	44	26	37	26
	Bearded Seal	Unrankable													2	2		
	Caribou ³	Vulnerable	Threatened (Barrenground); Endangered (Dolphin Union)	Special Concern (Dolphin Union)	80	13	38	10	20	14	57	21	171	25	441	54	93	21
	Ermine	Secure											1	1				
	Grey Wolf	Secure			11	11	12	5	19	12	17	13	8	5	33	23	56	34
	Grizzly Bear	Vulnerable	Special Concern	Special Concern	22	11	13	7	21	8	6	6	25	19	27	12	80	29
	Least Weasel	Secure			1	1							1	1				
	Moose	Unrankable																
	Muskox	Apparent Secure			160	14	86	10	50	4	75	4	44	3	380	11	676	26
	Red Fox	Secure			26	25	17	15	18	15	37	23	14	14	19	18	30	21
	Ringed Seal	Secure			7	6					5	1	1	1	1	1		
	Snowshoe hare (likely misidentification)	Unrankable											1	1	1	1	5	5
	Unknown Fox				9	6	4	4	2	2	3	3	4	4	1	1	1	1
	Unknown Seal														12	1	1	1
	Unknown Weasel				2	2	1	1	1	1								
Unknown Mouse																		
Wolverine	Vulnerable	Special Concern	Special Concern	13	13	8	8	4	4	2	2	10	9	5	5	5	5	
Upland Breeding Bird	American Golden-plover	Vulnerable																
	American Pipit	Unrankable/ Undetermined																
	American Robin	Secure									3	1						
	American Tree Sparrow	Unrankable/ Undetermined																
	Common Redpoll	Unrankable/ Undetermined									1	1	5	1	1	1		
	Baird's Sandpiper	Secure																
	Gray-cheeked Thrush	Unrankable/ Undetermined																
	Harris' Sparrow	Unrankable/ Undetermined																
	Hoary Redpoll	Vulnerable																
	Horned Lark	Unrankable/ Undetermined																
	Lapland Longspur	Secure																
	Least Sandpiper	Vulnerable																
	Pectoral Sandpiper	Apparently Secure																
	Rock Ptarmigan	Secure													8	1	13	1
	Red-necked Phalarope	Vulnerable	Special Concern	Special Concern														
Ruby-throated hummingbird (likely misidentification)													1	1				
Savannah Sparrow	Unrankable/ Undetermined																	
Semipalmated Sandpiper	Vulnerable																	
Semipalmated Plover	Apparently Secure				11	6	27	5	11	5	25	6	4	1	16	7	6	2

APPENDIX J: SUMMARY OF THE HOPE BAY PROJECT WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2011 - 2023

Species Group	Species	Conservation Status ¹			2018		2019		2020		2021		2022		2023		Incidental Sightings (Biologists/Surveyors 1996- 2023) ²
		Territorial Rank	COSEWIC	SARA Schedule 1	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	
Mammal	Arctic Fox	Apparently Secure			4	4	2	2	1	1	4	2	2	2	4	4	13
	Arctic Ground Squirrel	Secure			8	4	1	1			29	18	19	12	10	10	8
	Arctic Hare	Secure			11	9	19	13	8	7			30	23	29	28	7
	Bearded Seal	Unrankable											1	1			4
	Caribou ³	Vulnerable	Threatened (Barrenground); Endangered (Dolphin Union)	Special Concern (Dolphin Union)	118	24	52	27	103	45	166	66	233	71	362	173	14*
	Ermine	Secure									2	2			1	1	
	Grey Wolf	Secure			8	4	5	3					4	3	5	5	19
	Grizzly Bear	Vulnerable	Special Concern	Special Concern	84	36	92	41	19	14	41	38	53	36	77	37	20
	Least Weasel	Secure															5
	Moose	Unrankable											6	3	2	2	
	Muskox	Apparent Secure			81	10			40	2	66	2	267	21	395	28	12
	Red Fox	Secure			39	34	34	30	1	1	17	16	32	25	30	28	14
	Ringed Seal	Secure															12
	Snowshoe hare (likely misidentification)	Unrankable							1	1							
	Unknown Fox				4	4	3	3					5	5	13	12	
	Unknown Seal				2	1					3	1	2	2	2	2	
	Unknown Weasel				1	1	4	2									
	Unknown Mouse														1	1	
Wolverine	Vulnerable	Special Concern	Special Concern	4	4	9	7			4	4			2	2	16	
Upland Breeding Bird	American Golden-plover	Vulnerable															2
	American Pipit	Unrankable/ Undetermined															8
	American Robin	Secure									2	1	1	1	2	2	3
	American Tree Sparrow	Unrankable/ Undetermined															7
	Common Redpoll	Unrankable/ Undetermined									3	1					5
	Baird's Sandpiper	Secure															2
	Gray-cheeked Thrush	Unrankable/ Undetermined															1
	Harris' Sparrow	Unrankable/ Undetermined															2
	Hoary Redpoll	Vulnerable															5
	Horned Lark	Unrankable/ Undetermined															7
	Lapland Longspur	Secure											1	1	15	1	12
	Least Sandpiper	Vulnerable															6
	Pectoral Sandpiper	Apparently Secure															2
	Rock Ptarmigan	Secure															5
	Red-necked Phalarope	Vulnerable	Special Concern	Special Concern													6
	Ruby-throated hummingbird (likely misidentification)																
Savannah Sparrow	Unrankable/ Undetermined															10	
Semipalmated Sandpiper	Vulnerable											1	1			6	
Semipalmated Plover	Apparently Secure				28	6	18	3								4	

APPENDIX J: SUMMARY OF THE HOPE BAY PROJECT WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2011 - 2023

Species Group	Species	Conservation Status ¹			2011		2012		2013		2014		2015		2016		2017		
		Territorial Rank	COSEWIC	SARA Schedule 1	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	
Upland Breeding Bird (cont'd)	Snow Bunting	Vulnerable																	
	Unknown Grouse (likely misidentification)												20	1					
	Unknown Ptarmigan				47	5	10	1	7	2	2	1	68	6	30	1	46	6	
	Unknown Songbird												1	1			3	1	
	White-crowned Sparrow	Unrankable/ Undetermined																	
	Willow Ptarmigan	Secure																	
	Wilson's Snipe	Secure																	
Waterbird	American Green-winged Teal	Unrankable/ Undetermined																	
	Arctic Tern	Apparently Secure																	
	Brant Goose	Vulnerable																	
	Common Goldeneye	Unrankable/ Undetermined																	
	Canada Goose	Secure			50	1	30	2	8	1	6	2	4	1	42	4	47	2	
	Common Eider	Vulnerable																	
	Common Loon	Secure	Not at Risk																
	Common Merganser	Unrankable/ Undetermined																	
	Gadwall	Not Applicable																	
	Greater White-fronted Goose	Secure							21	2	36	2	12	3	24	3	12	1	
	Greater Scaup	Unrankable/ Undetermined																	
	Glaucous Gull	Apparently Secure																	
	Herring Gull	Apparently Secure																	
	King Eider	Vulnerable																	
	Lesser Scaup	Unrankable/ Undetermined																	
	Long-tailed Duck	Apparently Secure											1*	1	3	1			
	Long-tailed Jaeger	Secure																	
	Parasitic Jaeger	Apparently Secure																	
	Northern Pintail	Secure							2	1	6	2	1	1					
	Pacific Loon	Unrankable/ Undetermined																	
	Red-breasted Merganser	Secure																	
	Red-throated Loon	Apparently Secure																	
	Sandhill Crane	Secure				11	6	27	5	11	5	25	6	4	1	16	7	6	2
	Snow Goose	Secure									21	2							
	Thayer's Gull	Apparently Secure																	
	Tundra Swan	Secure				2	1	3	2	1	1	7	2	2*	2	6	4	6	4
	Unknown Duck					5	1												
	Unknown Goose					38	6	488	10	60	2	150	4						
	Unknown Gull									2	2	1	1			11	2		
	Unknown Loon											1	1	3*	2	8	4	1	1
	Unknown Shearwater																		
	Unknown Swan																		
White-winged Scoter	Unrankable/ Undetermined																		
Yellow-billed Loon	Apparently Secure	Not at Risk																	

APPENDIX J: SUMMARY OF THE HOPE BAY PROJECT WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2011 - 2023

Species Group	Species	Conservation Status ¹			2018		2019		2020		2021		2022		2023		Incidental Sightings (Biologists/Surveyors 1996- 2023) ²	
		Territorial Rank	COSEWIC	SARA Schedule 1	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records		
Upland Breeding Bird (cont'd)	Snow Bunting	Vulnerable									6	1	9	2	62	2	4	
	Unknown Grouse (likely misidentification)																	
	Unknown Ptarmigan				20	1	84	15	43	6	90	6	168	12	210	24		
	Unknown Songbird						1	1			2	1			2	1		
	White-crowned Sparrow	Unrankable/ Undetermined									1	1					10	
	Willow Ptarmigan	Secure											243	16			6	
	Wilson's Snipe	Secure															5	
Waterbird	American Green-winged Teal	Unrankable/ Undetermined															3	
	Arctic Tern	Apparently Secure															7	
	Brant Goose	Vulnerable															1	
	Common Goldeneye	Unrankable/ Undetermined															1	
	Canada Goose	Secure				100	2	20*	1		62	7	42	6	92	5	18	
	Common Eider	Vulnerable															3	
	Common Loon	Secure	Not at Risk								3	2					5	
	Common Merganser	Unrankable/ Undetermined											2	1			2	
	Gadwall	Not Applicable																2
	Greater White-fronted Goose	Secure				12	1				30	5	17	3			17	
	Greater Scaup	Unrankable/ Undetermined																9
	Glaucous Gull	Apparently Secure																9
	Herring Gull	Apparently Secure																9
	King Eider	Vulnerable									3	1						6
	Lesser Scaup	Unrankable/ Undetermined																2
	Long-tailed Duck	Apparently Secure									3	1						13
	Long-tailed Jaeger	Secure																4
	Parasitic Jaeger	Apparently Secure																5
	Northern Pintail	Secure									3	1						8
	Pacific Loon	Unrankable/ Undetermined									2	1	2	1	3	1		16
	Red-breasted Merganser	Secure																14
	Red-throated Loon	Apparently Secure											7	1				10
	Sandhill Crane	Secure				28	6	18	3	13	3	72	12	38	11	46	13	15
	Snow Goose	Secure				31	3	20*	1	15	2	15	3	12	1			12
	Thayer's Gull	Apparently Secure																1
	Tundra Swan	Secure				10	1					8	3	5	1			16
	Unknown Duck											1	1	2	1	44	4	
	Unknown Goose					220	2	105*	2	>1600	3	15	1	44	3	169	10	
	Unknown Gull													1	1	3	2	
	Unknown Loon											1	1	3	2			
	Unknown Shearwater															1	1	
	Unknown Swan											3	2	1	1	18	6	
White-winged Scoter	Unrankable/ Undetermined																2	
Yellow-billed Loon	Apparently Secure	Not at Risk															5	

APPENDIX J: SUMMARY OF THE HOPE BAY PROJECT WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2011 - 2023

Species Group	Species	Conservation Status ¹			2011		2012		2013		2014		2015		2016		2017		
		Territorial Rank	COSEWIC	SARA Schedule 1	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	
Raptor	Bald Eagle	Unrankable/ Undetermined	Not at Risk								2	2							
	Common Raven	Secure			1	1			3	2	4	3	1	1					
	Golden Eagle	Apparently Secure	Not at Risk		1	1	1	1			1	1	2	2	4	3	1	1	
	Gyrfalcon	Apparently Secure	Not at Risk						2	2	1	1	1	1	1	1			
	Northern Harrier	Unrankable/ Undetermined	Not at Risk																
	Peregrine Falcon	Apparently Secure	Not at Risk	Special Concern				2	2			6	6	1	1	2	2	5	4
	Rough-legged Hawk	Unrankable/ Undetermined	Not at Risk		4	3	6	3	3	3	7	6	4	4	2	2	1	1	
	Short-eared Owl	Vulnerable	Special Concern	Special Concern															
	Snowy Owl	Apparently Secure	Not at Risk															1	1
	Unknown Eagle													2	2				
	Unknown Owl										1	1							
Unknown Raptor				2	1	13	5	2	2	2	1			2	2	4	3		
Fish	Arctic Char																		
	Unknown Fish																		

APPENDIX J: SUMMARY OF THE HOPE BAY PROJECT WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2011 - 2023

Species Group	Species	Conservation Status ¹			2018		2019		2020		2021		2022		2023		Incidental Sightings (Biologists/Surveyors 1996- 2023) ²
		Territorial Rank	COSEWIC	SARA Schedule 1	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	No. Ind.	No. Records	
Raptor	Bald Eagle	Unrankable/ Undetermined	Not at Risk										1	1	1	1	4
	Common Raven	Secure			3	3	1	1			2	1	1	1	15	6	15
	Golden Eagle	Apparently Secure	Not at Risk		2	2			3	2	1	1	1	1	2	2	16
	Gyrfalcon	Apparently Secure	Not at Risk								1	1					8
	Northern Harrier	Unrankable/ Undetermined	Not at Risk														3
	Peregrine Falcon	Apparently Secure	Not at Risk	Special Concern							1	1	6	5	8	6	13
	Rough-legged Hawk	Unrankable/ Undetermined	Not at Risk		3	2	1	1	4	2	7	6	3	3	1	1	17
	Short-eared Owl	Vulnerable	Special Concern	Special Concern													8
	Snowy Owl	Apparently Secure	Not at Risk								1	1	1	1	1	1	5
	Unknown Eagle				1	1							4	4	10	7	
	Unknown Owl																
Unknown Raptor						1	1							1	1		
Fish	Arctic Char												1	1			
	Unknown Fish													1	1		

Notes:

* Contains records where number observed was not recorded; value of one was assigned.

¹ Territorial Rankings provided in the 2015 Wild Species Report (CESCC 2020), COSEWIC and SARA status as indicated on the Species At Risk Act Public Registry (Government of Canada 2022).

² Incidental observations by ERM crew and other Biologists were not recorded in 2019 or 2020 due to minimal compliance monitoring work on site.

³ Caribou recorded incidentally and in the wildlife sightings log are not identified to herd but based on timing, both herds have been observed.

APPENDIX K MONTHLY AVERAGE OF PERSONNEL ON SITE, HOPE BAY PROJECT, 2009 TO 2023



APPENDIX K: MONTHLY AVERAGE OF PERSONNEL ON SITE, HOPE BAY PROJECT, 2009 TO 2023

Month	Year														
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
January	69	83	214	183	0	7	13	60	172	202	265	316	140	123	148
February	84	106	250	193	0	7	16	73	168	239	279	332	143	178	168
March	94	131	265	180	3	8	30	78	176	261	286	282	147	160	165
April	102	172	278	127	13	14	28	93	173	264	291	133	169	134	163
May	102	182	274	90	20	63	32	110	188	261	287	130	176	135	158
June	103	200	280	103	44	71	41	123	189	266	304	139	189	162	150
July	113	220	284	90	61	77	46	123	185	265	304	137	193	164	146
August	109	205	277	93	59	79	84	129	178	271	285	136	230	172	133
September	98	484	277	0	54	73	105	144	179	272	293	128	240	174	126
October	66	332	270	0	49	79	114	158	179	273	306	133	89	181	109
November	16	147	252	0	19	44	93	172	184	270	324	149	171	189	64
December	14	108	0	0	8	7	89	173	179	246	300	143	185	114	45
Average	81	197	243	88	27	44	58	120	179	258	294	180	173	157	131

APPENDIX L WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, BOSTON PROJECT, SEPTEMBER 2021 TO SEPTEMBER 2023

APPENDIX L: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, BOSTON PROJECT, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
71	2022/05/30	1	1/0/1900	1/0/1900		1482	1531	50	5	Caribou	2	0	2	Walking	Tundra	Classifier added multiple events together over multiple days, I separated these - DB
61	2021/06/09	1	1/0/1900	1/0/1900	M	2550	2585	34	4	Caribou	1	1	2	Walking	Tundra	
61	2021/06/07	1	1/0/1900	1/0/1900	M	2479	2526	30	3	Caribou	1	0	1	Walking	Tundra	
61	2021/06/05	1	1/0/1900	1/0/1900	M	2478	2487	10	1	Caribou	1	0	1	Walking	Tundra	
61	2021/06/04	1	1/0/1900	1/0/1900	M	2468	2469	2	1	Caribou	1	0	1	Walking	Tundra	
61	2021/05/31	1	1/0/1900	1/0/1900	M	2423	2432	10	1	Caribou	10	1	11	Walking	Tundra	
61	2021/05/31	1	1/0/1900	1/0/1900	M	2433	2442	10	1	Caribou	2	0	2	Walking	Tundra	
61	2021/05/30	1	1/0/1900	1/0/1900	M	2404	2418	15	2	Caribou	1	0	1	Walking	Tundra	
61	2021/05/28	1	1/0/1900	1/0/1900	M	2387	2393	7	1	Caribou	1	0	1	Walking	Tundra	
61	2021/05/26	1	1/0/1900	1/0/1900	M	2361	2370	20	2	Caribou	5	0	5	Walking	Tundra	
61	2021/05/25	1	1/0/1900	1/0/1900	M	2275	2304	30	3	Caribou	5	0	5	Walking	Tundra	
61	2021/05/25	1	1/0/1900	1/0/1900	M	2308	2327	20	2	Caribou	3	0	3	Grazing	Tundra	
61	2021/05/24	1	1/0/1900	1/0/1900	M	2212	2231	20	2	Caribou	4	0	4	Walking	Tundra	
61	2021/05/24	1	1/0/1900	1/0/1900	M	2235	2244	10	1	Caribou	3	0	3	Walking	Tundra	
61	2021/05/24	1	1/0/1900	1/0/1900	M	2245	2254	10	1	Caribou	2	0	2	Walking	Tundra	
61	2021/05/24	1	1/0/1900	1/0/1900	M	2255	2274	20	2	Caribou	2	0	2	Grazing	Tundra	
61	2020/02/19	1	1/0/1900	1/0/1900	M	655	661	7	1	Caribou	1	0	1	Walking	Tundra	
61	2020/01/29	1	1/0/1900	1/0/1900	M	582	591	10	1	Caribou	1	0	1	Standing	Tundra	
61	2019/12/29	1	1/0/1900	1/0/1900	M	429	431	2	1	Caribou	1	0	1	Investigating camera	Tundra	
61	2019/12/29	1	1/0/1900	1/0/1900	M	439	485	47	5	Caribou	1	0	1	Investigating camera	Tundra	
61	2019/12/08	1	1/0/1900	1/0/1900	M	334	353	20	2	Caribou	1	0	1	Walking	Tundra	
61	2019/12/08	1	1/0/1900	1/0/1900	M	354	363	10	1	Caribou	5	1	6	Walking	Tundra	
61	2019/12/03	1	1/0/1900	1/0/1900	M	268	311	50	5	Caribou	1	0	1	Walking	Tundra	
61	2019/10/14	1	1/0/1900	1/0/1900	M	101	119	20	2	Caribou	1	0	1	Investigating camera	Tundra	
61	2019/10/01	1	1/0/1900	1/0/1900	M	51	59	9	1	Caribou	1	0	1	Walking	Tundra	
61	2019/09/09	1	1/0/1900	1/0/1900	M	568	577	10	1	Caribou	1	0	1	Walking	Tundra	
62	2023/07/27	2	1/0/1900	1/0/1900	M	237	256	10	10	Caribou	1	0	1	Walking	Tundra	
62	2023/07/23	1	1/0/1900	1/0/1900	M	178	181	4	10	Caribou	1	0	1	Feeding	Tundra	
62	2023/07/17	1	1/0/1900	1/0/1900	M	140	145	6	10	Caribou	1	0	1	Feeding	Tundra	
62	2023/07/06	1	1/0/1900	1/0/1900	M	77	86	10	10	Caribou	1	0	1	Feeding	Tundra	
62	2023/06/30	1	1/0/1900	1/0/1900	M	46	47	1	10	Caribou	1	0	1	Running	Tundra	
62	2020/07/21	1	1/0/1900	1/0/1900	M	1021	1030	10	1	Caribou	1	0	1	Walking	Tundra	
63	2023/07/22	1	1/0/1900	1/0/1900	M	265	274	10	10	Caribou	0	1	1	Feeding	Tundra	
63	2023/07/18	1	1/0/1900	1/0/1900	M	190	194	5	10	Caribou	0	1	1	Walking	Tundra	
63	2023/07/12	1	1/0/1900	1/0/1900	M	122	124	3	10	Caribou	1	0	1	Walking	Tundra	Unsure of life stage
63	2023/07/06	1	1/0/1900	1/0/1900	M	87	96	10	10	Caribou	1	0	1	Walking	Tundra	
63	2023/07/06	2	1/0/1900	1/0/1900	M	97	105	9	10	Caribou	1	0	1	Walking	Tundra	
63	2022/05/26	1	1/0/1900	1/0/1900	M	1450	1491	40	4	Caribou	2	0	2	Walking	Tundra	
63	2022/05/26	1	1/0/1900	1/0/1900	M	1462	1491	30	3	Caribou	2	0	2	Walking	Tundra	
63	2021/09/19	1	1/0/1900	1/0/1900	M	505	674	170	17	Caribou	1	0	1	Grazing	Tundra	
63	2021/09/19	1	1/0/1900	1/0/1900	M	517	666	130	15	Caribou	1	0	1	Grazing	Tundra	
63	2021/06/06	1	1/0/1900	1/0/1900	M	2580	2584	5	1	Caribou	1	0	1	Walking	Tundra	
63	2021/06/06	1	1/0/1900	1/0/1900	M	2590	2599	10	1	Caribou	1	0	1	Walking	Tundra	
63	2021/06/04	1	1/0/1900	1/0/1900	M	2527	2571	45	5	Caribou	0	1	1	Investigating camera	Tundra	
63	2021/06/03	1	1/0/1900	1/0/1900	M	2504	2511	8	1	Caribou	1	0	1	Walking	Tundra	
63	2021/05/31	1	1/0/1900	1/0/1900	M	2265	2349	85	9	Caribou	1	0	1	Investigating camera	Tundra	
63	2021/05/31	1	1/0/1900	1/0/1900	M	2355	2404	48	5	Caribou	1	0	1	Investigating camera	Tundra	
63	2021/05/31	1	1/0/1900	1/0/1900	M	2405	2464	60	6	Caribou	0	1	1	Investigating camera	Tundra	
63	2021/05/31	1	1/0/1900	1/0/1900	M	2475	2494	20	2	Caribou	1	0	1	Investigating camera	Tundra	
63	2021/05/30	1	1/0/1900	1/0/1900	M	2179	2259	80	8	Caribou	2	2	4	Investigating camera	Tundra	
63	2021/05/29	1	1/0/1900	1/0/1900	M	1876	1965	90	9	Caribou	0	1	1	Investigating camera	Tundra	
63	2021/05/29	1	1/0/1900	1/0/1900	M	1972	2178	207	21	Caribou	3	4	7	Walking	Tundra	6 caribou walk by, one young caribou investigating camera
63	2021/05/25	1	1/0/1900	1/0/1900	M	1554	1662	109	11	Caribou	0	1	1	Investigating camera	Tundra	
63	2021/05/25	1	1/0/1900	1/0/1900	M	1671	1866	196	20	Caribou	0	1	1	Investigating camera	Tundra	
63	2021/05/24	1	1/0/1900	1/0/1900	M	1354	1546	193	20	Caribou	6	1	7	Investigating camera	Tundra	

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Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
63	2021/05/23	1	1/0/1900	1/0/1900	M	1294	1297	4	1	Caribou	1	0	1	Investigating camera	Tundra	
63	2021/05/22	1	1/0/1900	1/0/1900	M	1265	1281	17	2	Caribou	1	3	4	Walking	Tundra	
63	2021/05/21	1	1/0/1900	1/0/1900	M	1065	1264	200	20	Caribou	1	1	2	Investigating camera	Tundra	
64	2023/08/08	1	1/0/1900	1/0/1900	M	806	835	24	30	Caribou	1	0	1	Feeding	Tundra	Unsure if previously recorded
64	2023/07/30	1	1/0/1900	1/0/1900	M	729	731	4	10	Caribou	1	0	1	Running	Tundra	
64	2023/07/25	1	1/0/1900	1/0/1900	M	651	690	40	40	Caribou	0	1	1	Feeding	Tundra	Unsure if previously recorded
64	2023/07/25	5	1/0/1900	1/0/1900	M	694	703	10	10	Caribou	0	1	1	Feeding	Tundra	Unsure if previously recorded
64	2023/07/21	1	1/0/1900	1/0/1900	M	502	551	39	50	Caribou	0	1	1	Feeding	Tundra	
64	2023/07/05	1	1/0/1900	1/0/1900	M	321	324	4	10	Caribou	1	0	1	Walking	Tundra	Unsure if same animal
64	2023/06/28	1	1/0/1900	1/0/1900	M	80	83	4	10	Caribou	1	0	1	Walking	Tundra	
64	2023/05/27	1	1/0/1900	1/0/1900	M	10	39	26	3	Caribou	2	0	2	Walking	Tundra	Changed to two adults - DB
64	2022/09/30	1	1/0/1900	1/0/1900	M	83	88	6	1	Caribou	1	0	1	Walking	Tundra	
64	2021/08/26	1	1/0/1900	1/0/1900	M	507	526	20	2	Caribou	1	0	1	Grazing	Tundra	
64	2021/08/26	1	1/0/1900	1/0/1900	M	514	519	6	1	Caribou	1	0	1	Grazing	Tundra	
65	2023/06/17	1	1/0/1900	1/0/1900	M	189	268	80	8	Caribou	0	1	1	Investigating camera	Tundra	
65	2021/08/13	1	1/0/1900	1/0/1900	M	268	277	10	1	Caribou	1	0	1	Walking	Tundra	Added by DB - DB
65	2021/06/09	1	1/0/1900	1/0/1900	M	4189	4218	30	3	Caribou	1	0	1	Walking	Tundra	
65	2021/06/07	1	1/0/1900	1/0/1900	M	4067	4094	18	2	Caribou	0	2	2	Walking	Tundra	
65	2021/06/03	1	1/0/1900	1/0/1900	M	3578	3718	140	14	Caribou	12	0	12	Walking	Tundra	
65	2021/06/03	1	1/0/1900	1/0/1900	M	3719	3748	30	3	Caribou	2	1	3	Walking	Tundra	
65	2021/06/03	1	1/0/1900	1/0/1900	M	3752	3842	91	10	Caribou	2	0	2	Investigating camera	Tundra	
65	2021/06/03	1	1/0/1900	1/0/1900	M	3854	3863	10	1	Caribou	1	0	1	Walking	Tundra	
65	2021/05/31	1	1/0/1900	1/0/1900	M	3358	3387	30	3	Caribou	1	0	1	Investigating camera	Tundra	
65	2021/05/30	1	1/0/1900	1/0/1900	M	3314	3338	19	3	Caribou	0	1	1	Investigating camera	Tundra	
65	2021/05/28	1	1/0/1900	1/0/1900	M	3082	3189	108	11	Caribou	3	4	7	Walking	Tundra	
66	2023/07/19	1	1/0/1900	1/0/1900	M	213	218	7	10	Caribou	0	1	1	Walking	Tundra	Unsure if this animal had been captured in the data previously
66	2023/07/12	1	1/0/1900	1/0/1900	M	172	176	5	10	Caribou	1	0	1	Running	Tundra	
66	2020/02/20	1	1/0/1900	1/0/1900	M	578	587	10	1	Caribou	1	0	1	Walking	Tundra	
66	2019/12/05	1	1/0/1900	1/0/1900	M	258	267	10	1	Caribou	1	0	1	Investigating camera	Tundra	
66	2019/12/04	1	1/0/1900	1/0/1900	M	272	322	50	5	Caribou	20	0	20	Walking	Tundra	Large herd in background
66	2019/10/06	1	1/0/1900	1/0/1900	M	74	83	10	1	Caribou	1	0	1	Walking	Tundra	
66	2019/10/02	1	1/0/1900	1/0/1900	M	55	64	10	1	Caribou	1	0	1	Walking	Tundra	
67	2019/10/14	1	1/0/1900	1/0/1900	M	80	99	20	2	Caribou	1	0	1	Walking	Tundra	
68	2023/06/22	1	1/0/1900	1/0/1900	M	21	40	20	2	Caribou	1	1	2	Investigating camera	Tundra	Assuming the caribou inspecting the camera is an adult. No identifying features.
68	2021/10/22	1	1/0/1900	1/0/1900	M	312	321	10	1	Caribou	3	0	3	Walking	Tundra	Added by DB
68	2020/06/03	1	1/0/1900	1/0/1900	M	684	773	90	9	Caribou	6	0	6	Walking	Tundra	
69	2022/08/28	1	1/0/1900	1/0/1900	M	454	543	90	9	Caribou	1	0	1	Investigating camera	Tundra	
69	2022/06/22	1	1/0/1900	1/0/1900	M	183	192	10	1	Caribou	1	0	1	Walking	Tundra	
69	2022/06/22	3	1/0/1900	1/0/1900	M	183	186	4	1	Caribou	1	0	1	Walking	Tundra	
69	2021/09/11	2	1/0/1900	1/0/1900	M	512	521	10	1	Caribou	1	0	1	Investigating camera	Tundra	Added be DB - DB
69	2021/09/11	1	1/0/1900	1/0/1900	M	392	511	39	13	Caribou	2	0	2	Investigating camera	Tundra	Classifier originally combined two events here. DB separated them - DB
69	2021/09/11	1	1/0/1900	1/0/1900	M	392	515	39	13	Caribou	2	0	2	Investigating camera	Tundra	
69	2021/07/22	1	1/0/1900	1/0/1900	M	159	168	10	1	Caribou	1	0	1	Walking	Tundra	Added by DB - DB
69	2021/05/22	1	1/0/1900	1/0/1900	M	1926	1995	70	7	Caribou	2	2	4	Walking	Tundra	
69	2021/05/22	1	1/0/1900	1/0/1900	M	1996	2005	10	1	Caribou	1	2	3	Walking	Tundra	
69	2021/05/22	1	1/0/1900	1/0/1900	M	2009	2068	60	6	Caribou	1	0	1	Investigating camera	Tundra	
69	2020/06/19	1	1/0/1900	1/0/1900	M	888	897	10	1	Caribou	1	0	1	Walking	Tundra	
69	2020/06/14	1	1/0/1900	1/0/1900	M	860	865	6	1	Caribou	1	0	1	Walking	Tundra	
70	2022/09/13	1	1/0/1900	1/0/1900	M	332	441	90	9	Caribou	5	0	5	Grazing	Tundra	Appear to all be adult males - DB
70	2022/09/13	1	1/0/1900	1/0/1900	M	332	440	100	11	Caribou	5	0	5	Grazing	Tundra	
70	2021/07/02	1	1/0/1900	1/0/1900	M	89	98	10	1	Caribou	1	0	1	Walking	Tundra	
70	2021/07/02	1	1/0/1900	1/0/1900	M	89	96	8	1	Caribou	1	0	1	Walking	Tundra	
70	2021/06/08	1	1/0/1900	1/0/1900	M	2470	2529	60	6	Caribou	1	1	2	Investigating camera	Tundra	
70	2021/06/04	1	1/0/1900	1/0/1900	M	2395	2454	60	6	Caribou	2	0	2	Walking	Tundra	
70	2021/05/31	1	1/0/1900	1/0/1900	M	2346	2385	40	4	Caribou	1	0	1	Investigating camera	Tundra	
70	2021/05/30	1	1/0/1900	1/0/1900	M	2241	2341	100	10	Caribou	3	0	3	Walking	Tundra	

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Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
70	2021/05/29	1	1/0/1900	1/0/1900	M	2220	2239	20	2	Caribou	3	0	3	Walking	Tundra	
70	2021/05/27	1	1/0/1900	1/0/1900	M	2134	2213	90	9	Caribou	2	0	2	Walking	Tundra	
71	2022/05/29	1	1/0/1900	1/0/1900	M	1392	1481	90	9	Caribou	8	0	8	Walking	Tundra	Classifier added multiple events together over multiple days, I separated these - DB
71	2022/05/28	1	1/0/1900	1/0/1900	M	1379	1388	10	1	Caribou	2	0	2	Grazing	Tundra	Classifier added multiple events together over multiple days, I separated these - DB
71	2022/05/28	1	1/0/1900	1/0/1900	M	1379	1531	56	16	Caribou	5	3	8	Grazing	Tundra	
71	2022/05/24	1	1/0/1900	1/0/1900	M	1297	1356	60	6	Caribou	11	0	11	Walking	Tundra	Changed from 11 young to 11 adults, it is may so there will be no young here, not of adult size especially - DB
71	2022/05/22	1	1/0/1900	1/0/1900	M	1278	1287	10	1	Caribou	4	0	4	Grazing	Tundra	Changed from 3 young to 4 adults as they are adult females - DB
71	2021/09/01	1	1/0/1900	1/0/1900	M	403	451	50	5	Caribou	1	0	1	Grazing	Tundra	Image 0402 which should be first of this series is missing - DB
71	2021/08/23	1	1/0/1900	1/0/1900	M	365	374	10	1	Caribou	1	0	1	Walking	Tundra	Added by DB - DB
71	2021/07/01	1	1/0/1900	1/0/1900	M	93	132	40	4	Caribou	1	0	1	Investigating camera	Tundra	
71	2021/07/01	1	1/0/1900	1/0/1900	M	93	113	12	2	Caribou	1	0	1	Investigating camera	Tundra	
71	2021/06/30	1	1/0/1900	1/0/1900	M	80	89	10	1	Caribou	1	0	1	Investigating camera	Tundra	
71	2021/05/29	1	1/0/1900	1/0/1900	M	2197	2286	90	9	Caribou	9	2	11	Walking	Tundra	Caribou are walking and then appear to run from something off camera
71	2021/05/29	1	1/0/1900	1/0/1900	M	2290	2299	10	1	Caribou	4	0	4	Walking	Tundra	
71	2021/05/29	1	1/0/1900	1/0/1900	M	2305	2309	4	1	Caribou	1	0	1	Standing	Tundra	
71	2020/07/09	1	1/0/1900	1/0/1900	M	1165	1167	3	1	Caribou	1	0	1	Walking	Tundra	
71	2020/04/20	1	1/0/1900	1/0/1900	M	828	837	10	1	Caribou	1	1	2	Walking	Tundra	
71	2020/04/20	1	1/0/1900	1/0/1900	M	838	857	10	1	Caribou	5	3	8	Walking	Tundra	
71	2020/03/19	1	1/0/1900	1/0/1900	M	689	721	33	4	Caribou	1	0	1	Investigating camera	Tundra	
71	2020/03/15	1	1/0/1900	1/0/1900	M	657	666	10	1	Caribou	1	0	1	Walking	Tundra	
71	2019/09/26	1	1/0/1900	1/0/1900	M	47	56	10	1	Caribou	8	0	8	Grazing	Tundra	
71	2019/09/26	1	1/0/1900	1/0/1900	M	57	63	7	1	Caribou	1	0	1	Walking	Tundra	
71	2019/09/26	1	1/0/1900	1/0/1900	M	67	76	10	1	Caribou	4	0	4	Walking	Tundra	
71	2019/09/26	1	1/0/1900	1/0/1900	M	77	96	20	2	Caribou	5	0	5	Walking	Tundra	
72	2023/08/24	1	1/0/1900	1/0/1900	M	388	453	39	70	Caribou	2	0	2	Investigating camera	Tundra	
72	2023/07/28	1	1/0/1900	1/0/1900	M	272	286	15	20	Caribou	1	0	1	Walking	Tundra	
72	2023/07/14	1	1/0/1900	1/0/1900	M	210	214	6	10	Caribou	1	0	1	Walking	Tundra	
72	2022/08/18	1	1/0/1900	1/0/1900	M	274	283	10	1	Caribou	1	0	1	Walking	Tundra	
72	2021/08/06	1	1/0/1900	1/0/1900	M	194	203	10	1	Caribou	1	0	1	Walking	Tundra	
72	2021/08/06	1	1/0/1900	1/0/1900	M	194	198	5	1	Caribou	1	0	1	Walking	Tundra	
73	2022/08/18	1	1/0/1900	1/0/1900	M	267	326	60	6	Caribou	1	0	1	Investigating camera	Tundra	Turned 3 events into 1 - DB
73	2022/08/18	4	1/0/1900	1/0/1900	M	307	326	20	2	Caribou	1	0	1	Walking	Tundra	
73	2022/07/29	2	1/0/1900	1/0/1900	M	194	203	10	1	Caribou	1	0	1	Walking	Tundra	Edit from grazing to walking - DB
73	2022/07/28	1	1/0/1900	1/0/1900	M	184	193	10	1	Caribou	1	0	1	Investigating camera	Tundra	
73	2022/07/28	1	1/0/1900	1/0/1900	M	184	192	9	1	Caribou	1	0	1	Investigating camera	Tundra	
73	2021/09/25	1	1/0/1900	1/0/1900	M	504	523	20	2	Caribou	5	0	5	Grazing	Tundra	Caribou fighting into the tripod 0514-0519? - DB
73	2021/09/25	1	1/0/1900	1/0/1900	M	504	518	16	2	Caribou	5	0	5	Grazing	Tundra	
73	2021/07/17	1	1/0/1900	1/0/1900	M	144	153	10	1	Caribou	1	0	1	Walking	Tundra	
73	2021/06/04	1	1/0/1900	1/0/1900	M	2355	2384	30	3	Caribou	1	0	1	Investigating camera	Tundra	
73	2021/06/04	1	1/0/1900	1/0/1900	M	2388	2447	60	6	Caribou	2	0	2	Investigating camera	Tundra	
73	2021/05/31	1	1/0/1900	1/0/1900	M	2213	2342	130	13	Caribou	1	0	1	Investigating camera	Tundra	
73	2021/05/27	1	1/0/1900	1/0/1900	M	2174	2203	20	1	Caribou	3	0	3	Walking	Tundra	
73	2021/05/22	1	1/0/1900	1/0/1900	M	1909	2158	250	25	Caribou	1	0	1	Investigating camera	Tundra	
74	2023/08/20	1	1/0/1900	1/0/1900	M	729	748	20	40	Caribou	1	3	4	Feeding	Tundra	
74	2023/08/12	1	1/0/1900	1/0/1900	M	645	704	54	60	Caribou	1	1	2	Investigating camera	Tripod	Unsure if previously noted
74	2023/08/07	1	1/0/1900	1/0/1900	M	610	627	17	40	Caribou	0	0	0	Feeding	Tundra	Unable to determine life stage
74	2023/07/27	1	1/0/1900	1/0/1900	M	530	533	4	10	Caribou	0	1	1	Investigating camera	Tundra	
74	2023/07/04	1	1/0/1900	1/0/1900	M	81	82	1	10	Caribou	1	0	1	Running	Tundra	
74	2023/06/29	1	1/0/1900	1/0/1900	M	53	62	10	10	Caribou	3	1	4	Investigating camera	Tripod	Unsure of age structure of animals captured in frame.
74	2022/10/07	1	1/0/1900	1/0/1900	M	222	231	10	1	Caribou	3	0	3	Walking	Tundra	
74	2022/10/04	1	1/0/1900	1/0/1900	M	63	72	10	1	Caribou	1	0	1	Walking	Tundra	
74	2022/09/15	1	1/0/1900	1/0/1900	M	411	420	10	1	Caribou	1	0	1	Walking	Tundra	
74	2022/09/15	8	1/0/1900	1/0/1900	M	416	420	5	1	Caribou	1	0	1	Walking	Tundra	

APPENDIX L: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, BOSTON PROJECT, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
74	2022/09/03	1	1/0/1900	1/0/1900	M	355	374	20	2	Caribou	1	0	1	Walking	Tundra	
74	2022/08/25	1	1/0/1900	1/0/1900	M	305	314	10	1	Caribou	1	0	1	Walking	Tundra	
74	2022/08/22	1	1/0/1900	1/0/1900	M	279	298	20	2	Caribou	2	0	2	Walking	Tundra	
74	2022/08/17	1	1/0/1900	1/0/1900	M	251	260	10	1	Caribou	1	0	1	Walking	Tundra	
74	2022/07/22	1	1/0/1900	1/0/1900	M	166	175	10	1	Caribou	1	0	1	Walking	Tundra	
74	2019/10/09	1	1/0/1900	1/0/1900	M	93	102	10	1	Caribou	1	0	1	Walking	Tundra	
74	2019/10/06	1	1/0/1900	1/0/1900	M	74	83	10	1	Caribou	2	0	2	Grazing	Tundra	
75	2023/07/10	1	1/0/1900	1/0/1900	M	159	164	7	10	Caribou	1	0	1	Walking	Tundra	
75	2022/06/18	1	1/0/1900	1/0/1900	M	71	120	50	5	Caribou	4	0	4	Grazing	Tundra	Look like all females but can not be positive - DB
75	2022/06/18	1	1/0/1900	1/0/1900	M	71	115	45	5	Caribou	4	0	4	Grazing	Tundra	
75	2022/06/12	1	1/0/1900	1/0/1900	M	1224	1253	30	3	Caribou	1	0	1	Walking	Tundra	Added by DB - DB
75	2021/06/20	1	1/0/1900	1/0/1900	M	43	52	10	1	Caribou	3	0	3	Walking	Tundra	
76	2023/07/27	1	1/0/1900	1/0/1900	M	194	197	4	10	Caribou	1	0	1	Running	Tundra	
76	2023/07/13	1	1/0/1900	1/0/1900	M	102	104	3	10	Caribou	1	0	1	Running	Tundra	
76	2023/07/07	1	1/0/1900	1/0/1900	M	77	779	3	10	Caribou	1	0	1	Running	Tundra	
76	2023/07/06	1	1/0/1900	1/0/1900	M	61	66	6	10	Caribou	1	0	1	Running	Tundra	
76	2023/07/03	1	1/0/1900	1/0/1900	M	45	46	1	10	Caribou	1	0	1	Running	Tundra	
76	2023/06/11	1	1/0/1900	1/0/1900	M	2464	2469	6	1	Caribou	1	0	1	Walking	Tundra	
76	2021/10/15	1	1/0/1900	1/0/1900	M	543	552	10	1	Caribou	1	0	1	Walking	Tundra	Transferred to this event - DB
76	2021/10/15	1	1/0/1900	1/0/1900	M	543	546	3	1	Caribou	1	0	1	Walking	Tundra	
76	2021/08/05	1	1/0/1900	1/0/1900	M	247	296	50	5	Caribou	1	0	1	Grazing	Tundra	
76	2021/08/05	1	1/0/1900	1/0/1900	M	300	307	10	1	Caribou	1	0	1	Grazing	Tundra	
76	2021/08/05	1	1/0/1900	1/0/1900	M	247	291	17	5	Caribou	1	0	1	Grazing	Tundra	
76	2021/08/05	1	1/0/1900	1/0/1900	M	300	307	8	1	Caribou	1	0	1	Grazing	Tundra	
76	2021/07/30	1	1/0/1900	1/0/1900	M	222	231	10	1	Caribou	2	0	2	Walking	Tundra	
76	2020/08/06	1	1/0/1900	1/0/1900	M	1039	1058	20	2	Caribou	1	0	1	Feeding	Tundra	
77	2023/07/11	1	1/0/1900	1/0/1900	M	219	224	6	10	Caribou	1	0	1	Walking	Tundra	
77	2023/07/09	1	1/0/1900	1/0/1900	M	203	204	2	10	Caribou	1	0	1	Walking	Tundra	
77	2023/07/02	1	1/0/1900	1/0/1900	M	139	148	10	10	Caribou	1	0	1	Walking	Tundra	
77	2023/07/02	1	1/0/1900	1/0/1900	M	152	154	2	10	Caribou	1	0	1	Walking	Tundra	
77	2020/06/20	1	1/0/1900	1/0/1900	M	1208	1237	30	3	Caribou	1	0	1	Investigating camera	Tundra	
77	2020/06/08	1	1/0/1900	1/0/1900	M	1165	1174	10	1	Caribou	1	0	1	Walking	Tundra	
78	2023/07/15	1	1/0/1900	1/0/1900	M	101	102	3	10	Caribou	0	0	0	Running	Tundra	
78	2022/08/05	2	1/0/1900	1/0/1900	M	316	317	2	1	Caribou	1	0	1	Walking	Tundra	
79	2023/07/03	1	1/0/1900		M	62	63	2	10	Caribou	0	1	1	Running	Tundra	
79	2022/09/25	1	1/0/1900	1/0/1900	M	329	348	20	2	Caribou	1	0	1	Grazing	Tundra	
79	2022/09/25	1	1/0/1900	1/0/1900	M	329	346	15	2	Caribou	1	0	1	Grazing	Tundra	
79	2022/06/14	1	1/0/1900	1/0/1900	M	1479	1528	50	5	Caribou	4	0	4	Walking	Tundra	Went from 3 adults and 1 young to 4 adults - DB
79	2021/06/28	1	1/0/1900	1/0/1900	M	226	235	10	1	Caribou	2	0	2	Walking	Tundra	
79	2021/06/18	1	1/0/1900	1/0/1900	M	113	192	80	8	Caribou	1	0	1	Investigating camera	Tundra	
79	2021/06/15	1	1/0/1900	1/0/1900	M	37	106	70	7	Caribou	2	0	2	Walking	Tundra	
79	2021/06/15	1	1/0/1900	1/0/1900	M	37	98	21	8	Caribou	2	0	2	Walking	Tundra	
79	2020/07/19	1	1/0/1900	1/0/1900	M	1165	1174	10	1	Caribou	0	1	1	Walking	Tundra	
80	2023/07/26	1	1/0/1900	1/0/1900	M	284	284	1	10	Caribou	1	0	1	Walking	Tundra	Unsure if same animal noted above
80	2023/07/22	1	1/0/1900	1/0/1900	M	179	180	2	10	Caribou	0	1	1	Walking	Tundra	
80	2023/07/10	1	1/0/1900	1/0/1900	M	113	122	10	10	Caribou	0	1	1	Feeding	Tundra	
80	2023/07/04	1	1/0/1900	1/0/1900	M	75	76	2	10	Caribou	1	0	1	Walking	Tundra	
80	2023/07/03	1	1/0/1900	1/0/1900	M	52	53	2	10	Caribou	1	0	1	Walking	Tundra	
80	2021/07/04	1	1/0/1900	1/0/1900	M	152	161	10	1	Caribou	3	0	3	Grazing	Tundra	
80	2021/07/04	2	1/0/1900	1/0/1900	M	164	173	10	1	Caribou	2	0	2	Grazing	Tundra	
81	2022/09/26	1	1/0/1900	1/0/1900	M	845	894	50	5	Caribou	2	0	2	Grazing	Tundra	Looks like adult male and adult female - DB
81	2020/05/25	1	1/0/1900	1/0/1900	M	4693	4702	10	1	Caribou	2	0	2	Walking	Tundra	Look to be Peary Caribou but might need a second look to make sure
82	2023/07/12	1	1/0/1900	1/0/1900	M	159	166	8	10	Caribou	1	0	1	Walking	Tundra	
82	2023/07/12	1	1/0/1900	1/0/1900	M	179	182	4	10	Caribou	0	1	1	Walking	Tundra	
82	2023/07/12	1	1/0/1900	1/0/1900	M	189	191	3	10	Caribou	1	0	1	Walking	Tundra	
82	2023/07/11	1	1/0/1900	1/0/1900	M	136	141	6	10	Caribou	1	0	1	Running	Tundra	

APPENDIX L: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, BOSTON PROJECT, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
82	2023/07/10	1	1/0/1900	1/0/1900	M	126	128	3	10	Caribou	1	0	1	Running	Tundra	
82	2023/07/07	1	1/0/1900	1/0/1900	M	104	113	10	10	Caribou	1	0	1	Running	Tundra	Verify if same animal a identified in previous record
82	2023/07/06	1	1/0/1900	1/0/1900	M	81	88	8	10	Caribou	1	0	1	Running	Tundra	
82	2023/07/06	1	1/0/1900	1/0/1900	M	94	100	7	10	Caribou	1	0	1	Running	Tundra	Verify if same animal as identified in previous record
82	2023/06/26	1	1/0/1900	1/0/1900	M	34	34	1	20	Caribou	0	0	0	Investigating camera	Tripod	Unable to determine species, although caribou is likely
82	2023/06/25	1	1/0/1900	1/0/1900	M	21	27	8	10	Caribou	0	1	1	Walking	Tundra	
82	2022/07/22	1	1/0/1900	1/0/1900	M	217	226	10	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/17	2	1/0/1900	1/0/1900	M	189	198	10	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/13	1	1/0/1900	1/0/1900	M	137	146	10	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/13	6	1/0/1900	1/0/1900	M	137	139	3	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/11	1	1/0/1900	1/0/1900	M	111	120	10	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/11	2	1/0/1900	1/0/1900	M	121	130	10	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/11	4	1/0/1900	1/0/1900	M	111	115	5	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/11	5	1/0/1900	1/0/1900	M	121	126	6	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/10	1	1/0/1900	1/0/1900	M	98	107	10	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/10	3	1/0/1900	1/0/1900	M	98	101	4	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/09	1	1/0/1900	1/0/1900	M	85	94	10	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/09	2	1/0/1900	1/0/1900	M	85	92	8	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/08	1	1/0/1900	1/0/1900	M	75	77	10	1	Caribou	1	0	1	Walking	Tundra	
82	2022/07/08	1	1/0/1900	1/0/1900	M	75	77	3	1	Caribou	1	0	1	Walking	Tundra	
82	2021/07/17	1	1/0/1900	1/0/1900	M	243	252	10	1	Caribou	1	0	1	Feeding	Tundra	
82	2021/07/17	1	1/0/1900	1/0/1900	M	243	250	8	1	Caribou	1	0	1	Feeding	Tundra	
83	2023/08/04	1	1/0/1900	1/0/1900	M	198	227	30	30	Caribou	1	0	1	Feeding	Tundra	
83	2023/06/23	1	1/0/1900	1/0/1900	M	3698	3777	80	8	Caribou	1	1	2	Feeding	Tundra	
83	2023/06/20	1	1/0/1900	1/0/1900	M	3572	3578	7	1	Caribou	1	0	1	Walking	Tundra	
83	2023/06/02	1	1/0/1900	1/0/1900	M	2675	2684	10	1	Caribou	1	0	1	Investigating camera	Tundra	
83	2022/06/02	1	1/0/1900	1/0/1900	M	1343	1362	20	2	Caribou	2	0	2	Grazing	Tundra	Adjusted from 1 to 2 - DB
83	2021/07/25	1	1/0/1900	1/0/1900	M	337	356	20	2	Caribou	1	0	1	Grazing	Tundra	
83	2021/07/10	1	1/0/1900	1/0/1900	M	189	198	10	1	Caribou	1	0	1	Feeding	Tundra	
83	2021/07/08	1	1/0/1900	1/0/1900	M	176	185	10	1	Caribou	1	0	1	Feeding	Tundra	
83	2021/07/02	1	1/0/1900	1/0/1900	M	135	144	10	1	Caribou	1	0	1	Standing	Tundra	
83	2021/07/02	1	1/0/1900	1/0/1900	M	135	138	4	1	Caribou	1	0	1	Standing	Tundra	
84	2023/06/25	1	1/0/1900	1/0/1900	M	31	70	40	40	Caribou	0	1	1	Feeding	Tundra	Also investigating camera as shutter closes and opens
84	2021/07/31	1	1/0/1900	1/0/1900	M	263	272	10	1	Caribou	1	0	1	Walking	Tundra	
84	2021/07/31	4	1/0/1900	1/0/1900	M	263	265	3	1	Caribou	1	0	1	Walking	Tundra	
84	2021/07/06	1	1/0/1900	1/0/1900	M	141	150	10	1	Caribou	1	0	1	Walking	Tundra	
84	2021/07/06	1	1/0/1900	1/0/1900	M	141	150	10	1	Caribou	1	0	1	Walking	Tundra	
85	2023/07/30	1	1/0/1900	1/0/1900	M	107	115	9	9	Caribou	1	0	1	Walking	Tundra	
85	2023/07/16	1	1/0/1900	1/0/1900	M	92	98	7	9	Caribou	1	0	1	Walking	Tundra	
85	2023/07/09	1	1/0/1900	1/0/1900	M	62	79	19	21	Caribou	1	0	1	Walking	Tundra	
85	2023/07/09	1	1/0/1900	1/0/1900	M	83	85	3	3	Caribou	1	0	1	Running	Tundra	
85	2023/06/17	1	1/0/1900		M	250	291	42	14	Caribou	3	0	3	Investigating camera	Tundra	Not sure of age
85	2023/06/13	1	1/0/1900	1/0/1900	M	232	246	15	3	Caribou	1	0	1	Investigating camera	Tundra	
85	2022/08/27	5	1/0/1900	1/0/1900	M	106	147	39	13	Caribou	1	0	1	Investigating camera	Tundra	
85	2022/08/12	4	1/0/1900	1/0/1900	M	94	102	9	3	Caribou	1	0	1	Grazing	Tundra	
85	2022/08/09	3	1/0/1900	1/0/1900	M	82	89	8	3	Caribou	1	0	1	Walking	Tundra	
85	2022/08/07	1	1/0/1900	1/0/1900	M	49	63	15	5	Caribou	1	0	1	Grazing	Tundra	
86	2023/06/13	1	1/0/1900	1/0/1900	M	2585	2594	10	1	Caribou	2	0	2	Feeding	Tundra	
86	2021/07/05	1	1/0/1900	1/0/1900	M	174	233	60	6	Caribou	2	0	2	Grazing	Tundra	1 to 2 - DB
87	2022/08/22	1	1/0/1900	1/0/1900	M	207	226	20	2	Caribou	1	0	1	Investigating camera	Tundra	
88	2023/08/14	1	1/0/1900	1/0/1900	M	209	210	2	10	Caribou	1	0	1	Walking	Tundra	
88	2023/08/03	1	1/0/1900	1/0/1900	M	156	175	20	20	Caribou	1	0	1	Feeding	Tundra	
88	2023/03/28	1	1/0/1900	1/0/1900	M	8761	8831	71	11	Caribou	3	2	5	Feeding	Tundra	
88	2022/07/28	1	1/0/1900	1/0/1900	M	162	171	10	1	Caribou	1	0	1	Grazing	Tundra	
88	2021/07/31	1	1/0/1900	1/0/1900	M	192	201	10	1	Caribou	1	0	1	Walking	Tundra	Added by DB - DB
88	2020/08/28	1	1/0/1900	1/0/1900	M	1115	1204	90	9	Caribou	3	0	3	Walking	Tundra	

APPENDIX L: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, BOSTON PROJECT, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
88	2020/08/17	1	1/0/1900	1/0/1900	M	1065	1084	20	2	Caribou	1	0	1	Walking	Tundra	
88	2020/08/15	1	1/0/1900	1/0/1900	M	1049	1058	10	1	Caribou	2	0	2	Walking	Tundra	
88	2020/08/06	1	1/0/1900	1/0/1900	M	1009	1018	10	1	Caribou	1	0	1	Walking	Tundra	
88	2019/10/05	1	1/0/1900	1/0/1900	M	41	50	10	1	Caribou	1	0	1	Walking	Tundra	Only antlers visible
61	2022/10/08	1	1/0/1900	1/0/1900	T	582	582	1	1	Caribou	1	0	1	Standing	Tundra	
61	2019/12/28	1	1/0/1900	1/0/1900	T	424	424	1	0	Caribou	1	0	1	Standing	Tundra	
61	2019/12/28	1	1/0/1900	1/0/1900	T	425	425	1	0	Caribou	1	0	1	Standing	Tundra	
64	2022/09/30	1	1/0/1900	1/0/1900	T	50	80	31	3	Caribou	7	0	7	Walking	Tundra	
71	2020/03/14	1	1/0/1900	1/0/1900	T	656	656	1	0	Caribou	6	0	6	Walking	Tundra	
73	2022/08/18		1/0/1900		T	266		1		Caribou	1	0	1	Walking	Tundra	
81	2023/06/13	1	1/0/1900	1/0/1900	T	2	9	8	8	Caribou	1	0	1	Feeding	Tundra	
87	2023/06/11	1	1/0/1900	1/0/1900	T	2541	2542	2	2	Caribou	2	0	2	Bedded	Tundra	
64	2021/07/03	1	1/0/1900	1/0/1900		102	106	5	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
82	2020/07/16	1	1/0/1900	1/0/1900		1036	1055	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	Second trigger is from bear moving tripod
88	2021/07/27	1	1/0/1900	1/0/1900		152	153	2	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
61	2023/07/15	1	1/0/1900	1/0/1900	M	241	280	40	40	Grizzly Bear	1	0	1	Investigating camera	Tripod	
61	2021/08/01	1	1/0/1900	1/0/1900	M	312	341	3	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	Added by DB - DB
61	2021/07/22	1	1/0/1900	1/0/1900	M	259	278	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
61	2021/07/22	1	1/0/1900	1/0/1900	M	259	266	7	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
62	2023/07/24	1	1/0/1900	1/0/1900	M	188	210	20	30	Grizzly Bear	1	0	1	Investigating camera	Tripod	
62	2021/06/26	1	1/0/1900	1/0/1900	M	64	83	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
63	2023/07/17	1	1/0/1900	1/0/1900	M	180	181	2	10	Grizzly Bear	0	0	0	Investigating camera	Tripod	Unknown life stage
63	2021/09/29	1	1/0/1900	1/0/1900	M	702	711	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
63	2021/09/29	1	1/0/1900	1/0/1900	M	702	705	4	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
64	2023/08/09	1	1/0/1900	1/0/1900	M	839	848	10	10	Grizzly Bear	1	0	1	Investigating camera	Tripod	
64	2021/07/21	1	1/0/1900	1/0/1900	M	276	315	40	4	Grizzly Bear	1	0	1	Investigating camera	Tundra	
64	2021/07/21	1	1/0/1900	1/0/1900	M	278	305	28	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
64	2021/07/13	1	1/0/1900	1/0/1900	M	232	251	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
64	2021/07/13	1	1/0/1900	1/0/1900	M	232	244	13	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
64	2021/07/03	1	1/0/1900	1/0/1900	M	102	111	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
66	2023/08/01	1	1/0/1900	1/0/1900	M	274	285	5	20	Grizzly Bear	0	0	0	Investigating camera	Tripod	Unable to determine life stage, or if previously counted. Camera knocked over for duration.
66	2023/06/28	1	1/0/1900	1/0/1900	M	73	120	23	50	Grizzly Bear	1	0	1	Investigating camera	Tripod	
66	2022/06/22	1	1/0/1900	1/0/1900	M	1077	1086	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
66	2020/07/08	1	1/0/1900	1/0/1900	M	1155	1184	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	Knocked camera over
66	2020/06/30	1	1/0/1900	1/0/1900	M	1108	1127	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
66	2020/06/11	1	1/0/1900	1/0/1900	M	964	983	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
66	2020/05/11	1	1/0/1900	1/0/1900	M	839	858	20	2	Grizzly Bear	1	0	1	Walking	Tundra	
67	2021/06/22	1	1/0/1900	1/0/1900	M	132	143	10	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
70	2023/07/25	1	1/0/1900	1/0/1900	M	365	393	7	20	Grizzly Bear	1	0	1	Investigating camera	Tripod	Unsure if same bear previously noted
70	2023/07/15	1	1/0/1900	1/0/1900	M	174	231	28	60	Grizzly Bear	1	0	1	Investigating camera	Tripod	Unsure if same bear previously noted
70	2023/07/14	1	1/0/1900	1/0/1900	M	101	167	24	70	Grizzly Bear	1	0	1	Investigating camera	Tripod	
71	2023/05/22	1	1/0/1900	1/0/1900	M	27	86	60	6	Grizzly Bear	1	0	1	Investigating camera	Tundra	
71	2023/05/22	2	1/0/1900	1/0/1900	M	97	124	27	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
71	2022/05/26	1	1/0/1900	1/0/1900	M	1363	1372	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
71	2021/07/16	1	1/0/1900	1/0/1900	M	218	237	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
71	2021/07/02	1	1/0/1900	1/0/1900	M	136	165	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
71	2021/07/02	1	1/0/1900	1/0/1900	M	136	157	6	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
71	2020/06/05	1	1/0/1900	1/0/1900	M	1023	1032	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
72	2021/06/29	1	1/0/1900	1/0/1900	M	67	76	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	Added by DB - DB
74	2023/07/29	1	1/0/1900	1/0/1900	M	543	552	3	20	Grizzly Bear	0	0	0	Investigating camera	Tripod	Unable to determine life stage
74	2022/07/12	1	1/0/1900	1/0/1900	M	103	122	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	Unsure, wolverine or grizzly bear - DB
75	2023/07/09	1	1/0/1900	1/0/1900	M	136	144	7	10	Grizzly Bear	0	0	0	Investigating camera	Tripod	Unable to determine life stage
76	2021/06/17	1	1/0/1900	1/0/1900	M	53	72	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
76	2021/06/17	1	1/0/1900	1/0/1900	M	53	69	8	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
77	2023/08/13	1	1/0/1900	1/0/1900	M	546	546	1	30	Grizzly Bear	1	0	1	Investigating camera	Tripod	Camera angle repositioned by bear

APPENDIX L: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, BOSTON PROJECT, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
77	2020/07/27	1	1/0/1900	1/0/1900	M	1429	1458	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	Grizzly is moving the camera around
77	2020/06/05	1	1/0/1900	1/0/1900	M	1146	1155	10	1	Grizzly Bear	1	0	1	Investigating camera	Tripod	
78	2021/06/13	1	1/0/1900	1/0/1900	M	21	30	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	Added by DB - DB
79	2022/05/07	1	1/0/1900	1/0/1900	M	1255	1344	90	9	Grizzly Bear	1	0	1	Investigating camera	Tundra	
80	2023/07/24	1	1/0/1900	1/0/1900	M	198	277	80	80	Grizzly Bear	1	1	2	Investigating camera	Tripod	Shadow of bear on tripod evident through series. May be two bears - mother and cub?
80	2021/07/24	1	1/0/1900	1/0/1900	M	254	263	10	1	Grizzly Bear	0	1	1	Investigating camera	Tundra	This was originally called a FOX but it is very clearly a GRIZZLY BEAR - DB
80	2021/07/14	1	1/0/1900	1/0/1900	M	214	223	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
80	2021/07/14	1	1/0/1900	1/0/1900	M	214	217	5	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
81	2023/08/05	1	1/0/1900	1/0/1900	M	192	232	19	70	Grizzly Bear	0	0	0	Investigating camera	Tripod	Life stage not determined. Not sure if previously noted on July 12.
81	2023/07/12	1	1/0/1900	1/0/1900	M	80	100	10	30	Grizzly Bear	0	0	0	Investigating camera	Tripod	Life stage not determined
81	2021/07/29	1	1/0/1900	1/0/1900	M	356	365	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
81	2021/07/29	1	1/0/1900	1/0/1900	M	356	358	3	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
81	2021/07/28	1	1/0/1900	1/0/1900	M	326	355	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	Added by DB - DB
81	2021/07/28	1	1/0/1900	1/0/1900	M	333	348	9	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	
81	2021/06/28	1	1/0/1900	1/0/1900	M	86	105	20	2	Grizzly Bear	1	0	1	Investigating camera	Tundra	Added by DB - DB
82	2023/06/03	1	1/0/1900	1/0/1900	M	2266	2285	20	2	Grizzly Bear	1	2	3	Walking	Tundra	
82	2021/09/21	1	1/0/1900	1/0/1900	M	531	540	10	1	Grizzly Bear	1	0	1	Walking	Tundra	
82	2021/07/20	1	1/0/1900	1/0/1900	M	272	301	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
82	2021/07/20	1	1/0/1900	1/0/1900	M	272	285	20	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
82	2021/07/18	1	1/0/1900	1/0/1900	M	256	265	10	1	Grizzly Bear	1	0	1	Walking	Tundra	
82	2021/07/18	1	1/0/1900	1/0/1900	M	256	259	4	1	Grizzly Bear	1	0	1	Walking	Tundra	
82	2021/07/16	1	1/0/1900	1/0/1900	M	228	237	10	1	Grizzly Bear	1	0	1	Walking	Tundra	
82	2021/07/16	1	1/0/1900	1/0/1900	M	228	233	6	1	Grizzly Bear	1	0	1	Walking	Tundra	
82	2019/09/03	1	1/0/1900	1/0/1900	M	490	509	20	2	Grizzly Bear	1	2	3	Walking	Tundra	Mama bear and two new cubs
83	2022/08/11	3	1/0/1900	1/0/1900	M	1877	1886	10	1	Grizzly Bear	1	0	1	Hunting	Tundra	
83	2021/07/22	1	1/0/1900	1/0/1900	M	285	314	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	Was multiple events included as one, I separated these - DB
83	2021/07/22	2	1/0/1900	1/0/1900	M	315	324	10	1	Grizzly Bear	1	0	1	Investigating camera		Was multiple events included as one, I separated these - DB
83	2021/07/21	1	1/0/1900	1/0/1900	M	232	281	50	5	Grizzly Bear	1	0	1	Investigating camera	Tundra	Was multiple events included as one, I separated these - DB
84	2021/07/24	1	1/0/1900	1/0/1900	M	215	238	30	3	Grizzly Bear	1	0	1	Hunting	Tundra	
84	2021/07/24	3	1/0/1900	1/0/1900	M	215	238	24	3	Grizzly Bear	1	0	1	Hunting	Tundra	
85	2023/08/11	1	1/0/1900	1/0/1900	M	122	136	14	15	Grizzly Bear	0	1	1	Investigating camera	Tripod	Only young bear visible. Actual trigger number is greater however no bear is noted in any of the additional frames.
86	2021/07/19	1	1/0/1900	1/0/1900	M	316	355	40	4	Grizzly Bear	1	0	1	Investigating camera	Tundra	Changed from young to an adult, obviously an adult bear - DB
87	2021/07/26	1	1/0/1900	1/0/1900	M	147	176	30	3	Grizzly Bear	1	0	1	Investigating camera	Tundra	
88	2023/05/28	1	1/0/1900	1/0/1900	M	1900	1907	8	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	Unsure of animal species.
88	2021/07/27	1	1/0/1900	1/0/1900	M	152	161	10	1	Grizzly Bear	1	0	1	Investigating camera	Tundra	
62	2021/08/31	1	1/0/1900	1/0/1900	M	339	378	40	4	Muskox	1	0	1	Grazing	Tundra	
71	2020/07/26	1	1/0/1900	1/0/1900	M	1229	1257	29	3	Muskox	2	0	2	Investigating camera	Tundra	
71	2020/05/27	2	1/0/1900	1/0/1900	M	979	998	20	2	Muskox	1	0	1	Investigating camera	Tundra	
73	2021/09/21	1	1/0/1900	1/0/1900	M	445	494	50	5	Muskox	6	1	7	Grazing	Tundra	Changed from 7 adults to 6 adults 1 young - DB
74	2023/07/23	1	1/0/1900	1/0/1900	M	448	510	64	70	Muskox	1	0	1	Investigating camera	Tripod	Unsure if noted previously
74	2023/07/05	30	1/0/1900	1/0/1900	M	94	393	290	300	Muskox	10	2	12	Sitting	Tundra	
74	2019/10/21	1	1/0/1900	1/0/1900	M	332	431	100	10	Muskox	3	0	3	Investigating camera	Tundra	
81	2021/08/11	1	1/0/1900	1/0/1900	M	408	447	40	4	Muskox	23	0	23	Grazing	Tundra	20 to 23 - DB
81	2021/07/12	1	1/0/1900	1/0/1900	M	251	256	6	1	Muskox	1	0	1	Grazing	Tundra	
85	2022/08/08	2	1/0/1900	1/0/1900	M	67	79	13	5	Muskox	1	0	1	Investigating camera	Tundra	
82	2020/04/06	1	1/0/1900	1/0/1900		636	654	10	1	Red Fox	1	0	1	Walking	Tundra	
61	2020/04/26	1	1/0/1900	1/0/1900	M	868	872	4	1	Fox	1	0	1	Walking	Tundra	
62	2022/07/27	1	1/0/1900	1/0/1900	M	181	189	10	1	Common Raven	3	0	3	Flying	Tundra	Ravens - DB
64	2023/05/18	1	1/0/1900	1/0/1900	M	4	12	9	1	Fox	1	0	1	Walking	Tundra	
65	2022/08/03	1	1/0/1900	1/0/1900	M	242	251	10	1	Common Raven	1	0	1	Flying	Tundra	
69	2023/06/07	1	1/0/1900	1/0/1900	M	45	68	24	2	Common Raven	1	0	1	Investigating camera	Tundra	
69	2021/07/12	1	1/0/1900	1/0/1900	M	116	125	10	1	Grey Wolf	1	0	1	Walking	Tundra	
69	2021/07/12	1	1/0/1900	1/0/1900	M	116	118	3	1	Grey Wolf	1	0	1	Walking	Tundra	
70	2023/08/24	14021	1/0/1900	1/0/1900	M	511	513	3	10	Fox	1	0	1	Running	Tundra	Unsure if same fox previously noted

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Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
70	2023/08/09	1	1/0/1900	1/0/1900	M	456	465	10	10	Fox	1	0	1	Hunting	Tundra	
70	2023/05/04	1	1/0/1900	1/0/1900	M	547	551	5	1	Red Fox	1	0	1	Investigating camera	Tundra	
70	2022/06/09	1	1/0/1900	1/0/1900	M	1485	1494	10	1	Fox	1	0	1	Walking	Tundra	Added by DB - DB
70	2022/05/18	1	1/0/1900	1/0/1900	M	1249	1258	10	1	Arctic Fox	1	0	1	Walking	Tundra	Added by DB - DB
70	2021/05/08	1	1/0/1900	1/0/1900	M	1987	1996	10	1	Arctic Fox	1	0	1	Walking	Tundra	
70	2020/05/07	1	1/0/1900	1/0/1900	M	736	745	10	1	Arctic Fox	1	0	1	Walking	Tundra	Wolverine or Fox?
71	2022/06/16	1	1/0/1900	1/0/1900	M	1673	1692	20	2	Grey Wolf	2	0	2	Walking	Tundra	Classifier added multiple events together over the day, I separated these - DB
71	2022/06/16	2	1/0/1900	1/0/1900	M	1706	1715	10	1	Grey Wolf	1	0	1	Walking	Tundra	Classifier added multiple events together over the day, I separated these - DB
71	2022/06/16	1	1/0/1900	1/0/1900	M	1673	1708	5	3	Grey Wolf	2	0	2	Walking	Tundra	
71	2021/07/16	1	1/0/1900	1/0/1900	M	241	250	10	1	Common Raven	1	0	1	Flying	Tundra	Added by DB - DB
71	2020/07/28	1	1/0/1900	1/0/1900	M	1262	1263	2	1	Grey Wolf	1	0	1	Running	Tundra	
72	2023/07/31	1	1/0/1900	1/0/1900	M	301	304	4	10	Fox	1	0	1	Investigating camera	Tundra	
72	2023/06/28	1	1/0/1900	1/0/1900	M	95	154	15	80	Common Raven	1	0	1	Other	Tripod	Confirm species. Presumed common raven.
73	2023/06/06	1	1/0/1900	1/0/1900	M	33	161	42	13	Common Raven	1	0	1	Investigating camera	Tundra	
73	2021/06/25	1	1/0/1900	1/0/1900	M	58	67	10	1	Grey Wolf	1	0	1	Walking	Tundra	
73	2021/06/25	1	1/0/1900	1/0/1900	M	58	60	3	1	Grey Wolf	1	0	1	Walking	Tundra	
73	2021/05/22	1	1/0/1900	1/0/1900	M	1899	1908	10	1	Arctic Fox	1	0	1	Running	Tundra	
75	2022/04/30	1	1/0/1900	1/0/1900	M	1045	1057	11	2	Fox	1	0	1	Walking	Tundra	
78	2023/07/24	1	1/0/1900		M	148	157	10	10	Common Raven	1	0	1	Sitting	Tundra	
78	2022/08/02	1	1/0/1900	1/0/1900	M	300	309	10	1	Common Raven	1	0	1	Flying	Tundra	
79	2021/10/15	1	1/0/1900	1/0/1900	M	603	612	10	1	Red Fox	1	0	1	Walking	Tundra	
79	2021/10/15	1	1/0/1900	1/0/1900	M	603	605	3	1	Fox	1	0	1	Walking	Tundra	
80	2021/07/24	1	1/0/1900	1/0/1900	M	254	263	7	1	Fox	1	0	1	Investigating camera	Tundra	
81	2022/08/12	1	1/0/1900	1/0/1900	M	310	379	70	7	Common Raven	2	0	2	Investigating camera	Tripod	Updated the number of adults to two - DB
81	2022/08/12	2	1/0/1900	1/0/1900	M	319	351	9	4	Common Raven	1	0	1	Investigating camera	Tripod	
82	2023/03/27	1	1/0/1900	1/0/1900	M	8869	8878	10	1	Red Fox	1	0	1	Walking	Tundra	
82	2023/03/20	1	1/0/1900	1/0/1900	M	8508	8509	2	1	Red Fox	1	0	1	Walking	Tundra	
82	2023/03/19	1	1/0/1900	1/0/1900	M	8447	8466	20	2	Red Fox	2	0	2	Walking	Tundra	
82	2022/05/02	1	1/0/1900	1/0/1900	M	2347	2356	10	1	Red Fox	1	0	1	Walking	Tundra	Added by DB - DB
83	2023/06/30	1	1/0/1900	1/0/1900	M	53	56	4	10	Fox	1	0	1	Walking	Tundra	
84	2023/07/01	1	1/0/1900	1/0/1900	M	106	108	3	10	Grey Wolf	1	0	1	Walking	Tundra	
84	2021/07/15	1	1/0/1900	1/0/1900	M	178	187	10	1	Fox	1	0	1	Hunting	Tundra	
84	2021/07/15	2	1/0/1900	1/0/1900	M	178	187	10	1	Fox	1	0	1	Hunting	Tundra	
85	2023/07/18	1	1/0/1900	1/0/1900	M	101	103	3	3	Fox	1	0	1	Walking	Tundra	
85	2023/04/26	1	1/0/1900	1/0/1900	M	52	52	1	1	Red Fox	1	0	1	Walking	Tundra	
85	2023/04/20	1	1/0/1900	1/0/1900	M	46	47	2	1	Red Fox	1	0	1	Investigating camera	Tundra	
86	2023/07/09	1	1/0/1900	1/0/1900	M	70	79	10	10	Fox	0	1	1	Hunting	Tundra	An unknown bird lands on camera a few frames in, and fox turns his attention from walking to crouching - appears to slink toward the camera and the bird likely flies away at end of triggers
61	2023/07/05	11			T	172	180	9	10	Common Raven	1	0	1	Flying	Tundra	
69	2021/08/26	1	1/0/1900	1/0/1900	M	294	333	40	4	Wolverine	1	0	1	Investigating camera	Tripod	Wolverine on tripod, originally called unknown, updated by DB - DB
70	2023/05/13	1	1/0/1900	1/0/1900	M	1	10	10	1	Wolverine	1	0	1	Walking	Tundra	
76	2022/09/07	1	1/0/1900	1/0/1900	M	268	467	100	10	Wolverine	1	0	1	Investigating camera	Tripod	
82	2022/07/17	1	1/0/1900	1/0/1900	M	159	188	30	3	Wolverine	1	0	1	Investigating camera	Tripod	Agreed, wolverine - DB
82	2022/07/17	7	1/0/1900	1/0/1900	M	159	187	19	2	Wolverine	1	0	1	Investigating camera	Tripod	
85	2023/03/17	1	1/0/1900	1/0/1900	M	37	45	4	2	Wolverine	1	0	1	Investigating camera	Tundra	
86	2023/03/25	1	1/0/1900	1/0/1900	M	8659	8660	2	1	Wolverine	1	0	1	Walking	Tundra	
82	2021/06/28	1	1/0/1900		T	145			1	Wolverine	1	0	1	Walking	Tundra	This may highlight an issue in detectability with this camera - DB
73	2020/04/29	1	1/0/1900	1/0/1900		672	681	10	1	Unknown	1	0	1	Investigating camera	Tundra	
75	2023/09/01	1	1/0/1900			358		1	1	Snow Goose	5	0	5	Feeding	Tundra	
75	2023/09/01	1	1/0/1900			359		1	1	Unknown	4	0	4	Other	Tundra	Both snow geese and an unknown species noted. Compare Photos 358 and 359
80	2023/08/29	1	1/0/1900	1/0/1900		416	425	10	10	Greater White-fronted Goose	15	0	15	Feeding	Tundra	Confirmation of species required
61	2023/07/23	1	1/0/1900	1/0/1900	M	327	334	8	10	Bird	1	0	1	Investigating camera	Tripod	Unknown adult or juvenile
61	2023/07/10	1	1/0/1900	1/0/1900	M	221	223	3	10	Unknown	0	0	0	Investigating camera	Tripod	Unknown adult or juvenile
61	2023/07/09	13	1/0/1900	1/0/1900	M	207	209	6	10	Unknown	1	0	1	Investigating camera	Tripod	
61	2022/09/20	1	1/0/1900	1/0/1900	M	1713	1724	20	2	Bird	1	0	1	Investigating camera	Tundra	Looks like it may be a raven - DB

APPENDIX L: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, BOSTON PROJECT, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
61	2022/09/20	2	1/0/1900	1/0/1900	M	1771	1825	60	6	Bird	1	0	1	Investigating camera	Tundra	Looks like it may be a raven - DB
61	2022/09/20	3	1/0/1900	1/0/1900	M	1826	1842	20	2	Bird	1	0	1	Investigating camera	Tundra	Looks like it may be a raven - DB
61	2022/08/25	1	1/0/1900	1/0/1900	M	1385	1626	240	24	Bird	1	0	1	Investigating camera	Tundra	Looks like it may be a raven - DB
61	2022/08/23	1	1/0/1900	1/0/1900	M	1293	1366	80	8	Bird	3	0	3	Investigating camera	Tundra	Looks like it may be a raven - DB
61	2022/08/20	1	1/0/1900	1/0/1900	M	1124	1277	51	11	Bird	1	0	1	Investigating camera	Tundra	Looks like it may be a raven - DB
61	2022/08/17	1	1/0/1900	1/0/1900	M	750	1073	330	33	Bird	1	0	1	Investigating camera	Tundra	Looks like it may be a raven - DB
61	2022/08/12	1	1/0/1900	1/0/1900	M	380	711	240	24	Bird	1	0	1	Investigating camera	Tundra	Looks like it may be a raven - DB
61	2022/08/09	1	1/0/1900	1/0/1900	M	357	366	10	1	Bird	1	0	1	Flying	Tundra	Sparrow size - DB
61	2022/08/09	1	1/0/1900	1/0/1900	M	357	357	1	1	Bird	1	0	1	Flying	Tundra	
61	2021/07/05	1	1/0/1900	1/0/1900	M	138	167	30	3	Canada Goose	45	0	45	Grazing	Tundra	Added by DB - DB
61	2021/07/04	1	1/0/1900	1/0/1900	M	125	134	10	1	Unknown	1	0	1	Standing	Tripod	Wing looks to be a raptor, unsure what raptor - DB
61	2021/07/04	1	1/0/1900	1/0/1900	M	125	123	1	1	Unknown	0	0	0	Standing	Unknown	
61	2021/06/09	1	1/0/1900	1/0/1900	M	2530	2536	7	1	Bird	1	0	1	Flying	Unknown	
61	2021/05/27	1	1/0/1900	1/0/1900	M	2374	2376	3	1	Raptor	1	0	1	Flying	Tundra	
61	2021/05/16	1	1/0/1900	1/0/1900	M	2128	2157	30	3	Sandhill Crane	5	0	5	Walking	Lake	
61	2020/07/18	1	1/0/1900	1/0/1900	M	1172	1181	10	1	Bird	3	0	3	Walking	Tundra	
62	2020/06/10	1	1/0/1900	1/0/1900	M	838	847	10	1	Bird	1	0	1	Flying	Tundra	Unsure on species of hawk
62	2020/05/29	1	1/0/1900	1/0/1900	M	795	804	10	1	Bird	5	0	5	Walking	Tundra	Multiple species
63	2023/07/15	1	1/0/1900	1/0/1900	M	155	156	1	10	Unknown	0	0	0	Walking	Tripod	Unsure of ID and life stage
63	2022/08/08	1	1/0/1900	1/0/1900	M	228	297	70	7	Bird	1	0	1	Investigating camera	Tripod	Tail feather of some bird - DB
63	2022/08/08	2	1/0/1900	1/0/1900	M	229	288	10	3	Bird	1	0	1	Investigating camera	Tripod	
63	2022/06/21	1	1/0/1900	1/0/1900	M	64	73	10	1	Unknown	1	0	1	Investigating camera	Tripod	Dark blob - DB
63	2022/06/21	1	1/0/1900	1/0/1900	M	64	64	1	1	Unknown	1	0	1	Investigating camera	Tripod	
63	2021/06/09	1	1/0/1900	1/0/1900	M	2682	2687	6	1	Canada Goose	2	0	2	Flying	Tripod	
63	2021/06/08	1	1/0/1900	1/0/1900	M	2639	2648	10	1	Greater White-fronted Goose	2	0	2	Walking	Tundra	
63	2021/06/08	1	1/0/1900	1/0/1900	M	2649	2678	20	2	Canada Goose	10	0	10	Walking	Tundra	
63	2021/06/07	1	1/0/1900	1/0/1900	M	2606	2630	25	3	Greater White-fronted Goose	2	0	2	Walking	Tundra	
65	2023/06/17	1	1/0/1900	1/0/1900	M	245	248	4	1	Canada Goose	16	0	16	Flying	Tundra	Unsure of bird species. Flock was cuaght incidentally while caribou triggered the camera.
65	2022/06/20	1	1/0/1900	1/0/1900	M	58	67	10	1	Bird	1	0	1	Investigating camera	Tripod	Feathers, not able to ID - DB
65	2020/09/24	1	1/0/1900	1/0/1900	M	1281	1284	4	1	Bird	1	0	1	Flying	Tundra	Type of owl (blurry)
66	2023/07/08	1	1/0/1900	1/0/1900	M	150	159	10	10	Unknown	1	0	1	Investigating camera	Tripod	Unsure of ID
66	2020/06/16	1	1/0/1900	1/0/1900	M	999	1058	60	6	Canada Goose	5	0	5	Grazing	Tundra	
66	2020/06/06	1	1/0/1900	1/0/1900	M	936	945	10	1	Bird	5	0	5	Flying	Tundra	
68	2022/10/13	1	1/0/1900	1/0/1900	M	282	291	10	1	Bird	1	0	1	Investigating camera	Tripod	Probably some raptor - DB
69	2022/08/15	1	1/0/1900	1/0/1900	M	358	417	60	6	Bird	1	0	1	Investigating camera	Tripod	It is probably a raven - DB
69	2022/06/21	1	1/0/1900	1/0/1900	M	160	167	10	1	Bird	1	0	1	Investigating camera	Tripod	Somone who knows arctic birds could ID - DB
69	2022/06/19	1	1/0/1900	1/0/1900	M	147	156	10	1	Bird	1	0	1	Investigating camera	Tripod	Somone who knows arctic birds could ID - DB
69	2022/06/01	1	1/0/1900	1/0/1900	M	1338	1347	10	1	Snow Goose	9	0	9	Flying	Tundra	Added by DB - DB
69	2021/09/26	1	1/0/1900	1/0/1900	M	577	586	10	1	Bird	1	0	1	Standing	Unknown	Likely a raven. Originally called unknown but it is obviously a bird - DB
69	2021/09/26	1	1/0/1900	1/0/1900	M	577	577	1	1	Unknown	1	0	1	Standing	Unknown	
69	2021/08/26	1	1/0/1900	1/0/1900	M	314	325	4	2	Unknown	1	0	1	Investigating camera	Tundra	
70	2023/07/30	1	1/0/1900	1/0/1900	M	406	419	15	20	Ptarmigan	7	0	7	Feeding	Tundra	
70	2023/06/03	1	1/0/1900	1/0/1900	M	8	17	10	1	Ptarmigan	2	0	2	Walking	Tundra	
70	2023/05/25	1	1/0/1900	1/0/1900	M	28	28	1	1	Ptarmigan	1	0	1	Walking	Tundra	Unsure of animal. Ptarmigan - DB
70	2023/05/17	1	1/0/1900	1/0/1900	M	54	54	1	1	Ptarmigan	1	0	1	Walking	Tundra	
70	2023/05/08	1	1/0/1900	1/0/1900	M	4	23	13	2	Ptarmigan	1	0	1	Walking	Tundra	
70	2022/09/21	1	1/0/1900	1/0/1900	M	469	528	50	5	Bird	1	0	1	Investigating camera	Tripod	Probably a raven - DB
70	2022/09/21	2	1/0/1900	1/0/1900	M	469	524	8	6	Bird	1	0	1	Investigating camera	Tripod	
70	2022/06/09	1	1/0/1900	1/0/1900	M	1485	1486	2	1	Unknown	1	0	1	Running	Tundra	
70	2022/05/28	1	1/0/1900	1/0/1900	M	1349	1358	10	1	Canada Goose	1	0	1	Walking	Tundra	Added by DB - DB
70	2022/05/21	1	1/0/1900	1/0/1900	M	1321	1330	10	1	Canada Goose	1	0	1	Walking	Tundra	Added by DB - DB
70	2022/05/13	1	1/0/1900	1/0/1900	M	1224	1233	10	1	Ptarmigan	2	0	2	Walking	Tundra	Added by DB - DB
70	2022/05/12	1	1/0/1900	1/0/1900	M	1191	1200	10	1	Ptarmigan	1	0	1	Walking	Tundra	Added by DB - DB
70	2022/05/12	2	1/0/1900	1/0/1900	M	1201	1210	10	1	Ptarmigan	1	0	1	Other	Tundra	Added by DB - DB
70	2022/05/11	1	1/0/1900	1/0/1900	M	1158	1167	10	1	Ptarmigan	2	0	2	Walking	Tundra	Added by DB - DB

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Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
70	2022/05/11	2	1/0/1900	1/0/1900	M	1171	1190	20	2	Ptarmigan	2	0	2	Walking	Tundra	Added by DB - DB
70	2022/05/10	1	1/0/1900	1/0/1900	M	1138	1157	20	2	Arctic Hare	1	0	1	Walking	Tundra	Added by DB - DB
70	2022/05/09	1	1/0/1900	1/0/1900	M	1112	1121	10	1	Ptarmigan	2	0	2	Walking	Tundra	Added by DB - DB
70	2022/05/06	1	1/0/1900	1/0/1900	M	1096	1105	10	1	Ptarmigan	1	0	1	Walking	Tundra	Added by DB - DB
70	2022/05/02	1	1/0/1900	1/0/1900	M	1071	1080	10	1	Ptarmigan	2	0	2	Walking	Tundra	Added by DB - DB
70	2022/05/01	1	1/0/1900	1/0/1900	M	1058	1067	10	1	Ptarmigan	1	0	1	Walking	Tundra	Added by DB - DB
70	2022/04/27	1	1/0/1900	1/0/1900	M	1036	1045	10	1	Ptarmigan	1	0	1	Walking	Tundra	Added by DB - DB
70	2022/04/24	1	1/0/1900	1/0/1900	M	1010	1029	10	1	Ptarmigan	1	0	1	Walking	Tundra	Added by DB - DB
70	2021/05/15	1	1/0/1900	1/0/1900	M	2015	2034	20	2	Ptarmigan	2	0	2	Walking	Tundra	
70	2021/05/15	1	1/0/1900	1/0/1900	M	2035	2054	20	2	Ptarmigan	2	0	2	Walking	Tundra	
70	2020/09/12	1	1/0/1900	1/0/1900	M	1263	1272	10	1	Ptarmigan	1	0	1	Walking	Tundra	
70	2020/06/14	1	1/0/1900	1/0/1900	M	940	959	20	2	Canada Goose	6	0	6	Grazing	Tundra	
70	2020/05/13	1	1/0/1900	1/0/1900	M	804	833	30	3	Ptarmigan	2	0	2	Walking	Tundra	
70	2020/05/11	1	1/0/1900	1/0/1900	M	768	777	10	1	Ptarmigan	1	0	1	Walking	Tundra	
70	2020/05/11	1	1/0/1900	1/0/1900	M	778	787	10	1	Ptarmigan	1	0	1	Walking	Tundra	
70	2020/05/10	1	1/0/1900	1/0/1900	M	755	764	10	1	Ptarmigan	1	0	1	Walking	Tundra	
70	2020/04/09	1	1/0/1900	1/0/1900	M	632	641	10	1	Arctic Hare	1	0	1	Investigating camera	Tundra	
70	2020/04/07	1	1/0/1900	1/0/1900	M	606	615	10	1	Ptarmigan	1	0	1	Standing	Tundra	
71	2022/10/09	2	1/0/1900	1/0/1900	M	296	296	1	1	Snowy Owl	1	0	1	Other	Tundra	Not sure of species, can only see wing tip. Likely the same bird as identified in 291.
71	2022/06/19	2	1/0/1900	1/0/1900	M	108	117	10	1	Bird	1	0	1	Investigating camera	Tripod	Black,white, brown appear on what seems to be the wing, maybe speculum area - DB
71	2022/06/18	1	1/0/1900	1/0/1900	M	82	101	20	2	Bird	1	0	1	Investigating camera	Tripod	Two blurry tail feathers - DB
71	2022/06/18	1	1/0/1900	1/0/1900	M	82	82	1	1	Bird	1	0	1	Investigating camera	Tripod	
73	2023/05/04	1	1/0/1900	1/0/1900	M	282	291	10	1	Rough-legged Hawk	1	0	1	Standing	Tundra	
73	2021/08/05	1	1/0/1900	1/0/1900	M	214	283	70	7	Rough-legged Hawk	1	0	1	Standing	Tripod	Called rough-legged hawk originally, I think that is correct img 0274 has it in flight - DB
73	2020/08/13	1	1/0/1900	1/0/1900	M	1040	1049	10	1	Canada Goose	13	0	13	Grazing	Tundra	
74	2022/08/28	1	1/0/1900	1/0/1900	M	327	329	10	1	Bird	1	0	1	Investigating camera	Tripod	Unsure - DB
75	2022/05/13	1	1/0/1900	1/0/1900	M	1111	1118	7	1	Ptarmigan	2	0	2	Walking	Tundra	
76	2023/07/27	2	1/0/1900	1/0/1900	M	224	225	1	110	Unknown	0	0	0	Investigating camera	Tripod	unable to determine species. Animal disturbs the camera stand for the duration. Only one frame contains an unknown animal species.
76	2023/06/17	1	1/0/1900	1/0/1900	M	2765	2782	18	2	Moose	1	0	1	Investigating camera	Tundra	
76	2022/06/22	1	1/0/1900	1/0/1900	M	14	25	10	1	Unknown	0	0	0	Other	Tundra	Blur crossing screen followed by bugs, likely a mammal but no way to tell for sure - DB
76	2021/06/08	1	1/0/1900	1/0/1900	M	2310	2319	10	1	Canada Goose	2	0	2	Flying	Tundra	
76	2019/09/26	1	1/0/1900	1/0/1900	M	36	45	10	1	Unknown	1	0	1	Investigating camera	Tundra	
77	2023/07/25	1	1/0/1900	1/0/1900	M	389	389	1	10	Bird	0	0	0	Flying	Tundra	Unknown species
77	2022/09/20	2	1/0/1900	1/0/1900	M	614	643	30	3	Unknown	1	0	1	Investigating camera	Tripod	I think it is another raven
77	2022/09/17	1	1/0/1900	1/0/1900	M	568	607	40	4	Bird	1	0	1	Investigating camera	Tripod	It is most likely a raven - DB
77	2022/09/17	1	1/0/1900	1/0/1900	M	568	600	6	3	Bird	1	0	1	Investigating camera	Tripod	
77	2020/09/05	1	1/0/1900	1/0/1900	M	1579	1608	30	3	Unknown	1	0	1	Investigating camera	Tundra	Cannot tell the animal type
79	2021/06/09	1	1/0/1900	1/0/1900	M	2241	2250	10	1	Bird	1	0	1	Flying	Tundra	
79	2021/06/09	1	1/0/1900	1/0/1900	M	2253	2292	40	1	Greater White-fronted Goose	2	0	2	Walking	Tundra	
79	2021/06/09	1	1/0/1900	1/0/1900	M	2293	2312	20	1	Canada Goose	4	0	4	Walking	Tundra	
79	2021/06/08	1	1/0/1900	1/0/1900	M	2180	2239	60	6	Canada Goose	3	0	3	Walking	Tundra	
80	2023/08/25	1	1/0/1900	1/0/1900	M	394	394	1	10	Unknown	0	0	0	Investigating camera	Tripod	Unsure of species
80	2021/06/09	1	1/0/1900	1/0/1900	M	2050	2059	10	1	Greater White-fronted Goose	1	0	1	Flying	Tundra	
80	2020/09/13	1	1/0/1900	1/0/1900	M	1193	1202	10	1	Snowy Owl	1	0	1	Flying	Other	
80	2020/07/19	1	1/0/1900	1/0/1900	M	1018	1027	10	1	Bird	1	0	1	Flying	Other	
80	2020/06/16	1	1/0/1900	1/0/1900	M	879	898	20	2	Bird	1	0	1	Flying	Other	
80	2020/06/14	1	1/0/1900	1/0/1900	M	861	870	10	1	Bird	1	0	1	Flying	Other	
81	2023/08/28	1	1/0/1900	1/0/1900	M	354	355	2	10	Unknown	0	0	0	Investigating camera	Tripod	Unsure of species
81	2022/09/13	1	1/0/1900	1/0/1900	M	733	792	60	6	Bird	1	0	1	Investigating camera	Tripod	Night photo, identification not possible - DB
81	2022/09/13	6	1/0/1900	1/0/1900	M	733	788	55	6	Bird	1	0	1	Investigating camera	Tripod	
81	2022/08/28	1	1/0/1900	1/0/1900	M	515	624	110	11	Bird	1	0	1	Investigating camera	Tripod	Most likely a raven - DB

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Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
81	2022/08/23	1	1/0/1900	1/0/1900	M	463	492	30	3	Peregrine Falcon	1	0	1	Investigating camera	Tripod	Raptor tail feathers, can not confirm peregrine falcon. Someone better with ID may be able to confirm - DB
81	2022/08/23	4	1/0/1900	1/0/1900	M	463	483	19	2	Peregrine Falcon	1	0	1	Investigating camera	Tripod	
81	2022/08/22	1	1/0/1900	1/0/1900	M	427	456	30	3	Bird	1	0	1	Investigating camera	Tripod	Most likely a raven - DB
81	2022/08/02	1	1/0/1900	1/0/1900	M	200	259	60	6	Bird	1	0	1	Investigating camera	Tripod	Most likely a raven - DB
81	2022/06/01	1	1/0/1900	1/0/1900	M	5427	5427	1	1	Unknown	1	0	1	Flying	Tundra	
82	2023/07/31	1	1/0/1900	1/0/1900	M	290	299	2	20	Unknown	0	0	0	Investigating camera	Tripod	Species unknown
82	2022/10/13	1	1/0/1900	1/0/1900	M	807	906	100	10	Moose	1	0	1	Investigating camera	Tundra	
83	2023/08/07	1	1/0/1900	1/0/1900	M	237	256	20	20	Greater White-fronted Goose	15	0	15	Feeding	Tundra	
83	2022/07/20	2	1/0/1900	1/0/1900	M	891	1780	890	89	Peregrine Falcon	1	0	1	Investigating camera	Tripod	Raptor confirmed, I can not confirm peregrine falcon but someone with better ID could - DB
83	2022/07/05	1	1/0/1900	1/0/1900	M	66	845	780	78	Peregrine Falcon	1	0	1	Investigating camera	Tripod	Raptor confirmed, I can not confirm peregrine falcon but someone with better ID could - DB
83	2021/06/09	1	1/0/1900	1/0/1900	M	2170	2199	30	3	Greater White-fronted Goose	2	0	2	Grazing	Tundra	
83	2021/06/08	1	1/0/1900	1/0/1900	M	2140	2169	30	1	Canada Goose	1	0	1	Grazing	Tundra	
83	2021/06/07	1	1/0/1900	1/0/1900	M	2127	2136	10	1	Greater White-fronted Goose	1	0	1	Walking	Tundra	
83	2021/06/04	1	1/0/1900	1/0/1900	M	2105	2114	10	1	Canada Goose	1	0	1	Walking	Tundra	
83	2020/06/08	1	1/0/1900	1/0/1900	M	935	944	10	1	Canada Goose	2	0	2	Grazing	Tundra	
84	2020/06/19	1	1/0/1900		M	867		1	1	Unknown	0	0	0		Tundra	Animal observed but not identifiable
85	2023/07/15	1	1/0/1900	1/0/1900	M	86	88	3	3	Unknown	0	0	0	Investigating camera	Tripod	Unable to determine species
85	2023/06/11	1	1/0/1900	1/0/1900	M	58	227	170	56	Moose	2	0	2	Investigating camera	Tundra	
85	2023/05/19	1	1/0/1900	1/0/1900	M	55	57	3	1	Unknown	1	0	1	Investigating camera	Tundra	Likely a grizzly, but not sure. Unknown - DB
85	2023/04/23	1	1/0/1900	1/0/1900	M	49	49	1	1	Unknown	1	0	1	Other	Tundra	Unkown animal. Dark fur. Wolverine?
86	2022/08/31	1	1/0/1900	1/0/1900	M	22	31	10	1	Bird	1	0	1	Investigating camera	Tripod	Might be a raven, photos do not give much detail - DB
86	2022/08/31	1	1/0/1900	1/0/1900	M	23	28	2	1	Bird	1	0	1	Investigating camera	Tripod	
88	2022/08/25	1	1/0/1900	1/0/1900	M	337	448	110	11	Bird	1	0	1	Investigating camera	Tripod	Probably a raven - DB
88	2022/08/22	1	1/0/1900	1/0/1900	M	300	309	10	1	Unknown	1	0	1	Investigating camera	Tripod	Unsure, nothing to really go off of - DB
88	2022/08/04	1	1/0/1900	1/0/1900	M	196	235	40	4	Bird	1	0	1	Investigating camera	Tripod	Probably a raven - DB
88	2021/07/30	1	1/0/1900	1/0/1900	M	169	188	20	2	Unknown	1	0	1	Investigating camera	Tundra	Added by DB - DB
61	2021/06/10	1	1/0/1900	1/0/1900	T	2613	2613	1	0	Rock Ptarmigan	1	0	1	Standing	Tundra	
61	2020/02/05	1	1/0/1900	1/0/1900	T	611	611	1	0	Ptarmigan	20	0	20	Standing	Tundra	
62	2022/08/13	2	1/0/1900		T	250		1		Canada Goose	5	0	5	Feeding	Tundra	
62	2022/08/13	2	1/0/1900		T	250		1		Canada Goose	5	0	5	Feeding	Tundra	
65	2021/06/10	1	1/0/1900	1/0/1900	T	4260	4260	1	0	Canada Goose	5	0	5	Standing	Tundra	
65	2021/06/03	1	1/0/1900	1/0/1900	T	3570	3570	1	0	Bird	2	0	2	Standing	Tundra	
65	2021/05/12	1	1/0/1900	1/0/1900	T	2307	2307	1	0	Rock Ptarmigan	1	0	1	Standing	Tundra	
68	2023/06/24	1	1/0/1900	1/0/1900	T	15	15	1	1	Canada Goose	6	0	6	Flying	Tundra	
68	2021/10/13	1	1/0/1900		T	287		1		Snow Goose	2	2	4	Feeding	Tundra	Added by DB - DB
70	2023/05/20	1	1/0/1900	1/0/1900	T	58	58	1	1	Ptarmigan	1	0	1	Standing	Tundra	
70	2023/05/19	1	1/0/1900	1/0/1900	T	11	15	4	4	Ptarmigan	1	0	1	Walking	Tundra	
70	2023/05/19	2	1/0/1900	1/0/1900	T	38	38	1	1	Tundra Swan	1	0	1	Sitting	Tundra	
71	2023/06/23	1	1/0/1900	1/0/1900	T	16	17	2	2	Bird	6	0	6	Flying	Tundra	
71	2023/06/14	1	1/0/1900	1/0/1900	T	14	14	1	1	Canada Goose	3	0	3	Walking	Tundra	
71	2022/10/09	1	1/0/1900	1/0/1900	T	291	291	1	1	Snowy Owl	1	0	1	Sitting	Tundra	Need confirmation on the species
71	2020/08/09	1	1/0/1900	1/0/1900	T	1310	1310	1	0	Bird	15	0	15	Standing	Unknown	
71	2020/06/19	1	1/0/1900	1/0/1900	T	1097	1097	1	0	Bird	1	0	1	Bedded	Unknown	
72	2023/07/26		1/0/1900		T	268				Unknown	0	0	0	Swimming	Lake	Appears to be either a swan, or caribou swimming in lake
73	2022/09/29		1/0/1900		T	450		1		Moose	2	0	2	Grazing	Tundra	Looks like two moose to be, the caribou in the event above was almost black, however, these are significantly larger - DB
73	2022/09/29		1/0/1900		T	451		1		Moose	2	0	2	Grazing	Tundra	Looks like two moose to be, the caribou in the event above was almost black, however, these are significantly larger - DB
73	2022/09/29		1/0/1900		T	452		1		Moose	2	0	2	Grazing	Tundra	Looks like two moose to be, the caribou in the event above was almost black, however, these are significantly larger - DB
73	2022/09/29		1/0/1900		T	450		1		Moose	2	0	2	Grazing	Tundra	
73	2022/09/29		1/0/1900		T	451		1		Moose	2	0	2	Grazing	Tundra	
73	2022/09/29		1/0/1900		T	452		1		Moose	2	0	2	Grazing	Tundra	

APPENDIX L: WILDLIFE EVENTS RECORDED BY WILDLIFE CAMERAS, BOSTON PROJECT, SEPTEMBER 2021 TO SEPTEMBER 2023

Camera No.	Date	Series	Start Time	End Time	Photo Type	Start Photo No.	End Photo No.	No. Photos	No. Triggers	Species ¹	No. Adults	No. Young	Total	Behaviour	Location of Wildlife	Comment
73	2022/08/19		1/0/1900		T	327		1		Canada Goose	3	0	3	Feeding	Tundra	
73	2022/08/19		1/0/1900		T	327		1		Canada Goose	3	0	3	Feeding	Tundra	
73	2022/08/11		1/0/1900		T	243		1		Canada Goose	24	0	24	Feeding	Tundra	
73	2022/08/11		1/0/1900		T	243		1		Canada Goose	24	0	24	Feeding	Tundra	
73	2020/06/15	1	1/0/1900	1/0/1900	T	823	823	1	0	Canada Goose	2	0	2	Grazing	Tundra	
74	2019/09/23		1/0/1900	1/0/1900	T	418	418	1		Canada Goose	15	0	15	Sitting	Tundra	Looks like Canada Geese but is far away
75	2023/05/28	1	1/0/1900	1/0/1900	T	212	218	7	7	Unknown	1	0	1	Feeding	Tundra	
76	2021/06/08	1	1/0/1900	1/0/1900	T	2307	2309	3	0	Bird	4	0	4	Feeding	Tundra	
78	2023/07/14		1/0/1900		T	85				Unknown	0	0	0	Flying	Tundra	Appears to be a goose
78	2023/07/12		1/0/1900		T	79				Unknown	0	0	0	Flying	Tundra	Appears to be geese
78	2023/07/02		1/0/1900		T	50				Unknown	0	0	0	Flying	Tundra	Appears to be geese
78	2023/07/02		1/0/1900		T	51				Unknown	0	0	0	Flying	Tundra	Appears to be geese
79	2023/06/26	1	1/0/1900		T			43		Unknown	0	0	0	Flying	Tundra	Appears to be small flock of geese - species unknown.
79	2020/09/03	1	1/0/1900	1/0/1900	T	1343	1343	1	0	Sandhill Crane	9	0	9	Walking	Tundra	
79	2020/09/03	1	1/0/1900	1/0/1900	T	1345	1345	1	0	Sandhill Crane	9	0	9	Walking	Esker	
79	2020/06/11	1	1/0/1900	1/0/1900	T	1051	1051	1	0	Unknown	3	0	3	Grazing	Tundra	Type of birds is unknown
81	2023/06/22	1	1/0/1900	1/0/1900	T	59	59	1	1	Bird	5	0	5	Flying	Tundra	
81	2023/06/07	1	1/0/1900	1/0/1900	T	52	53	2	2	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/06/03	1	1/0/1900	1/0/1900	T	6	6	1	1	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/06/02	1	1/0/1900	1/0/1900	T	3	3	1	1	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/06/01	1	1/0/1900	1/0/1900	T	6	7	2	2	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/05/29	1	1/0/1900	1/0/1900	T	4	5	1	1	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/05/29	2	1/0/1900	1/0/1900	T	8	8	1	1	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/05/29	3	1/0/1900	1/0/1900	T	11	11	1	1	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/05/28	1	1/0/1900	1/0/1900	T	32	48	17	17	Ptarmigan	1	0	1	Walking	Tundra	Look for moving white dot
81	2023/05/22	1	1/0/1900	1/0/1900	T	52	52	1	1	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/05/16	1	1/0/1900	1/0/1900	T	16	16	1	1	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/05/15	1	1/0/1900	1/0/1900	T	84	84	1	1	Ptarmigan	2	0	2	Feeding	Tundra	
81	2023/05/15	2	1/0/1900	1/0/1900	T	89	90	2	2	Ptarmigan	1	0	1	Walking	Tundra	
81	2023/05/14	1	1/0/1900	1/0/1900	T	69	71	3	3	Ptarmigan	2	0	2	Feeding	Tundra	
82	2022/09/30	1	1/0/1900	1/0/1900	T	189	189	1	1	Ptarmigan	6	0	6	Feeding	Tundra	
82	2022/09/27	1	1/0/1900	1/0/1900	T	36	36	1	1	Ptarmigan	1	0	1	Walking	Tundra	
82	2022/08/17		1/0/1900		T	304		1		Bird	1	0	1	Sitting	Tundra	Raptor or raven. Dark in colour but may have lighter tail tips, otherwise uniform in colour. Not enough detail to add more - DB.
82	2022/08/17		1/0/1900		T	304		1		Bird	1	0	1	Sitting	Tundra	
82	2022/08/16		1/0/1900		T	300		1		Bird	1	0	1	Sitting	Tundra	Looks like a raven, it is behind a snow fence and difficult to see clearly - DB
82	2022/08/16		1/0/1900		T	300		1		Bird	1	0	1	Sitting	Tundra	
82	2020/09/16	1	1/0/1900	1/0/1900	T	1252	1252	1	0	Ptarmigan	3	0	3	Standing	Tundra	Unclear what kind of ptarmigans these are
83	2023/08/11	1	1/0/1900		T	269		1		Greater White-fronted Goose	1	0	1	Standing	Tundra	
83	2023/08/11	1	1/0/1900		T	270		1		Greater White-fronted Goose	2	0	2	Feeding	Tundra	
87	2023/08/25	1	1/0/1900		T	222		1		Canada Goose	13	0	13	Feeding	Tundra	Not 100% on species determination
87	2022/10/01	1	1/0/1900	1/0/1900	T	227	227	1	1	Ptarmigan	26	0	26	Feeding	Tundra	
88	2020/06/04	1	1/0/1900	1/0/1900	T	820	820	1	0	Bird	2	0	2	Flying	Other	

APPENDIX M SUMMARY OF CARIBOU CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023

APPENDIX M: SUMMARY OF CARIBOU CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023

Camera No.	Camera Type	Species Specific Monitoring Objective	2022				2023									Total 2016-Aug 2022	Total by Camera			
			Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept			Oct	Nov	
1	Treatment	-															-	57	57	
2	Treatment	Road Crossing Ramp																-	N/A	0
3	Control	-									1	13					-	73	87	
4	Control	-								1	1	1					-	15	18	
5	Control	-									3	3					-	15	21	
6	Control	-															-	8	8	
7	Control	-	1							4		3	1				-	8	17	
8	Control	-								1	2		1				-	10	14	
9	Control	-									1	2					-	15	18	
10	ZOI	-						1			5	2	1				-	21	30	
11	Treatment	-									4						-	2	6	
12	ZOI	-	2								1	3	1				-	11	18	
13	Treatment	-								2							-	11	13	
14	ZOI	-	1									2	2				-	7	12	
15	Treatment	-									4	3					-	6	13	
16	Control	-	1									2	1				-	19	23	
17	Treatment	-									1	3					-	7	11	
18	Treatment	Waste Management Facility										2					-	28	30	
19	Treatment	-									1	5					-	14	20	
21	Treatment	Waste Management Facility															-	64	64	
22	Treatment	ERM Fish Fence										5					-	5	10	
23	ZOI	-							1		3	1	3				-	14	22	
24	ZOI/Ladder	-									2	21	2				-	76	101	
25	ZOI	-															-	3	3	
26	ZOI	-	1								8	27					-	7	43	
28	Treatment	-									2	2	2				-	12	18	
29	Control	-	1								3	1	1				-	13	19	
30	ZOI	-	2								1	1	1				-	11	16	

APPENDIX M: SUMMARY OF CARIBOU CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023

Camera No.	Camera Type	Species Specific Monitoring Objective	2022				2023											Total 2016-Aug 2022	Total by Camera	
			Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov			
31	Control	-															-	2	2	
32	Treatment	-	1									7	9	4				-	34	55
33	Control	-										4	18					-	67	89
34	ZOI/Ladder	-										1	2	1				-	9	13
35	Treatment	Road Crossing Ramp																-	N/A	0
36	Control	-			1							1						-	3	5
37	Control	-	1											1				-	14	16
39	ZOI	-										1						-	0	1
40	Control	-												3				-	7	10
41	ZOI	-											1					-	5	6
42	Treatment	-										1	9					-	47	57
43	Control	-									1							-	22	23
44	ZOI	-								1		2						-	3	6
45	Control	-																-	0	0
46	ZOI	-	2											5				-	7	14
47	ZOI	-	3															-	11	14
48	ZOI	-	4								1	2	10					-	28	45
49	Control	-								1								-	2	3
50	Treatment	-																-	6	6
51	Treatment	TIA	1									6	10	4				-	37	58
52	Treatment	TIA																-	2	2
53	Treatment	-											1					-	8	9
54	Treatment	-										1	1	1				-	11	14
55	ZOI	-			1													-	17	18
56	Control	-	2															-	14	16
57	ZOI	-										1						-	3	4
58	Control	-	3										1	3				-	18	25
59	Treatment	-											2					-	2	4
60	Treatment	-										2	5	3				-	7	17
Total			26	0	2	0	0	0	1	3	10	72	171	41	0	0	0	925	1251	

Notes:

Shaded columns (December and January) were not included in analysis due to low effort.

Shaded rows (Cameras 2 and 35) were not included in analysis because they are likely to have higher densities of caribou.

APPENDIX N CARIBOU OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009 TO 2023



APPENDIX N: CARIBOU OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009 TO 2023

Year	Month	Number of Observations from Raw Data		Monthly Average of Personnel Onsite	Number of Observations per Personnel	
		No. Individuals	No. Records		No. Individuals	No. Records
2009	Apr	141	3	102	1.38	0.03
	May	114	7	102	1.12	0.07
	Jun	10	2	103	0.1	0.02
	Jul	21	6	113	0.19	0.05
	Sep	14	1	98	0.14	0.01
2010	Mar	1	1	131	0.01	0.01
	Apr	16	1	172	0.09	0.01
	May	148	16	182	0.81	0.09
	Jun	1	1	200	0.01	0.01
	Jul	9	4	220	0.04	0.02
	Aug	2	2	205	0.01	0.01
2011	Apr	24	4	278	0.09	0.01
	May	43	5	274	0.16	0.02
	Jun	9	2	280	0.03	0.01
	Jul	4	2	284	0.01	0.01
2012	Apr	7	1	127	0.06	0.01
	May	28	6	90	0.31	0.07
	Jul	2	2	90	0.02	0.02
	Aug	1	1	93	0.01	0.01
2013	May	6	2	20	0.3	0.1
	Jun	4	4	44	0.09	0.09
	Jul	5	4	61	0.08	0.07
	Aug	5	4	59	0.08	0.07
2014	Apr	10	1	14	0.71	0.07
	May	3	1	63	0.05	0.02
	Jun	11	5	71	0.15	0.07
	Jul	23	13	77	0.3	0.17
	Dec	10	1	7	1.43	0.14
2015	Feb	6	1	16	0.38	0.06
	May	34	3	32	1.06	0.09
	Jun	9	3	41	0.22	0.07
	Jul	2	2	46	0.04	0.04
	Aug	10	7	84	0.12	0.08
	Nov	44	5	93	0.47	0.05
	Dec	66	4	89	0.74	0.04
2016	Jan	29	5	60	0.48	0.08
	Feb	27	3	73	0.37	0.04
	Mar	152	9	78	1.95	0.12
	Apr	51	5	93	0.55	0.05
	May	79	14	110	0.72	0.13
	Jul	10	9	123	0.08	0.07
	Aug	1	1	129	0.01	0.01
	Nov	11	2	172	0.06	0.01

APPENDIX N: CARIBOU OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009 TO 2023

Year	Month	Number of Observations from Raw Data		Monthly Average of Personnel Onsite	Number of Observations per Personnel	
		No. Individuals	No. Records		No. Individuals	No. Records
2017	Dec	51	6	173	0.29	0.03
	Mar	84	4	176	0.48	0.02
	Jun	4	4	189	0.02	0.02
	Jul	12	12	185	0.06	0.06
	Aug	2	2	178	0.01	0.01
2018	Mar	80	1	261	0.307	0.004
	May	12	6	261	0.046	0.023
	Jun	7	2	266	0.026	0.008
	Jul	14	12	265	0.053	0.045
	Aug	5	3	271	0.018	0.011
2019	Mar	2	1	286	0.01	0
	Apr	12	5	291	0.04	0.02
	May	21	10	287	0.07	0.03
	Jun	3	2	304	0.01	0.01
	Jul	2	1	304	0.01	0
	Aug	6	5	285	0.02	0.02
	Dec	unknown	1	300	-	-
2020	Jan	17	2	316	0.05	0.006
	Mar	7	1	282	0.03	0.004
	Jun	17	3	139	0.12	0.02
	Jul	57	34	137	0.42	0.25
	Aug	5	5	136	0.04	0.04
2021	Feb	14	3	143	0.1	0.02
	Mar	5	1	147	0.03	0.01
	Apr	5	1	169	0.03	0.01
	May	10	2	176	0.06	0.01
	Jun	4	1	189	0.02	0.01
	Jul	83	26	193	0.43	0.13
	Aug	40	29	230	0.17	0.13
	Sep	5	3	240	0.02	0.01
	Oct	5	3	240	0.02	0.01
2022	Apr	20	5	134	0.15	0.04
	May	3	1	135	0.02	0.01
	Jun	35	9	162	0.22	0.06
	Jul	106	37	164	0.65	0.23
	Aug	14	13	172	0.08	0.08
	Sept	10	2	174	0.06	0.01
	Oct	19	2	181	0.10	0.01
	Nov	0	0	189	0.00	0.00
	Dec	26	2	114	0.23	0.02
	Jan	26	2	114	0.23	0.02
2023	Jan	9	1	148	0.06	0.01
	Feb	7	1	168	0.04	0.01
	Apr	7	1	163	0.04	0.01
	June	111	33	150	0.74	0.22

APPENDIX N: CARIBOU OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009 TO 2023

Year	Month	Number of Observations from Raw Data		Monthly Average of Personnel Onsite	Number of Observations per Personnel	
		No. Individuals	No. Records		No. Individuals	No. Records
	Jul	142	103	146	0.97	0.71
	Aug	31	18	133	0.23	0.14
	Sept	38	13	126	0.30	0.1
	Oct	2	2	109	0.02	0.02
	Dec	15	1	45	0.33	0.02

APPENDIX O SUMMARY OF MUSKOX CAMERA EVENTS, JUNE 2016 TO SEPTEMBER 2023



APPENDIX O: SUMMARY OF MUSKOX CAMERA EVENTS, JUNE 2016 TO SEPTEMBER 2023

Camera No	Camera Type	Species Specific Monitoring Objective	2022				2023									Total 2016-Aug 2022	Total by Camera			
			Sep	Oct	Nov	Dec ¹	Jan ¹	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			Oct	Nov	
1	Treatment	-															-	0	0	
2	Treatment	Road Crossing Ramp																-	3	3
3	Control	-																-	0	0
4	Control	-																-	0	0
5	Control	-																-	0	0
6	Control	-																-	0	0
7	Control	-																-	0	0
8	Control	-																-	0	0
9	Control	-																-	0	0
10	ZOI	-																-	0	0
11	Treatment	-																-	0	0
12	ZOI	-																-	3	3
13	Treatment	-																-	0	0
14	ZOI	-																-	2	2
15	Treatment	-																-	0	0
16	Control	-															1	-	0	1
17	Treatment	-																-	2	2
18	Treatment	Waste Management Facility																-	0	0
19	Treatment	-																-	0	0
21	Treatment	Waste Management Facility																-	0	0
22	Treatment	ERM Fish Fence																-	0	0
23	ZOI	-										1					1	-	0	2
24	ZOI/Ladder	-																-	0	0
25	ZOI	-										1						-	1	2
26	ZOI	-										1						-	1	2
28	Treatment	-											1	1				-	0	2
29	Control	-																-	1	1
30	ZOI	-																-	0	0
31	Control	-																-	0	0
32	Treatment	-																-	1	1
33	Control	-																-	3	3
34	ZOI/Ladder	-																-	0	0
35	Treatment	Road Crossing Ramp																-	0	0

APPENDIX O: SUMMARY OF MUSKOX CAMERA EVENTS, JUNE 2016 TO SEPTEMBER 2023

Camera No	Camera Type	Species Specific Monitoring Objective	2022				2023											Total 2016-Aug 2022	Total by Camera		
			Sep	Oct	Nov	Dec ¹	Jan ¹	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov				
36	Control	-																-	1	1	
37	Control	-																	-	0	0
39	ZOI	-																	-	0	0
40	Control	-																	-	0	0
41	ZOI	-																	-	0	0
42	Treatment	-																	-	0	0
43	Control	-																	-	0	0
44	ZOI	-										1							-	0	1
45	Control	-																	-	0	0
46	ZOI	-																	-	0	0
47	ZOI	-																	-	0	0
48	ZOI	-																	-	1	1
49	Control	-																	-	3	3
50	Treatment	-																	-	0	0
51	Treatment	TIA																	-	NA	0
52	Treatment	TIA																	-	NA	0
53	Treatment	-																	-	5	5
54	Treatment	-																	-	17	17
55	ZOI	-																	-	3	3
56	Control	-																	-	0	0
57	ZOI	-																	-	0	0
58	Control	-																	-	0	0
59	Treatment	-																	-	2	2
60	Treatment	-																	-	0	0
Total			0	0	0	0	0	0	0	0	0	4	1	1	2	0	0	0	46	54	

Notes:

¹ December and January are periods of low effort which should be removed from analysis in future years

Shaded rows (Cameras 51 and 52) are specifically in place to monitor wildlife, including muskox, at the TIA. These cameras will not be included in analysis.

APPENDIX P SUMMARY OF GRIZZLY BEAR CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023



APPENDIX P: SUMMARY OF GRIZZLY BEAR CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023

Camera No	Camera Type	Species Specific Monitoring Objective	2022				2023							Total 2016-2022	Total by Camera					
			Sept	Oct	Nov ¹	Dec ¹	Jan ¹	Feb ¹	Mar	Apr	May	Jun	Jul			Aug	Sept	Oct	Nov ¹	
1	Treatment	-															-	0	0	
2	Treatment	Road Crossing Ramp																-	1	1
3	Control	-												1				-	23	24
4	Control	-	1											1				-	25	27
5	Control	-		1										1				-	19	21
6	Control	-	1							1				1				-	11	14
7	Control	-																-	5	5
8	Control	-										1						-	13	14
9	Control	-									1			1				-	26	28
10	ZOI	-	1											3				-	19	23
11	Treatment	-																-	17	17
12	ZOI	-		1							1	1	1					-	28	32
13	Treatment	-	1	1														-	10	12
14	ZOI	-										1						-	6	7
15	Treatment	-								1								-	33	34
16	Control	-												1				-	9	10
17	Treatment	-																-	19	19
18	Treatment	Waste Management Facility																-	0	0
19	Treatment	-																-	5	5
21	Treatment	Waste Management Facility																-	0	0
22	Treatment	ERM Fish Fence									1		6					-	0	7
23	ZOI	-	2	1								1	2					-	51	57
24	ZOI/Ladder	-																-	8	8
25	ZOI	-	1										1					-	17	19
26	ZOI	-	1									2						-	8	11
28	Treatment	-									1		1					-	30	32
29	Control	-	1									1	1					-	5	8
30	ZOI	-										1	2					-	18	21
31	Control	-																-	2	2
32	Treatment	-	1							1		1						-	22	25
33	Control	-									1		4					-	35	40
34	ZOI/Ladder	-										1						-	7	8
35	Treatment	Road Crossing Ramp																-	0	0

APPENDIX P: SUMMARY OF GRIZZLY BEAR CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023

Camera No	Camera Type	Species Specific Monitoring Objective	2022				2023											Total 2016-2022	Total by Camera	
			Sept	Oct	Nov ¹	Dec ¹	Jan ¹	Feb ¹	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov ¹			
36	Control	-										1					-	27	28	
37	Control	-															-	14	14	
39	ZOI	-															-	3	3	
40	Control	-															-	5	5	
41	ZOI	-	2											1			-	15	18	
42	Treatment	-															-	2	2	
43	Control	-	1											2			-	16	19	
44	ZOI	-	1														-	14	15	
45	Control	-															-	17	17	
46	ZOI	-	1									1					-	14	16	
47	ZOI	-															-	1	1	
48	ZOI	-										1					-	6	7	
49	Control	-		1													-	5	6	
50	Treatment	-												1			-	4	5	
51	Treatment	TIA									1						-	3	4	
52	Treatment	TIA															-	0	0	
53	Treatment	-															-	22	22	
54	Treatment	-											1				-	21	22	
55	ZOI	-	1														-	64	65	
56	Control	-												1			-	4	5	
57	ZOI	-															-	10	10	
58	Control	-															-	3	3	
59	Treatment	-	2									4					-	73	79	
60	Treatment	-												3			-	21	24	
Total			18	5	0	0	0	0	0	0	1	3	10	13	35	0	0	0	834	919

Notes:

¹ November - February are hibernation months and were not included in analysis

Shaded rows (Cameras 18, 21, and 22) were not included in analysis because they monitor facilities which may attract bears

APPENDIX Q GRIZZLY BEAR OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009 TO 2023



APPENDIX Q: GRIZZLY BEAR OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG
CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009-2023

Year	Month	Number of Observations from Raw Data		Monthly Average of Personnel Onsite	Number of Observations per Personnel	
		No. Individuals	No. Records		No. Individuals	No. Records
2009	May	11	5	102	0.11	0.05
	Jun	4	4	103	0.04	0.04
	Jul	18	10	113	0.16	0.09
	Aug	18	17	109	0.17	0.16
	Sep	6	6	98	0.06	0.06
2010	May	6	6	182	0.03	0.03
	Jun	2	1	200	0.01	0.01
	Jul	7	7	220	0.03	0.03
	Aug	4	4	205	0.02	0.02
	Sep	7	5	484	0.01	0.01
2011	May	3	3	274	0.01	0.01
	Jul	3	1	284	0.01	0
	Aug	10	5	277	0.04	0.02
	Sep	3	1	277	0.01	0
	Oct	3	1	270	0.01	0
2012	Apr	1	1	127	0.01	0.01
	May	2	2	90	0.02	0.02
	Jun	1	1	103	0.01	0.01
	Jul	3	1	90	0.03	0.01
	Aug	6	2	93	0.06	0.02
2013	Jul	9	3	61	0.15	0.05
	Aug	8	3	59	0.14	0.05
	Sep	3	1	54	0.06	0.02
	Oct	1	1	49	0.02	0.02
2014	Jun	2	2	71	0.03	0.03
	Jul	2	2	77	0.03	0.03
	Aug	1	1	79	0.01	0.01
	Oct	1	1	79	0.01	0.01
2015	May	1	1	32	0.03	0.03
	Jun	3	3	41	0.07	0.07
	Jul	1	1	46	0.02	0.02
	Aug	17	11	84	0.2	0.13
	Sep	2	2	105	0.02	0.02
2016	Jul	14	5	123	0.11	0.04
	Aug	10	4	129	0.08	0.03
	Oct	3	3	158	0.02	0.02
2017	May	8	3	188	0.02	0.02
	Jun	26	9	189	0.05	0.05
	Jul	6	2	185	0.01	0.01
	Aug	13	5	178	0.03	0.03
	Sep	11	4	179	0.02	0.02
	Oct	13	5	179	0.03	0.03

APPENDIX Q: GRIZZLY BEAR OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG
CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009-2023

Year	Month	Number of Observations from Raw Data		Monthly Average of Personnel Onsite	Number of Observations per Personnel	
		No. Individuals	No. Records		No. Individuals	No. Records
2018	May	9	3	261	0.01	0.01
	Jun	7	3	266	0.01	0.01
	Jul	17	8	265	0.03	0.03
	Aug	12	6	271	0.02	0.02
	Sep	25	8	272	0.03	0.03
	Oct	13	5	273	0.02	0.02
	Nov	3	3	270	0.01	0.01
2019	May	4	1	287	0	0
	Jun	14	6	304	0.02	0.02
	Aug	23	13	285	0.05	0.05
	Sept	33	11	293	0.04	0.04
	Oct	4	4	306	0.01	0.01
2020	Jun	5	2	139	0.04	0.01
	Jul	3	3	137	0.02	0.02
	Aug	4	4	136	0.03	0.03
	Sep	7	5	128	0.06	0.04
2021	May	5	5	176	0.03	0.03
	Jun	12	12	189	0.06	0.06
	Jul	14	11	193	0.07	0.06
	Aug	5	5	230	0.02	0.02
	Sep	4	4	240	0.02	0.02
	Oct	1	1	89	0.01	0.01
2022	May	10	5	135	0.07	0.04
	Jun	11	4	162	0.07	0.02
	Jul	17	10	164	0.10	0.06
	Aug	3	2	172	0.02	0.01
	Sep	18	11	174	0.10	0.06
	Oct	2	2	181	0.01	0.01
2023	May	6	4	158	0.04	0.02
	Jun	13	11	150	0.09	0.09
	Jul	13	6	146	0.09	0.09
	Aug	6	5	133	0.05	0.03
	Sep	39	11	126	0.31	0.08

APPENDIX R SUMMARY OF WOLVERINE CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023



APPENDIX R: SUMMARY OF WOLVERINE CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023

Camera No	Camera Type	Species Specific Monitoring Objective	2022				2023											Total 2016-Aug 2022	Total by Camera
			Sept	Oct	Nov	Dec ¹	Jan ¹	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov		
1	Treatment	-																0	0
2	Treatment	Road Crossing Ramp																0	0
3	Control	-																5	5
4	Control	-																0	0
5	Control	-																1	1
6	Control	-																0	0
7	Control	-																1	2
8	Control	-																0	1
9	Control	-																3	3
10	ZOI	-																3	3
11	Treatment	-																0	0
12	ZOI	-																2	2
13	Treatment	-																4	4
14	ZOI	-																3	3
15	Treatment	-																0	0
16	Control	-																0	0
17	Treatment	-																0	0
18	Treatment	Waste Management Facility																NA	0
19	Treatment	-																0	0
21	Treatment	Waste Management Facility																NA	0
22	Treatment	ERM Fish Fence																NA	0
23	ZOI	-	1								1							15	17
24	ZOI/Ladder	-																1	1
25	ZOI	-																4	4
26	ZOI	-																4	4
28	Treatment	-																1	1
29	Control	-																2	2
30	ZOI	-																8	8
31	Control	-																2	2
32	Treatment	-																2	2
33	Control	-								1						1		4	6
34	ZOI/Ladder	-																0	0

APPENDIX R: SUMMARY OF WOLVERINE CAMERA EVENTS FOR ZOI ANALYSIS, JUNE 2016 TO SEPTEMBER 2023

Camera No	Camera Type	Species Specific Monitoring Objective	2022				2023											Total 2016-Aug 2022	Total by Camera	
			Sept	Oct	Nov	Dec ¹	Jan ¹	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov			
35	Treatment	Road Crossing Ramp																	0	0
36	Control	-									2								3	5
37	Control	-																	1	1
39	ZOI	-																	0	0
40	Control	-																	1	1
41	ZOI	-								1									2	3
42	Treatment	-																	0	0
43	Control	-										1							4	5
44	ZOI	-																	2	2
45	Control	-																	0	0
46	ZOI	-																	1	1
47	ZOI	-																	3	3
48	ZOI	-																	0	0
49	Control	-																	0	0
50	Treatment	-																	0	0
51	Treatment	TIA																	0	0
52	Treatment	TIA																	0	0
53	Treatment	-																	0	0
54	Treatment	-																	0	0
55	ZOI	-																	2	2
56	Control	-																	0	0
57	ZOI	-																	2	2
58	Control	-																	19	19
59	Treatment	-											1						0	1
60	Treatment	-																	0	0
Total			1	0	0	0	0	0	0	2	3	3	1	0	1	0	0	0	105	116

Notes:

¹December and January) were not included in analysis due to low effort.

Shaded rows (Cameras 18, 21, and 22) were not included in analysis because they monitor facilities which may attract wolverines

APPENDIX S WOLVERINE OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009 TO 2023



APPENDIX S: WOLVERINE OBSERVATIONS FROM THE WILDLIFE SIGHTINGS LOG CORRECTED FOR PERSONNEL, HOPE BAY PROJECT, 2009 TO 2023

Year	Month	Number of Observations from Raw Data		Monthly Average of Personnel Onsite	Number of Observations per Personnel	
		No. Individuals	No. Records		No. Individuals	No. Records
2009	Feb	1	1	84	0.012	0.012
	May	1	1	102	0.01	0.01
	Aug	1	1	109	0.009	0.009
2010	Mar	1	1	131	0.008	0.008
	Apr	1	1	172	0.006	0.006
2011	Jan	1	1	214	0.005	0.005
	Feb	2	2	250	0.008	0.008
	Apr	2	2	278	0.007	0.007
	May	3	3	274	0.011	0.011
	Jun	1	1	280	0.004	0.004
	Aug	2	2	277	0.007	0.007
	Nov	1	1	252	0.004	0.004
	Dec	1	1	Unknown	-	-
2012	Feb	2	2	193	0.01	0.01
	Mar	1	1	180	0.006	0.006
	Apr	2	2	127	0.016	0.016
	May	3	3	90	0.033	0.033
2013	May	2	2	20	0.099	0.099
	Nov	2	2	19	0.105	0.105
2014	Feb	1	1	7	0.143	0.143
	May	1	1	63	0.016	0.016
2015	Jan	1	1	13	0.075	0.075
	Feb	1	1	16	0.062	0.062
	Mar	1	1	30	0.033	0.033
	May	2	2	32	0.063	0.063
	Jul	1	1	46	0.022	0.022
	Aug	1	1	84	0.012	0.012
	Oct	2	1	114	0.018	0.009
	Dec	1	1	89	0.011	0.011

Year	Month	Number of Observations from Raw Data		Monthly Average of Personnel Onsite	Number of Observations per Personnel	
		No. Individuals	No. Records		No. Individuals	No. Records
2016	Feb	1	1	73	0.01	0.01
	Mar	2	2	78	0.03	0.03
	Nov	1	1	172	0.01	0.01
2017	Mar	1	1	176	0.006	0.006
	Apr	1	1	173	0.006	0.006
	Sep	1	1	179	0.006	0.006
	Dec	2	2	179	0.011	0.011
2018	Jan	1	1	202	0.005	0.005
	Feb	1	1	261	0.004	0.004
	Oct	1	1	266	0.004	0.004
	Dec	1	1	272	0.004	0.004
2019	Apr	1	1	291	0.00	0.00
	Jul	6	4	304	0.02	0.01
	Sep	1	1	293	0.00	0.00
	Oct	1	1	306	0.00	0.00
2020	-	0	0	-	0.00	0.00
2021	May	1	1	176	0.01	0.01
	Aug	1	1	230	0.00	0.00
	Sep	1	1	240	0.00	0.00
	Oct	1	1	89	0.01	0.01
2022	<i>No incidental sightings of wolverine in 2022</i>					
2023	March	1	1	165	0.006	0.01
	May	1	0	158	0.006	0.00

APPENDIX T WATER QUALITY DATA AT THE TIA IN 2023 FOR PARAMETERS WITH GUIDELINES RELEVANT TO WILDLIFE

APPENDIX T: WATER QUALITY DATA AT THE TIA IN 2023 FOR PARAMETERS WITH GUIDELINES RELEVANT TO WILDLIFE

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L) ¹
Arsenic (As)-Total	mg/L	TL1	1/3/2023	0.0034	0.025
Arsenic (As)-Total	mg/L	TL1	1/10/2023	0.0031	0.025
Arsenic (As)-Total	mg/L	TL1	1/17/2023	0.00317	0.025
Arsenic (As)-Total	mg/L	TL1	1/23/2023	0.00278	0.025
Arsenic (As)-Total	mg/L	TL1	1/31/2023	0.00315	0.025
Arsenic (As)-Total	mg/L	TL1	2/7/2023	0.00308	0.025
Arsenic (As)-Total	mg/L	TL1	2/14/2023	0.00303	0.025
Arsenic (As)-Total	mg/L	TL1	2/21/2023	0.00369	0.025
Arsenic (As)-Total	mg/L	TL1	2/27/2023	0.00299	0.025
Arsenic (As)-Total	mg/L	TL1	3/7/2023	0.00302	0.025
Arsenic (As)-Total	mg/L	TL1	3/14/2023	0.00303	0.025
Arsenic (As)-Total	mg/L	TL1	3/21/2023	0.00305	0.025
Arsenic (As)-Total	mg/L	TL1	3/28/2023	0.00282	0.025
Arsenic (As)-Total	mg/L	TL1	4/3/2023	0.00284	0.025
Arsenic (As)-Total	mg/L	TL1	4/11/2023	0.00293	0.025
Arsenic (As)-Total	mg/L	TL1	4/18/2023	0.00307	0.025
Arsenic (As)-Total	mg/L	TL1	4/26/2023	0.0028	0.025
Arsenic (As)-Total	mg/L	TL1	5/2/2023	0.00284	0.025
Arsenic (As)-Total	mg/L	TL1	5/9/2023	0.00266	0.025
Arsenic (As)-Total	mg/L	TL1	5/16/2023	0.00288	0.025
Arsenic (As)-Total	mg/L	TL1	5/23/2023	0.00298	0.025
Arsenic (As)-Total	mg/L	TL1	5/30/2023	0.00296	0.025
Arsenic (As)-Total	mg/L	TL1	6/6/2023	0.00143	0.025
Arsenic (As)-Total	mg/L	TL1	6/13/2023	0.0005	0.025
Arsenic (As)-Total	mg/L	TL1	6/20/2023	0.00351	0.025
Arsenic (As)-Total	mg/L	TL1	6/27/2023	0.00242	0.025
Arsenic (As)-Total	mg/L	TL1	7/3/2023	0.00216	0.025
Arsenic (As)-Total	mg/L	TL1	7/11/2023	0.0015	0.025
Arsenic (As)-Total	mg/L	TL1	7/18/2023	0.0018	0.025

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L)¹
Arsenic (As)-Total	mg/L	TL1	7/25/2023	0.00154	0.025
Arsenic (As)-Total	mg/L	TL1	8/1/2023	0.00182	0.025
Arsenic (As)-Total	mg/L	TL1	8/8/2023	0.0023	0.025
Arsenic (As)-Total	mg/L	TL1	8/15/2023	0.00197	0.025
Arsenic (As)-Total	mg/L	TL1	8/22/2023	0.00164	0.025
Arsenic (As)-Total	mg/L	TL1	8/29/2023	0.00178	0.025
Arsenic (As)-Total	mg/L	TL1	9/5/2023	0.00165	0.025
Arsenic (As)-Total	mg/L	TL1	9/12/2023	0.00197	0.025
Arsenic (As)-Total	mg/L	TL1	9/19/2023	0.00163	0.025
Arsenic (As)-Total	mg/L	TL1	9/26/2023	0.00165	0.025
Arsenic (As)-Total	mg/L	TL1	10/3/2023	0.0019	0.025
Arsenic (As)-Total	mg/L	TL1	10/10/2023	0.00194	0.025
Arsenic (As)-Total	mg/L	TL1	10/17/2023	0.00196	0.025
Arsenic (As)-Total	mg/L	TL1	10/24/2023	0.002	0.025
Arsenic (As)-Total	mg/L	TL1	10/31/2023	0.00208	0.025
Arsenic (As)-Total	mg/L	TL1	11/7/2023	0.00202	0.025
Arsenic (As)-Total	mg/L	TL1	11/14/2023	0.00215	0.025
Arsenic (As)-Total	mg/L	TL1	11/21/2023	0.00207	0.025
Arsenic (As)-Total	mg/L	TL1	11/28/2023	0.00216	0.025
Arsenic (As)-Total	mg/L	TL1	12/5/2023	0.00182	0.025
Arsenic (As)-Total	mg/L	TL1	12/12/2023	0.00193	0.025
Arsenic (As)-Total	mg/L	TL1	12/19/2023	0.00196	0.025
Arsenic (As)-Total	mg/L	TL1	12/26/2023	0.00194	0.025
Cadmium (Cd)-Total	mg/L	TL1	1/3/2023	0.00005	0.08
Cadmium (Cd)-Total	mg/L	TL1	1/10/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	1/17/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	1/23/2023	0.000033	0.08
Cadmium (Cd)-Total	mg/L	TL1	1/31/2023	0.0000285	0.08
Cadmium (Cd)-Total	mg/L	TL1	2/7/2023	0.0000296	0.08
Cadmium (Cd)-Total	mg/L	TL1	2/14/2023	0.0000386	0.08
Cadmium (Cd)-Total	mg/L	TL1	2/21/2023	0.0000352	0.08
Cadmium (Cd)-Total	mg/L	TL1	2/27/2023	0.0000274	0.08

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L)¹
Cadmium (Cd)-Total	mg/L	TL1	3/7/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	3/14/2023	0.0000355	0.08
Cadmium (Cd)-Total	mg/L	TL1	3/21/2023	0.00005	0.08
Cadmium (Cd)-Total	mg/L	TL1	3/28/2023	0.0001	0.08
Cadmium (Cd)-Total	mg/L	TL1	4/3/2023	0.0000357	0.08
Cadmium (Cd)-Total	mg/L	TL1	4/11/2023	0.0000284	0.08
Cadmium (Cd)-Total	mg/L	TL1	4/18/2023	0.0000353	0.08
Cadmium (Cd)-Total	mg/L	TL1	4/26/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	5/2/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	5/9/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	5/16/2023	0.0000357	0.08
Cadmium (Cd)-Total	mg/L	TL1	5/23/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	5/30/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	6/6/2023	0.0000141	0.08
Cadmium (Cd)-Total	mg/L	TL1	6/13/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	6/20/2023	0.0000396	0.08
Cadmium (Cd)-Total	mg/L	TL1	6/27/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	7/3/2023	0.0000367	0.08
Cadmium (Cd)-Total	mg/L	TL1	7/11/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	7/18/2023	0.0000141	0.08
Cadmium (Cd)-Total	mg/L	TL1	7/25/2023	0.0000135	0.08
Cadmium (Cd)-Total	mg/L	TL1	8/1/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	8/8/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	8/15/2023	0.0000268	0.08
Cadmium (Cd)-Total	mg/L	TL1	8/22/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	8/29/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	9/5/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	9/12/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	9/19/2023	0.0000208	0.08
Cadmium (Cd)-Total	mg/L	TL1	9/26/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	10/3/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	10/10/2023	0.000025	0.08

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L)¹
Cadmium (Cd)-Total	mg/L	TL1	10/17/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	10/24/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	10/31/2023	0.000026	0.08
Cadmium (Cd)-Total	mg/L	TL1	11/7/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	11/14/2023	0.0000257	0.08
Cadmium (Cd)-Total	mg/L	TL1	11/21/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	11/28/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	12/5/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	12/12/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	12/19/2023	0.000025	0.08
Cadmium (Cd)-Total	mg/L	TL1	12/26/2023	0.000025	0.08
Copper (Cu)-Total	mg/L	TL1	1/3/2023	0.0258	5.000 ²
Copper (Cu)-Total	mg/L	TL1	1/10/2023	0.0255	5.000 ²
Copper (Cu)-Total	mg/L	TL1	1/17/2023	0.0265	5.000 ²
Copper (Cu)-Total	mg/L	TL1	1/23/2023	0.025	5.000 ²
Copper (Cu)-Total	mg/L	TL1	1/31/2023	0.027	5.000 ²
Copper (Cu)-Total	mg/L	TL1	2/7/2023	0.0256	5.000 ²
Copper (Cu)-Total	mg/L	TL1	2/14/2023	0.028	5.000 ²
Copper (Cu)-Total	mg/L	TL1	2/21/2023	0.0305	5.000 ²
Copper (Cu)-Total	mg/L	TL1	2/27/2023	0.027	5.000 ²
Copper (Cu)-Total	mg/L	TL1	3/7/2023	0.026	5.000 ²
Copper (Cu)-Total	mg/L	TL1	3/14/2023	0.0252	5.000 ²
Copper (Cu)-Total	mg/L	TL1	3/21/2023	0.0255	5.000 ²
Copper (Cu)-Total	mg/L	TL1	3/28/2023	0.0265	5.000 ²
Copper (Cu)-Total	mg/L	TL1	4/3/2023	0.0246	5.000 ²
Copper (Cu)-Total	mg/L	TL1	4/11/2023	0.0245	5.000 ²
Copper (Cu)-Total	mg/L	TL1	4/18/2023	0.0254	5.000 ²
Copper (Cu)-Total	mg/L	TL1	4/26/2023	0.0252	5.000 ²
Copper (Cu)-Total	mg/L	TL1	5/2/2023	0.024	5.000 ²
Copper (Cu)-Total	mg/L	TL1	5/9/2023	0.0242	5.000 ²
Copper (Cu)-Total	mg/L	TL1	5/16/2023	0.0253	5.000 ²
Copper (Cu)-Total	mg/L	TL1	5/23/2023	0.0242	5.000 ²

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L) ¹
Copper (Cu)-Total	mg/L	TL1	5/30/2023	0.0245	5.000 ²
Copper (Cu)-Total	mg/L	TL1	6/6/2023	0.00822	5.000 ²
Copper (Cu)-Total	mg/L	TL1	6/13/2023	0.00475	5.000 ²
Copper (Cu)-Total	mg/L	TL1	6/20/2023	0.0242	5.000 ²
Copper (Cu)-Total	mg/L	TL1	6/27/2023	0.0195	5.000 ²
Copper (Cu)-Total	mg/L	TL1	7/3/2023	0.0139	5.000 ²
Copper (Cu)-Total	mg/L	TL1	7/11/2023	0.01	5.000 ²
Copper (Cu)-Total	mg/L	TL1	7/18/2023	0.0116	5.000 ²
Copper (Cu)-Total	mg/L	TL1	7/25/2023	0.0101	5.000 ²
Copper (Cu)-Total	mg/L	TL1	8/1/2023	0.0124	5.000 ²
Copper (Cu)-Total	mg/L	TL1	8/8/2023	0.0247	5.000 ²
Copper (Cu)-Total	mg/L	TL1	8/15/2023	0.0223	5.000 ²
Copper (Cu)-Total	mg/L	TL1	8/22/2023	0.0147	5.000 ²
Copper (Cu)-Total	mg/L	TL1	8/29/2023	0.0166	5.000 ²
Copper (Cu)-Total	mg/L	TL1	9/5/2023	0.0142	5.000 ²
Copper (Cu)-Total	mg/L	TL1	9/12/2023	0.0168	5.000 ²
Copper (Cu)-Total	mg/L	TL1	9/19/2023	0.012	5.000 ²
Copper (Cu)-Total	mg/L	TL1	9/26/2023	0.0132	5.000 ²
Copper (Cu)-Total	mg/L	TL1	10/3/2023	0.0126	5.000 ²
Copper (Cu)-Total	mg/L	TL1	10/10/2023	0.0132	5.000 ²
Copper (Cu)-Total	mg/L	TL1	10/17/2023	0.0125	5.000 ²
Copper (Cu)-Total	mg/L	TL1	10/24/2023	0.0129	5.000 ²
Copper (Cu)-Total	mg/L	TL1	10/31/2023	0.0127	5.000 ²
Copper (Cu)-Total	mg/L	TL1	11/7/2023	0.0121	5.000 ²
Copper (Cu)-Total	mg/L	TL1	11/14/2023	0.0137	5.000 ²
Copper (Cu)-Total	mg/L	TL1	11/21/2023	0.0127	5.000 ²
Copper (Cu)-Total	mg/L	TL1	11/28/2023	0.0123	5.000 ²
Copper (Cu)-Total	mg/L	TL1	12/5/2023	0.0164	5.000 ²
Copper (Cu)-Total	mg/L	TL1	12/12/2023	0.0128	5.000 ²
Copper (Cu)-Total	mg/L	TL1	12/19/2023	0.0129	5.000 ²
Copper (Cu)-Total	mg/L	TL1	12/26/2023	0.0129	5.000 ²
Copper (Cu)-Total	mg/L	TL1	1/3/2023	0.0258	5.000 ²

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L) ¹
Copper (Cu)-Total	mg/L	TL1	12/13/2022	0.0223	5.000 ²
Copper (Cu)-Total	mg/L	TL1	12/27/2022	0.0234	5.000 ²
Copper (Cu)-Total	mg/L	TL1	11/29/2022	0.0235	5.000 ²
Copper (Cu)-Total	mg/L	TL1	12/6/2022	0.0245	5.000 ²
Copper (Cu)-Total	mg/L	TL1	12/13/2022	0.0223	5.000 ²
Lead (Pb)-Total	mg/L	TL1	1/3/2023	0.0005	0.1
Lead (Pb)-Total	mg/L	TL1	1/10/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	1/17/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	1/23/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	1/31/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	2/7/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	2/14/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	2/21/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	2/27/2023	0.0001	0.1
Lead (Pb)-Total	mg/L	TL1	3/7/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	3/14/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	3/21/2023	0.0005	0.1
Lead (Pb)-Total	mg/L	TL1	3/28/2023	0.001	0.1
Lead (Pb)-Total	mg/L	TL1	4/3/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	4/11/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	4/18/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	4/26/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	5/2/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	5/9/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	5/16/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	5/23/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	5/30/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	6/6/2023	0.0001	0.1
Lead (Pb)-Total	mg/L	TL1	6/13/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	6/20/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	6/27/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	7/3/2023	0.00025	0.1

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L)¹
Lead (Pb)-Total	mg/L	TL1	7/11/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	7/18/2023	0.0001	0.1
Lead (Pb)-Total	mg/L	TL1	7/25/2023	0.0001	0.1
Lead (Pb)-Total	mg/L	TL1	8/1/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	8/8/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	8/15/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	8/22/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	8/29/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	9/5/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	9/12/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	9/19/2023	0.0001	0.1
Lead (Pb)-Total	mg/L	TL1	9/26/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	10/3/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	10/10/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	10/17/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	10/24/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	10/31/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	11/7/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	11/14/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	11/21/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	11/28/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	12/5/2023	0.0003	0.1
Lead (Pb)-Total	mg/L	TL1	12/12/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	12/19/2023	0.00025	0.1
Lead (Pb)-Total	mg/L	TL1	12/26/2023	0.00025	0.1
Mercury (Hg)-Total	mg/L	TL1	1/3/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	1/10/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	1/17/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	1/23/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	1/31/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	2/7/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	2/14/2023	0.000005	0.003

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L)¹
Mercury (Hg)-Total	mg/L	TL1	2/21/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	2/27/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	3/7/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	3/14/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	3/21/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	3/28/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	4/3/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	4/11/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	4/18/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	4/26/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	5/2/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	5/9/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	5/16/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	5/23/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	5/30/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	6/6/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	6/13/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	6/20/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	6/27/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	7/3/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	7/11/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	7/18/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	7/25/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	8/1/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	8/8/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	8/15/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	8/22/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	8/29/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	9/5/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	9/12/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	9/19/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	9/26/2023	0.000005	0.003

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L) ¹
Mercury (Hg)-Total	mg/L	TL1	10/3/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	10/10/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	10/17/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	10/24/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	10/31/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	11/7/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	11/14/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	11/21/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	11/28/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	12/5/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	12/12/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	12/19/2023	0.000005	0.003
Mercury (Hg)-Total	mg/L	TL1	12/26/2023	0.000005	0.003
Nickel (Ni)-Total	mg/L	TL1	1/3/2023	0.00943	1
Nickel (Ni)-Total	mg/L	TL1	1/10/2023	0.00937	1
Nickel (Ni)-Total	mg/L	TL1	1/17/2023	0.01	1
Nickel (Ni)-Total	mg/L	TL1	1/23/2023	0.00966	1
Nickel (Ni)-Total	mg/L	TL1	1/31/2023	0.0105	1
Nickel (Ni)-Total	mg/L	TL1	2/7/2023	0.0104	1
Nickel (Ni)-Total	mg/L	TL1	2/14/2023	0.0108	1
Nickel (Ni)-Total	mg/L	TL1	2/21/2023	0.0121	1
Nickel (Ni)-Total	mg/L	TL1	2/27/2023	0.00994	1
Nickel (Ni)-Total	mg/L	TL1	3/7/2023	0.0107	1
Nickel (Ni)-Total	mg/L	TL1	3/14/2023	0.0102	1
Nickel (Ni)-Total	mg/L	TL1	3/21/2023	0.0106	1
Nickel (Ni)-Total	mg/L	TL1	3/28/2023	0.0106	1
Nickel (Ni)-Total	mg/L	TL1	4/3/2023	0.0107	1
Nickel (Ni)-Total	mg/L	TL1	4/11/2023	0.0102	1
Nickel (Ni)-Total	mg/L	TL1	4/18/2023	0.0105	1
Nickel (Ni)-Total	mg/L	TL1	4/26/2023	0.00992	1
Nickel (Ni)-Total	mg/L	TL1	5/2/2023	0.0104	1
Nickel (Ni)-Total	mg/L	TL1	5/9/2023	0.00729	1

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L) ¹
Nickel (Ni)-Total	mg/L	TL1	5/16/2023	0.0093	1
Nickel (Ni)-Total	mg/L	TL1	5/23/2023	0.66	1
Nickel (Ni)-Total	mg/L	TL1	5/30/2023	0.0025	1
Nickel (Ni)-Total	mg/L	TL1	6/6/2023	0.0032	1
Nickel (Ni)-Total	mg/L	TL1	6/13/2023	0.0025	1
Nickel (Ni)-Total	mg/L	TL1	6/20/2023	3.95	1
Nickel (Ni)-Total	mg/L	TL1	6/27/2023	0.00914	1
Nickel (Ni)-Total	mg/L	TL1	7/3/2023	0.00513	1
Nickel (Ni)-Total	mg/L	TL1	7/11/2023	0.00444	1
Nickel (Ni)-Total	mg/L	TL1	7/18/2023	0.00523	1
Nickel (Ni)-Total	mg/L	TL1	7/25/2023	0.00422	1
Nickel (Ni)-Total	mg/L	TL1	8/1/2023	0.00599	1
Nickel (Ni)-Total	mg/L	TL1	8/8/2023	0.0102	1
Nickel (Ni)-Total	mg/L	TL1	8/15/2023	0.0123	1
Nickel (Ni)-Total	mg/L	TL1	8/22/2023	0.00725	1
Nickel (Ni)-Total	mg/L	TL1	8/29/2023	0.00679	1
Nickel (Ni)-Total	mg/L	TL1	9/5/2023	0.0067	1
Nickel (Ni)-Total	mg/L	TL1	9/12/2023	0.00832	1
Nickel (Ni)-Total	mg/L	TL1	9/19/2023	0.00595	1
Nickel (Ni)-Total	mg/L	TL1	9/26/2023	0.0068	1
Nickel (Ni)-Total	mg/L	TL1	10/3/2023	0.00567	1
Nickel (Ni)-Total	mg/L	TL1	10/10/2023	0.0066	1
Nickel (Ni)-Total	mg/L	TL1	10/17/2023	0.00632	1
Nickel (Ni)-Total	mg/L	TL1	10/24/2023	0.00673	1
Nickel (Ni)-Total	mg/L	TL1	10/31/2023	0.00647	1
Nickel (Ni)-Total	mg/L	TL1	11/7/2023	0.00614	1
Nickel (Ni)-Total	mg/L	TL1	11/14/2023	0.00687	1
Nickel (Ni)-Total	mg/L	TL1	11/21/2023	0.0073	1
Nickel (Ni)-Total	mg/L	TL1	11/28/2023	0.00713	1
Nickel (Ni)-Total	mg/L	TL1	12/5/2023	0.0193	1
Nickel (Ni)-Total	mg/L	TL1	12/12/2023	0.00847	1
Nickel (Ni)-Total	mg/L	TL1	12/19/2023	0.00743	1

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L)¹
Nickel (Ni)-Total	mg/L	TL1	12/26/2023	0.00728	1
Selenium (Se)-Total	mg/L	TL1	1/3/2023	0.0005	0.05
Selenium (Se)-Total	mg/L	TL1	1/10/2023	0.000428	0.05
Selenium (Se)-Total	mg/L	TL1	1/17/2023	0.000389	0.05
Selenium (Se)-Total	mg/L	TL1	1/23/2023	0.000383	0.05
Selenium (Se)-Total	mg/L	TL1	1/31/2023	0.000309	0.05
Selenium (Se)-Total	mg/L	TL1	2/7/2023	0.00106	0.05
Selenium (Se)-Total	mg/L	TL1	2/14/2023	0.000411	0.05
Selenium (Se)-Total	mg/L	TL1	2/21/2023	0.000534	0.05
Selenium (Se)-Total	mg/L	TL1	2/27/2023	0.00043	0.05
Selenium (Se)-Total	mg/L	TL1	3/7/2023	0.000436	0.05
Selenium (Se)-Total	mg/L	TL1	3/14/2023	0.000495	0.05
Selenium (Se)-Total	mg/L	TL1	3/21/2023	0.000545	0.05
Selenium (Se)-Total	mg/L	TL1	3/28/2023	0.001	0.05
Selenium (Se)-Total	mg/L	TL1	4/3/2023	0.000416	0.05
Selenium (Se)-Total	mg/L	TL1	4/11/2023	0.00104	0.05
Selenium (Se)-Total	mg/L	TL1	4/18/2023	0.000447	0.05
Selenium (Se)-Total	mg/L	TL1	4/26/2023	0.000274	0.05
Selenium (Se)-Total	mg/L	TL1	5/2/2023	0.00032	0.05
Selenium (Se)-Total	mg/L	TL1	5/9/2023	0.000508	0.05
Selenium (Se)-Total	mg/L	TL1	5/16/2023	0.000521	0.05
Selenium (Se)-Total	mg/L	TL1	5/23/2023	0.000415	0.05
Selenium (Se)-Total	mg/L	TL1	5/30/2023	0.00045	0.05
Selenium (Se)-Total	mg/L	TL1	6/6/2023	0.000134	0.05
Selenium (Se)-Total	mg/L	TL1	6/13/2023	0.00025	0.05
Selenium (Se)-Total	mg/L	TL1	6/20/2023	0.000269	0.05
Selenium (Se)-Total	mg/L	TL1	6/27/2023	0.000284	0.05
Selenium (Se)-Total	mg/L	TL1	7/3/2023	0.00025	0.05
Selenium (Se)-Total	mg/L	TL1	7/11/2023	0.00025	0.05
Selenium (Se)-Total	mg/L	TL1	7/18/2023	0.000142	0.05
Selenium (Se)-Total	mg/L	TL1	7/25/2023	0.000231	0.05
Selenium (Se)-Total	mg/L	TL1	8/1/2023	0.000303	0.05

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L) ¹
Selenium (Se)-Total	mg/L	TL1	8/8/2023	0.000388	0.05
Selenium (Se)-Total	mg/L	TL1	8/15/2023	0.000348	0.05
Selenium (Se)-Total	mg/L	TL1	8/22/2023	0.000308	0.05
Selenium (Se)-Total	mg/L	TL1	8/29/2023	0.000334	0.05
Selenium (Se)-Total	mg/L	TL1	9/5/2023	0.000297	0.05
Selenium (Se)-Total	mg/L	TL1	9/12/2023	0.000401	0.05
Selenium (Se)-Total	mg/L	TL1	9/19/2023	0.000329	0.05
Selenium (Se)-Total	mg/L	TL1	9/26/2023	0.000264	0.05
Selenium (Se)-Total	mg/L	TL1	10/3/2023	0.000325	0.05
Selenium (Se)-Total	mg/L	TL1	10/10/2023	0.000416	0.05
Selenium (Se)-Total	mg/L	TL1	10/17/2023	0.000284	0.05
Selenium (Se)-Total	mg/L	TL1	10/24/2023	0.000356	0.05
Selenium (Se)-Total	mg/L	TL1	10/31/2023	0.00025	0.05
Selenium (Se)-Total	mg/L	TL1	11/7/2023	0.00025	0.05
Selenium (Se)-Total	mg/L	TL1	11/14/2023	0.000375	0.05
Selenium (Se)-Total	mg/L	TL1	11/21/2023	0.000323	0.05
Selenium (Se)-Total	mg/L	TL1	11/28/2023	0.00025	0.05
Selenium (Se)-Total	mg/L	TL1	12/5/2023	0.00025	0.05
Selenium (Se)-Total	mg/L	TL1	12/12/2023	0.000321	0.05
Selenium (Se)-Total	mg/L	TL1	12/19/2023	0.000318	0.05
Selenium (Se)-Total	mg/L	TL1	12/26/2023	0.00036	0.05
Zinc (Zn)-Total	mg/L	TL1	1/3/2023	0.03	50
Zinc (Zn)-Total	mg/L	TL1	1/10/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	1/17/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	1/23/2023	0.0172	50
Zinc (Zn)-Total	mg/L	TL1	1/31/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	2/7/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	2/14/2023	0.0249	50
Zinc (Zn)-Total	mg/L	TL1	2/21/2023	0.0195	50
Zinc (Zn)-Total	mg/L	TL1	2/27/2023	0.0096	50
Zinc (Zn)-Total	mg/L	TL1	3/7/2023	0.024	50
Zinc (Zn)-Total	mg/L	TL1	3/14/2023	0.0508	50

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L)¹
Zinc (Zn)-Total	mg/L	TL1	3/21/2023	0.03	50
Zinc (Zn)-Total	mg/L	TL1	3/28/2023	0.214	50
Zinc (Zn)-Total	mg/L	TL1	4/3/2023	0.0422	50
Zinc (Zn)-Total	mg/L	TL1	4/11/2023	0.0338	50
Zinc (Zn)-Total	mg/L	TL1	4/18/2023	0.0195	50
Zinc (Zn)-Total	mg/L	TL1	4/26/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	5/2/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	5/9/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	5/16/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	5/23/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	5/30/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	6/6/2023	0.006	50
Zinc (Zn)-Total	mg/L	TL1	6/13/2023	0.0977	50
Zinc (Zn)-Total	mg/L	TL1	6/20/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	6/27/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	7/3/2023	0.0152	50
Zinc (Zn)-Total	mg/L	TL1	7/11/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	7/18/2023	0.006	50
Zinc (Zn)-Total	mg/L	TL1	7/25/2023	0.006	50
Zinc (Zn)-Total	mg/L	TL1	8/1/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	8/8/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	8/15/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	8/22/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	8/29/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	9/5/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	9/12/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	9/19/2023	0.0082	50
Zinc (Zn)-Total	mg/L	TL1	9/26/2023	0.0175	50
Zinc (Zn)-Total	mg/L	TL1	10/3/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	10/10/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	10/17/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	10/24/2023	0.015	50

Variable	Report Result Unit	Sample Point	Date	Data Point	CCME Water Quality Criteria, Livestock (mg/L)¹
Zinc (Zn)-Total	mg/L	TL1	10/31/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	11/7/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	11/14/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	11/21/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	11/28/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	12/5/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	12/12/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	12/19/2023	0.015	50
Zinc (Zn)-Total	mg/L	TL1	12/26/2023	0.015	50

Notes:

¹ Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Agriculture, Livestock.

² Guideline is variable. 5 mg/L for poultry (CCREM 1987).

Canadian Council of Resource and Environment Ministers (CCREM). 1987 (Updated 2008). Canadian Water Quality Guidelines (CWQG).

APPENDIX U MARINE MAMMAL MONITORING IN ROBERTS BAY, 2023



APPENDIX U: MARINE MAMMAL MONITORING IN ROBERTS BAY, 2023

Date	Time	Zone	Easting	Northing	Species	No. Individuals	Age	Sex	Behaviour	Mitigation Action	Comments
8/29/2023											No observations
8/29/2023	12:21	13	525580	7624760	Harbour Seal	1	Adult	Not recorded	Travel	N	
8/29/2023	12:32	13	512015	7630232	Bearded Seal	2	Adult	Not recorded	Travel	N	
8/30/2023											No observations
8/30/2023											No observations
8/31/2023	21:05	13	525580	7624760	Hooded Seal	1	Adult	UNK	Travel	N	
8/31/2023	21:20	13	512015	7630232	Hooded Seal	1	Adult	UNK	Travel	N	
8/31/2023											No observations
8/29/2023											No observations
9/2/2023											No observations
9/2/2023											No observations
9/3/2023											No observations
9/3/2023											No observations
9/4/2023											No observations
9/5/2023	8:30				Unknown Seal	1	Adult	UNK	Resting	N	
9/5/2023	9:00				Bearded Seal	1	Adult	UNK	Playing	N	
9/6/2023											No observations
9/7/2023											No observations
9/8/2023											No observations
9/9/2023											No observations
9/10/2023	7:20				Unknown Seal	1	Adult	UNK	Resting	N	Resting on a rock in open water, didn't react to tug boats going by.
9/11/2023											No observations
9/12/2023											No observations
9/13/2023											No observations
9/14/2023											No observations
9/15/2023											No observations
9/16/2023	13:05				Unknown Seal	1	Adult	UNK	Basking	N	

APPENDIX V INVASIVE PLANT SPECIES TARGETED FOR MONITORING IN 2023

APPENDIX V: INVASIVE PLANT SPECIES TARGETED FOR MONITORING IN 2023

Scientific Name ¹	Common Name	Type	Life Form	Predicted Invasiveness ²	Observed 2023 (yes/no)
<i>Agropyron cristatum</i>	Crested wheat grass	Herbaceous	Graminoid	Not rated	No
<i>Amaranthus retroflexus</i>	Green amaranth	Herbaceous	Forb	Not rated	No
<i>Atriplex patula</i>	Spear saltbush	Herbaceous	Forb	Not rated	No
<i>Barbarea vulgaris</i>	Yellow rocket	Herbaceous	Forb	Not rated	No
<i>Berteoa incana</i>	Hoary false-alyssum	Herbaceous	Forb	Low	No
<i>Bromus inermis</i>	Awnless brome	Herbaceous	Graminoid	Moderate/low	No
<i>Capsella bursa-pastoris</i>	Shepherd's purse	Herbaceous	Forb	Not rated	No
<i>Caragana arborescens</i>	Siberian peashrub	Woody	Shrub	Low/potential	No
<i>Carum carvi</i>	Wild caraway	Herbaceous	Forb	Not rated	No
<i>Cirsium arvense</i>	Creeping thistle	Herbaceous	Forb	Moderate/low	No
<i>Hordeum vulgare</i>	Common barley	Herbaceous	Graminoid	Not rated	No
<i>Leucanthemum vulgare</i>	Oxeye daisy	Herbaceous	Forb	Not rated	No
<i>Matricaria discoidea</i>	Pineapple chamomile	Herbaceous	Forb	Not rated	No
<i>Medicago sativa</i>	Alfalfa	Herbaceous	Forb	Low	No
<i>Melilotus albus</i>	Sweet white clover	Herbaceous	Forb	Moderate	No
<i>Melilotus officinalis</i>	Yellow sweet clover	Herbaceous	Forb	Moderate	No
<i>Papaver somniferum</i>	Opium poppy	Herbaceous	Forb	Not rated	No
<i>Phalaris arundinacea</i>	Reed canary grass	Herbaceous	Graminoid	Moderate/low	No
<i>Plantago major</i>	Common plantain	Herbaceous	Forb	Not rated	No
<i>Poa compressa</i>	Flat-stem blue grass	Herbaceous	Graminoid	Minor/potential	No
<i>Poa pratensis</i>	Kentucky blue grass	Herbaceous	Graminoid	Minor/potential	No
<i>Polygonum aviculare</i>	Prostrate knotweed	Herbaceous	Forb	Not rated	No
<i>Puccinellia distans</i>	Spreading alkali grass	Herbaceous	Graminoid	Not rated	No
<i>Ranunculus acris</i>	Tall buttercup	Herbaceous	Forb	Not rated	No
<i>Sonchus arvensis</i>	Field sow thistle	Herbaceous	Forb	Not rated	No
<i>Tanacetum vulgare</i>	Common tansy	Herbaceous	Forb	Potential	No
<i>Taraxacum officinale</i>	Common dandelion	Herbaceous	Forb	Not rated	No
<i>Thlaspi arvense</i>	Field pennycress	Herbaceous	Forb	Not rated	No
<i>Tripleurospermum inodorum</i>	Scentless chamomile	Herbaceous	Forb	Not rated	No

Scientific Name ¹	Common Name	Type	Life Form	Predicted Invasiveness ²	Observed 2023 (yes/no)
<i>Vicia cracca</i>	Tufted vetch	Herbaceous	Forb	Not rated	No
Other	Other	N/A	N/A	N/A	No

Notes:

¹ Invasive plant species targeted in 2023 surveys referenced:

Environment Canada. 2010. *Non-Native & Invasive species In Nunavut*. Canadian Endangered Species Conservation Council (CESCC).

Rescan. 2011. *Hope Bay Belt Project: 2010 Ecosystems and Vegetation Baseline Report*. Prepared for Hope Bay Mining Limited by Rescan Environmental Services Ltd.: Vancouver, British Columbia.

² Predicted Invasiveness derived from Hope Bay Belt Project: 2010 Ecosystems and Vegetation Baseline Report (Rescan 2011), which referenced Northwest Territories General Status Ranking Program (NWT Department of Environment and Natural Resources 2010), now the NWT Species Infobase.

APPENDIX W INVASIVE PLANT SPECIES MONITORING ATTRIBUTES

APPENDIX W: INVASIVE PLANT SPECIES MONITORING ATTRIBUTES

	Attribute ¹	Required	Description	Data Type	Domain ²
Survey Grid Cell Information	Grid ID	Yes	Unique identifier field for each grid cell.	Integer (long)	-
	Grid Type	Yes	Grid cell type as linear or area used to determine grid cell dimensions (e.g., wider areas such as camps use 50 m grid, while linear features use elongated modified grid). Linear features are defined as roads or other corridors where feature width is < 20 m.	Text/String	GridType
	Grid Location	Yes	Identifies grid as being an edge (partial) or interior (full) grid cell.	Text/String	GridLocation
	Grid Dimensions	Yes	Grid cell dimensions (e.g., 50 m x 50 m or 250 m x 100 m).	Text/String	-
	Completion Status	Yes	Classification of the grid cell according to whether it has been fully surveyed or not, used to track survey progress.	Text/String	CompletionStatus
	Notes	No	Description of any supporting information about the observation that is not captured elsewhere.	Text/String	-
Basic Information	Survey Date/Time	Yes	Survey date (YYYY-MM-DD) and time (HH:MM AM/PM).	Date	-
	Area (m ²)	Yes	Area of grid cell in square metres (m ²), corresponding to survey area.	Double	-
	Latitude	Yes	Y coordinate of grid centroid in DD.	Double	-
	Longitude	Yes	X coordinate of grid centroid in DD.	Double	-
	UTM Zone	Yes	UTM Zone.	Integer (short)	-
	UTM Northing	Yes	Y coordinate of grid centroid in UTM.	Double	-
	UTM Easting	Yes	X coordinate of grid centroid in UTM.	Double	-
	Employer	No	Name of the company or agency that the person is directly employed by.	Text/String	-
	Funding Agency	No	Select the funding agency that is paying for the work to be done. If multiple funders exist or in cases when an agency has been hired to manage the work on behalf of the primary funding agency, multiple Funding Agencies may be chosen. However, multiple funding agencies must first have been indicated when the user signed into InvasivesBC.	Text/String	Agency
	Jurisdiction	No	This is the entity that has responsibility for the land base or waterbody where the infestation occurs. If the infestation falls on 2 or more jurisdictions, add jurisdictions using ADD ITEM and enter the % of each jurisdiction. Total must add to 100%. The data from observations and treatments with more than one jurisdiction can be split after the data is entered - when extracted from the database.	Text/String	Jurisdiction
	Location Description	Yes	Provide location directions - include both general area and how to get to the infestation. Format should be: General area of the province, closest town, Invasive Plant/Species Management Area (if applicable), road access directions from a landmark, ground access directions using direction and distance from a landmark. For example: NW BC, Smithers, Bulkley IPMA, Railroad Ave., 10 meters N from 30 km speed sign.	Text/String	-
	Access Description	No	Additional location information to find the infestation. Include the location of gates or hazards such as wet areas or needing an ATV or walk-in access or that the infestation is in a particular location within the geometry. Example of good location description will include regional district, closest municipality, proximity and orientation to majority landmarks. For example: Fraser Valley RD, 2km east of Mission, north side of Hwy 7 at upstream end of CP culvert.	Text/String	-
Comments	No	Description of any supporting information about the observation that is not captured elsewhere.	Text/String	-	
Project Code	No	ERM Project Number.	Integer (short)	-	

	Attribute ¹	Required	Description	Data Type	Domain ²
General Observation	Pre-Treatment Observation	Yes	Yes if the observation was completed directly before a treatment occurs. No if the observation is occurring after the treatment or during a separate survey.	Text/String	YesNoUnknown
	Observer #1	Yes	Observation Person #1.	Text/String	Observer
	Observer #2	No	Observation Person #2.	Text/String	Observer
	Soil Texture	No	Relative amount of sand, silt, clay, organic matter, and bedrock throughout the observation area.	Text/String	SoilTexture
	Specific Use	Yes	Notable land uses or attributes within the observation area.	Text/String	SpecificUse
	Slope	Yes	Exact or general slope of the land expressed as a percentage.	Text/String	Slope
	Aspect	Yes	Average orientation that slope is facing within the observation area (e.g.; SE = southeast).	Text/String	Aspect
	Research Observation	No	Is this observation part of a research project? Add details in project code or comments fields.	Text/String	YesNoUnknown
	Visible Well nearby	No	Choose Yes if there is a visible well or other domestic water intake nearby. Look for a well head, dugout, pump house, etc. Indicate the distance from the observation in the comments.	Text/String	YesNoUnknown
	Suitable for Biocontrol agent(s)	No	Choose Yes if the infestation is large, evenly infested and the site appears secure from future disturbance.	Text/String	YesNoUnknown
Terrestrial Plant Observation Form	Invasive Plant	Yes	Invasive Plant Species Name.	Text/String	SpeciesNunavut
	Invasive Plant Observation Type	Yes	Occurrence describes the presence or absence of target invasive plants within a defined area. Positive – if the plant is found. Additional fields will appear if plant observation positive. Negative – if the plant is not found – used for extent surveys such as roads or large areas where the target invasive plant is not found.	Text/String	Occurrence
	Invasive Plant Percent Cover	Yes	Percent Cover.	Integer (short)	PercentCover
	Invasive Plant Density (plants/m ²)	Yes	Average number of individual plants per square meter in patches expressed as a density class code.	Text/String	Density
	Invasive Plant Distribution	Yes	Description of the average arrangement of invasive plant clusters within the observation area expressed as a distribution code.	Text/String	Distribution
	Invasive Plant Life Stage	Yes	Average phenological stage of plant (e.g., seedlings, mature: flowering, etc.)	Text/String	LifeStage
	Invasive Plant Voucher Specimen Collected	Yes	Yes – if Voucher Specimen has been collected. Selecting Yes will bring up additional Fields: Voucher Sample ID, Date Voucher Collected, Date Voucher Verified, Name of Herbarium, Accession Number, Voucher verification completed by: Name, Organization. Exact UTM Coordinates of the voucher collection site: UTM Zone, UTM Easting, UTM Northing.	Text/String	YesNo
Editor Tracking	Global ID*	Yes	Unique code to a feature generated by ArcGIS Online.	Global ID	-
	Creator Name*	Yes	Editor tracking field for name of feature creator generated by ArcGIS Online.	String (50 char. text)	-
	Creation Date*	Yes	Editor tracking field for date of feature creation generated by ArcGIS Online.	Date	-
	Editor Name*	Yes	Editor tracking field for name of feature editor generated by ArcGIS Online.	String (255 char. text)	-
	Editor Date*	Yes	Editor tracking field for feature edit date generated by ArcGIS Online.	Date	-

Notes:

¹ Invasive plant species attributes were modified from the InvasivesBC Reference Guide (BC Ministry of Forests 2023).

² Domains refer to fields with automated values.

APPENDIX X INVASIVE PLANT SPECIES SURVEY123 FIELD FORM



KSM Invasive Plant Survey

Grid Information

Grid ID*

Date*


 MM/DD/YYYY

Time*


03:26 PM

Location Description*

Nunavut, Hope Bay, Hope Bay Belt Project

215 

Access Description

255 

Comments

Invasive Plant

1

255

Project Information ▾

Employer

ERM

Agency

Agnico Eagle

Jurisdiction

MN

Project Code

0685812-03

General Observations ▾

Observer #1*

Observer #2

Angie Wu (ERM) ▼

Pre-treatment Observation?*

No

Yes

Soil Texture

-Please select- ▼

Specific Use*

Mine Site ▼

Research Observation

Unknown ▼

Visible Well Nearby?

Unknown ▼

Suitable for Biocontrol Agent(s)

Unknown ▼

Invasive Plant

1

Were invasive plants identified in this grid cell?*

No

Yes

Invasive Plant Info (1) ▼

Species Name*

▼

Observation Type

Negative

Positive

Percent Cover

Code	Description	Details	Area if 50 m x 50 m grid
0	Not Present	Species is not observed within area	
1	<1%	< 1%: Trace abundance	<25 m ²
2	1-10%	1-10%: Low abundance	25-250 m ²
3	11-25%	11-25%: Moderate abundance	250-625 m ²
4	26-50%	26-50%: High abundance	625-1250 m ²
5	>50%	> 50%: Very high abundance	>1250 m ²

Life Stage

-Please select- ▼

Voucher Specimen Collected?



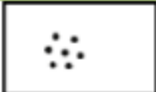
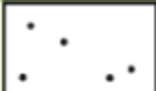





No

Yes

Opportunistic Management Applied

255

Expand for distribution code description ▼

Invasive Plant Survey - Distribution Codes		
Code	Image	Description
1		Rare individual, a single occurrence
2		Few sporadically occurring individuals
3		Single patch or clump of a species
4		Several sporadically occurring individuals
5		A few patches or clumps of a species
6		Several well-spaced patches or clumps
7		Continuous uniform occurrence of well-spaced individuals
8		Continuous occurrence of a species with a few gaps in the distribution
9		Continuous dense occurrence of a species

Distribution Code

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Expand for density code description ▼

Unknown
1 | <= 1 plant/m2 (Low)
2 | 2-5 plants/m2 (Med)
3 | 6-10 plants/m2 (High)
4 | >10 plants/m2 (Dense)
Not Applicable - actual foot-
print or sample location

Invasive Plant
1

Density Code

Low

Medium

High

Dense

Photos

Submit

Powered by [ArcGIS Survey123](https://survey123.arcgis.com/)

APPENDIX Y INVASIVE PLANT SPECIES SURVEY PRESENTATION & PLANT IDENTIFICATION 2023



Hope Bay Mine Site *Invasive Plant Survey Presentation*

Presented to: Agnico Eagle Mines Limited
Presented by: Katherine Baird and Angie Wu

August 2, 2023
Updated: August 14, 2023

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The business of sustainability



no gold from Nunavut's Hope Bay this year, as Agnico Eagle shifts focus | CBC News

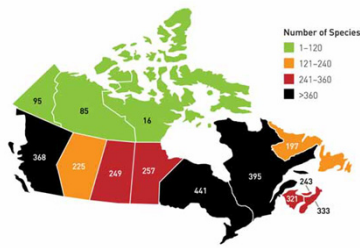
1

What are Invasive Plant Species?

2

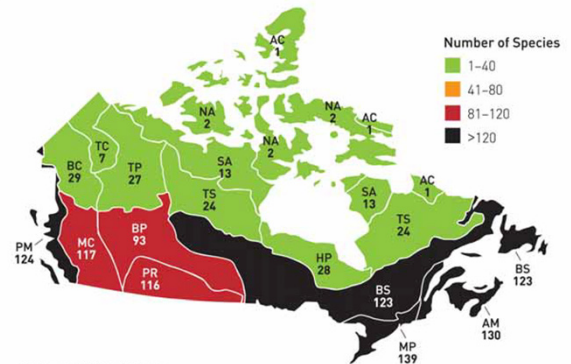
What are “invasive” plant species?

- Non-native
- Introduced by human activities
- Naturalized
- Negative impacts on the environment, the economy, and/or society including human health
- 16 invasive plant species identified for Nunavut (CFIA 2008) - lowest in all of Canada



Note: Canada has 486 invasive alien plant species.

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Ecoregion Abbreviations

- AC Arctic Cordillera
- AM Atlantic Maritime
- BC Boreal Cordillera
- BP Boreal Plain
- BS Boreal Shield
- HP Hudson Plain
- MC Montane Cordillera
- MP Mixedwood Plain
- NA Northern Arctic
- PM Pacific Maritime
- PR Prairie
- SA Southern Arctic
- TC Taiga Cordillera
- TP Taiga Plain
- TS Taiga Shield

Note: Based on the 162 species for which distribution maps were available.

3

Properties of Invasive Plants

- Wide ecological tolerance
- Fast growth
- Larger size
- High seed production
- Vegetative reproduction (e.g., suckering)
- Long dispersal (wind, bird, water)
- Phenotypic plasticity
- Earlier / Longer growing season
- Modify ecosystem (e.g., Allelopathic)



(c) saschaee – some rights reserved (CC BY-NC)

Montana Statewide Noxious Weed Awareness and Education Program. Montana State University. Burwood.org. UGA2154006

Field Pennycress, *Thlaspi arvense* – Wisconsin Horticulture

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4

4

Ecological Impacts of Invasive Plants

- Displace native plant species
- Reduce biodiversity
- Inhibit forest regeneration
- Impact natural succession
- Alter forest structure
- Reduce forest productivity
- Increase erosion / flooding
- Alter soil chemistry
- Disease spread
- Degrade wildlife habit



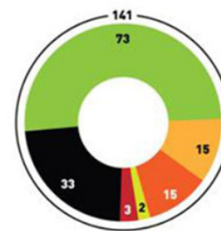
(Fagan & Peart 2004; Hejda et al. 2002; Narango et al. 2018; OIPC 2020: Quentin & Fuller 2013, etc.)

5

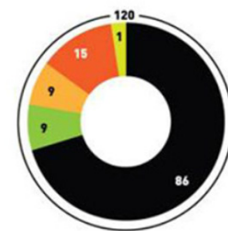
Pathways of Introduction/Spread

- ~54% invasive plants deliberately introduced; 46% unintentionally introduced to Canada (CFIA 2008)
- Most commonly: *Asteraceae* (daisy or composite family), *Poaceae* (grass family), *Brassicaceae* (mustard family), *Fabaceae* (pea family), and *Lamiaceae* (mint family)
- **Sources:** contaminated soil, sand, gravel; seeds or plant material on shoes/equipment
- **Corridors of spread:** roads, trails, watercourses

Total Number of invasive alien species with pathway information: 245 (out of 486)



- Intentional Introduction 141**
- as agricultural crop (food, fodder, fibre) [33]
 - as ornamental or landscaping plant [73]
 - for soil improvement, erosion control, reclamation [15]
 - for herbal or medicinal use [15]
 - for research (escape from research stations, botanical gardens, arboreta, etc.) [2]
 - unknown purpose [3]



- Unintentional Introduction 120**
- with plant products (contaminants in seed, forage, produce, wood products, garden supplies) [86]
 - with livestock or other animals [9]
 - in soil, sand, gravel (including ballast soil) [9]
 - with freight, packing materials, machinery, equipment, etc. [15]
 - through recreation/tourism (baggage, camping equipment, boats, etc.) [1]

6

Why are we Monitoring Invasive Plants?

7

Regulatory Requirements - NIRB

NIRB (Nunavut Impact Review Board):

- Hope Bay is regulated by NIRB who screens and assesses potential impacts of proposed developments in the Nunavut Settlement Area prior to approval of the required project authorizations
- NIRB assesses the potential biophysical and socio-economic impact of proposals using both traditional knowledge and recognized scientific methods. The Board will make recommendations and decisions about whether a project requires review and whether or not project proposals should proceed
- The Board may also establish monitoring programs for projects that have been assessed and approved to proceed



8

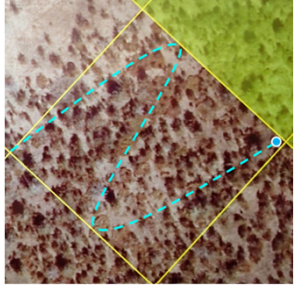
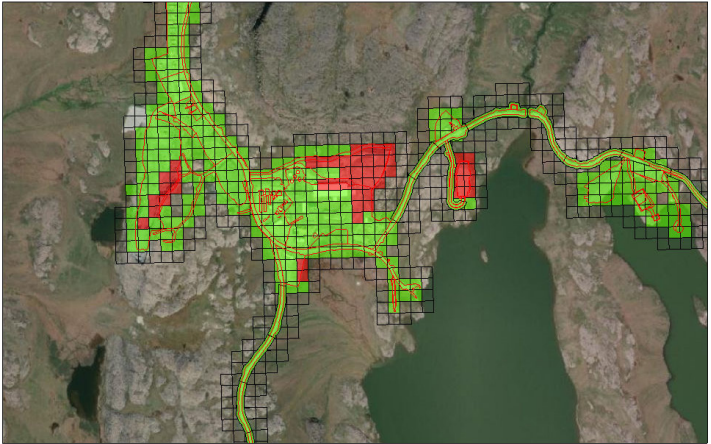
Invasive Plant Monitoring Methods

ArcGIS Field Maps

11

ArcGIS Field Maps

Hope Bay Invasive Species - July 31, 2023 (Doris)



7/31/2023

- Hope Bay As_built Footprint 2022
- Invasive Plants Survey Grid
- Not Surveyed
- Completed Survey
- Inaccessible
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery

1:32,922

0 0.1 0.2 0.4 mi
0 0.15 0.3 0.6 km

North

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Invasive Plant Survey Methods

Applications: ArcGIS Field Maps, Survey123
Standardized fields/drop-downs

Collected Data

- Species and Location
- Abundance (percent cover)
- Distribution
- Density
- Other details: location, date, features, etc.
- References InvasivesBC standards

Survey Methods

- 50 m x 50 m survey grid
- Rapid survey along roads (10 m buffer) - 3km/hr road assessment

Walked around infrastructure/disturbed areas

Density codes

Unknown
 1 | ≤ 1 plant/m² (Low)
 2 | 2-5 plants/m² (Med)
 3 | 6-10 plants/m² (High)
 4 | >10 plants/m² (Dense)
 Not Applicable - actual foot-print or sample location

Distribution codes

Invasive Plant Survey - Distribution Codes		
Code	Image	Description
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Invasive Plants with Potential to Occur in the Arctic

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Invasive Forbs/Shrubs

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Invasive Forbs/Shrubs with Potential to Occur in Hope Bay

Scientific Name	Common Name	Life Form	Predicted Invasiveness
<i>Amaranthus retroflexus</i>	green amaranth	forb	not rated
<i>Atriplex patula</i>	spear saltbush	forb	not rated
<i>Barbarea vulgaris</i>	yellow rocket	forb	not rated
<i>Berteoa incana</i>	hoary false-alyssum	forb	low
<i>Capsella bursa-pastoris</i>	shepherd's purse	forb	not rated
<i>Caragana arborescens</i>	Siberian peashrub	shrub	low/potential
<i>Carum carvi</i>	wild caraway	forb	not rated
<i>Cirsium arvense</i>	creeping thistle	forb	moderate/low
<i>Leucanthemum vulgare</i>	oxeye daisy	forb	not rated
<i>Matricaria discoidea</i>	pineapple chamomile	forb	not rated
<i>Medicago sativa</i>	alfalfa	forb	low
<i>Melilotus albus</i>	sweet white clover	forb	moderate
<i>Melilotus officinalis</i>	yellow sweet clover	forb	moderate
<i>Papaver somniferum</i>	opium poppy	forb	not rated
<i>Plantago major</i>	common plantain	forb	not rated
<i>Polygonum aviculare</i>	prostrate knotweed	forb	not rated
<i>Ranunculus acris</i>	tall buttercup	forb	not rated
<i>Sonchus arvensis</i>	field sow thistle	forb	not rated
<i>Tanacetum vulgare</i>	common tansy	forb	potential
<i>Taraxacum officinale</i>	common dandelion	forb	not rated
<i>Thlaspi arvense</i>	field pennycress	forb	not rated
<i>Tripleurospermum inodorum</i>	scentless chamomile	forb	not rated
<i>Vicia cracca</i>	tufted vetch	forb	not rated

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Plant Identification Features (Foliage)

leaf margin (leaf edge)
midrib
petiole

Leaf Margin

- entire
- toothed/serrated

Leaf Shape

- lance shaped
- heart shaped
- tear drop shaped
- egg shaped
- compound
- lobed

Leaf Venation

Arrangement

- opposite
- alternate

terminal leaflet

- sessile
- staked

ligule
found at inner base of leaf, between where the leaf attaches to the main stem and the stem itself. Commonly forms a translucent membrane or fringe of hairs.

stem sheath
portion of the leaf that wraps around and joins leaf to stem

Plant ID Key for region near Hope Bay: [Vascular plants of Victoria Island \(Northwest Territories and Nunavut, Canada\): a specimen-based study of an Arctic flora \(pensoft.net\)](#)

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Plant Identification Features (Flowers)

ray flower
disk flower
pale
phyllary
involucre
calyx
receptacle

Types of Inflorescence

- Solitary
- Raceme
- Corymb
- Spike
- Capitulum
- Spadix
- Umbel
- Compound umbel
- Uniparous cyme
- Dichasial cyme

Flower Anatomy

- Stigma
- Style
- Ovary
- Ovule
- Petal
- Stamen
- Stem
- Sepal

Cypselae (plural = cypselae)

- bifurcate style
- syngyneous anthers
- corolla tube
- corolla lobe
- pappus
- cypselae

https://web.stanford.edu/group/dahlia_genetics/compositae_info.htm
<https://www.trees.com/gardening-and-landscaping/flowers>

Plant ID Key for region near Hope Bay: [Vascular plants of Victoria Island \(Northwest Territories and Nunavut, Canada\): a specimen-based study of an Arctic flora \(pensoft.net\)](#)

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Invasive: Scentless Chamomile (*Tripleurospermum inodorum*)

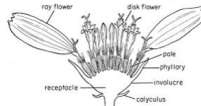
Tripleurospermum inodorum (Scentless False Mayweed) - Minnesota Wildflowers

- Flowers: Daisy-like
 - Leaves: Compound, dissected, dill-like, not fleshy
 - Phyllaries (bracts under flowers): **relatively narrow, margins light brown**
 - Resin glands: **± circular** (lengths mostly 1–1.5x widths)
 - Stems: typically **ascending** to erect
 - Annual**
- Native Look-alike: *Tripleurospermum maritimum* subsp. *phaeocephalum*

ID Keys:

http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=133732

<https://inspection.canada.ca/plant-health/seeds/seed-testing-and-grading/seeds-identification/tripleurospermum-inodorum/eng/1405513897968/1405513898734>



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2007 © Peter M. Dziuk

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Native: Seaside Chamomile (*Tripleurospermum maritimum* subsp. *phaeocephalum*)

Tripleurospermum maritimum subsp. *phaeocephalum* - Flora of the Canadian Arctic Archipelago

Inuktitut: imuguaq, misait, misartaq (Nunavik)

Syn. *Tripleurospermum hookeri*

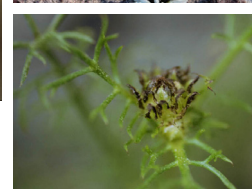
- Flowers: Daisy-like
- Leaves: Compound, dissected, dill-like, more fleshy
- Stems: typically procumbent (growing along ground), sometimes ascending
- Perennial (or biennial)**

Native subspecies: *Tripleurospermum maritimum* subsp. *phaeocephalum*

- Phyllaries (bracts under flowers): relatively **wide** (broadly triangular), margins **black/dark brown** and **0.4–1 mm wide**
- Cypselae (fruit): Resin glands **elongated** (lengths mostly **2x widths**)
- Habitat: seashores (near high tide strand line), moist sandy sites

Introduced subspecies: *Tripleurospermum maritimum* subsp. *maritimum*

- Phyllaries (bracts under flowers): **more narrow** (oblong or narrowly triangular), margins **pale/dark brown** and **0.2–0.4 mm wide**
- Cypselae (fruit): Resin glands **elongated** (lengths mostly **much more** than 2x widths)



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22

Native: Horned Dandelion (*Taraxacum ceratophorum*)

Taraxacum ceratophorum - Flora of the Canadian Arctic Archipelago

- Flowers: Solitary yellow, head very dense with ray flowers
- Stems: Stout and hollow
- Leaves: **Hairless**, sub-entire to deeply lobed
- Phyllaries (bracts under flowers): apex **notably horned**
- Other: Leaves/roots/stems exude milky sap when broken

- Habitat: wet meadows (at the edges), along streams, lakeshores, ridges; imperfectly drained moist areas, seepage slopes; gravel, sand, clay

Other native species: *T. hyparcticum*, *T. phymatocarpum*, *T. scopulorum*, *T. holmenianum*

ID Keys:

[Flora of North America \(Efloras.org\)](http://Efloras.org)

[Vascular plants of Victoria Island \(Northwest Territories and Nunavut, Canada\): a specimen-based study of an Arctic flora \(pensoft.net\)](#)



[Vascular plants of Victoria Island \(Northwest Territories and Nunavut, Canada\): a specimen-based study of an Arctic flora \(pensoft.net\)](#)

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Hope Bay *Taraxacum* specimen (Native *T. ceratophorum*)



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Invasive Grasses with Potential to Occur in Hope Bay

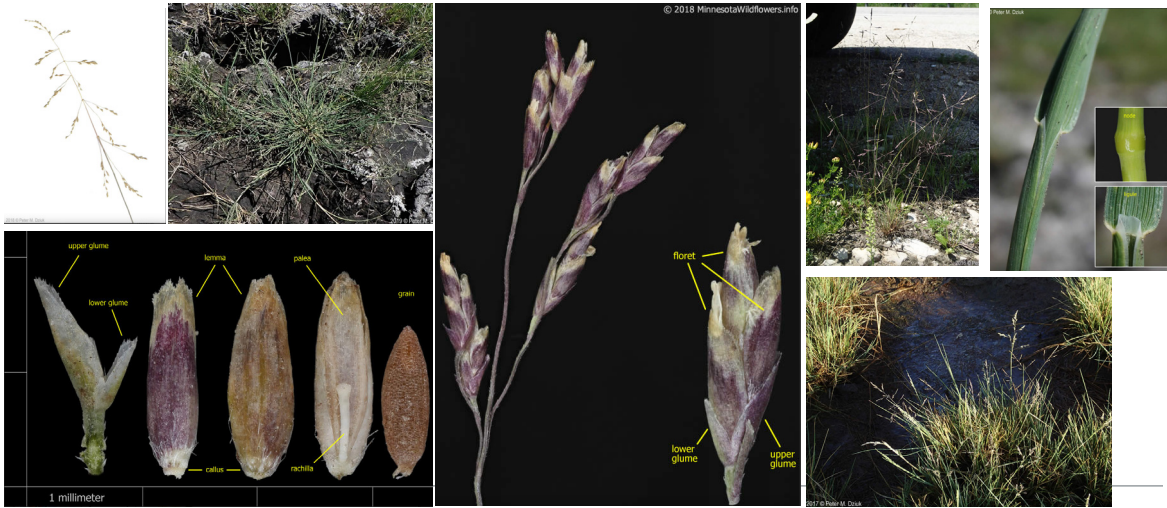
Scientific Name	Common Name	Life Form	Predicted Invasiveness
<i>Agropyron cristatum</i>	crested wheat grass	graminoid	not rated
<i>Bromus inermis</i>	awnless brome	graminoid	moderate/low
<i>Hordeum vulgare</i>	common barley	graminoid	not rated
<i>Phalaris arundinacea</i>	reed canary grass	graminoid	moderate/low
<i>Poa compressa</i>	flat-stem blue grass	graminoid	minor/potential
<i>Poa pratensis</i>	kentucky blue grass	graminoid	minor/potential
<i>Puccinellia distans</i>	spreading alkali grass	graminoid	not rated

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Invasive: *Puccinellia distans* (spreading alkali grass)

Puccinellia distans (Weeping Alkali grass): Minnesota Wildflowers

Native Look-alikes: native *Puccinellia* species (e.g., *P. nuttalliana* [most similar], *P. andersonii*, *P. angustata*, *P. arctica*, *P. banksiensis*, *P. bruggemannii*, *P. phryganodes*, *P. tenella*, *P. vaginata*, *P. vahliana*)



Key: <http://floranorthamerica.org/Puccinellia>

29

Native: *Puccinellia nuttalliana* (Nuttall's Alkali grass)



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Hope Bay *Puccinellia* specimen (likely Native *P. nuttalliana*)



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Monitoring Results



- Surveyed entire site including any roads along with all of Doris, Madrid, and Boston
- No Invasive Plants were found during the survey
- Dandelion and Chamomile species found in various areas of the site but were determined to be native species

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Best Management Practices for Invasive Plant Species Prevention

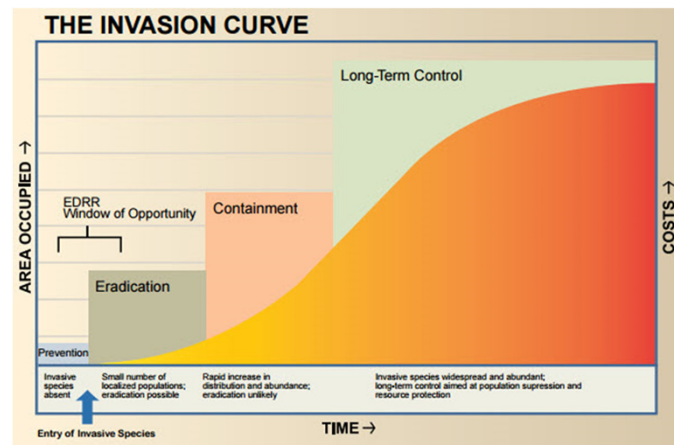
Ways to prevent introduction and spread

33

Preventing Invasive Plant Introductions

- **Stages of Invasion:** Introduction, Colonization, Proliferation
- Effectiveness of control decreases with time and costs of control increase
- **Management objective:** Due to the remote location of the Project and no occurrence of invasive plants currently, the goal is **Prevention** - to avoid the introduction species that may negatively affect native vegetation or wildlife
- Due to the remote location of the Project, the main source of introduced plants is mine activities (e.g., contamination shipments, equipment, clothing/boots); other uses from surrounding communities a lower risk
- Climate change risk for expansion of invasive species and increased potential in the Arctic

EDRR = Early Detection and Rapid Response



<https://www.floridainvasives.org/mgmt101.cfm>

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Overview of Recommendations

Wildlife Mitigation and Monitoring Plan (2023):

- Minimizing clearing and laydown areas, to reduce the areas where disturbance or de-vegetation would allow invasive plants to establish;
- Promptly re-vegetating short-term disturbance or clearing areas with native plant species, to avoid soil degradation (e.g., locally collected seed);
- Inspecting all vehicles and mobile equipment for cleanliness prior to arrival on site, and inspecting again prior to use at site (i.e., no debris on tires/tread, rims, or interior flooring and seats); and,
- Instructing personnel to clean gear (e.g., boots, shovels) prior to arrival at site.

Additionally – do not bring in outside soil/fill/seed/plant material for risk of contamination



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Thank you

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Invasive Plant ID Resources

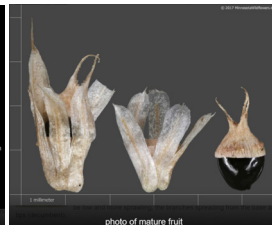
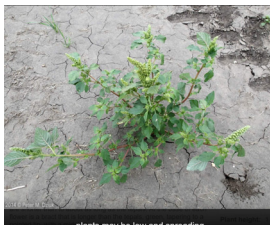
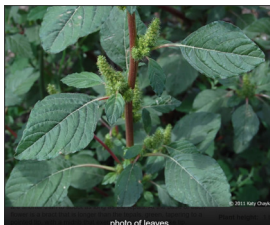
Invasive Forbs/Shrubs

37

Invasive: *Amaranthus retroflexus* (Green Amaranth/Pigweed)

Amaranthus retroflexus (Redroot Pigweed): Minnesota Wildflowers

- Tiny flowers are tightly packed in small clusters (glomerules) in a spike-like arrangement at the tips of branching stems and arising from leaf axils
- The spikes are thick, dense, relatively short, erect to ascending but not stiff, and usually numerous
- Flowers have 5 tepals that are 2.5 to 3.5 mm long, thin, translucent whitish with a green midrib, more or less oblong and rounded at the tip, with a minute, sharp point at the apex (mucronate)
- Male flowers have 3 to 5 yellow stamens and female flowers have a 3-parted style at the tip of an oval green ovary
- Leaves are alternate, 1 to 6 inches long, ½ to 3 inches wide, egg to diamond-shaped, widest at or below the middle, hairless to sparsely hairy, more densely hairy along the veins on the underside, bluntly pointed at the tip, wedge-shaped to somewhat rounded at the base. Edges are toothless and often somewhat wavy
- Fruit is a dry seed that is enclosed in a persistent ovary shell that has a seam around the middle with the top coming off like a cap to expose the seed
- Seeds are lens-shaped, 1 to 1.3 mm long and are smooth, shiny, and black to dark reddish-brown



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Invasive: *Atriplex patula* (Spear Saltbush)

[E-Flora BC Atlas Page \(ubc.ca\)](#)

- Annual herb from a taproot with stems erect or ascending, simple or branched up to 5 to 80 cm tall
- Lower leaves are opposite with upper leaves alternate, stalked or stalkless, 1 to 10 cm long, lanceolate to broadly lanceolate, 2 to 4 cm wide, rounded at the base, smooth or toothed, upper leaves green below, others covered with a whitish mealy substance above and below when young but becoming glabrous and greenish with maturity
- Inflorescence of terminal or axillary spikes or panicles; pistillate bracteoles somewhat basally thickened at maturity, the largest bracteoles are somewhat diamond-shaped, margins united almost to the middle, lateral teeth present, densely compressed in the inflorescence, more or less uniform in size, 3 to 6 mm long
- Fruits are membranous pericarps, seeds erect, 1.5 to 2.5 mm long



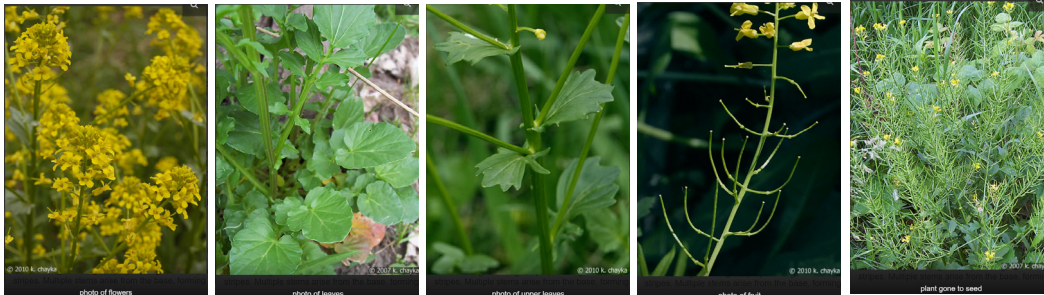
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39

Invasive: *Barbarea vulgaris* (Yellow Rocket)

[Barbarea vulgaris \(Garden Yellow Rocket\): Minnesota Wildflowers](#)

- Flowers are in rounded clusters 1 to 1½ inches across at the top of branching stems in the upper plant
- Individual flowers are about 1/3 inch across with 4 yellow petals, 6 yellow-tipped stamens, and 4 yellow-green sepals
- Clusters elongate as the plant matures, with flowers blooming at the tip and fruit forming along the stem below
- Leaves become progressively smaller as they ascend the stem. Near the base of the plant they are deeply lobed with a large rounded lobe at the tip and 1 to 4 pairs of small rounded lobes on the stalk
- Basal leaves are up to 6 inches long and 2 ½ inches wide with edges often somewhat wavy
- At the top of the plant, the upper leaves are rather smaller and somewhat variable. They may be unlobed, wedge shaped to oval to shallowly lobed with little or no stalk. Attachment is alternate
- Fruits are slender green pods about 1 inch long that typically angle or curve up. The pods hold numerous tiny brown seeds



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Invasive: *Berteoa incana* (hoary false-alyssum)

Berteoa incana (Hoary Alyssum): Minnesota Wildflowers

- Flowers are a rounded cluster 1 to 2 inches across at the end of branching stems near the top of the plant
- Individual flowers are $\frac{1}{4}$ inch across and have 4 white petals that are deeply notched to look like 8
- There are 6 thick yellowish green stamens in the center
- Leaves are $1\frac{1}{2}$ to 3 inches long and up to $\frac{1}{2}$ inch wide, toothless, and have a pointed or blunt tip and no stalk
- They are covered in fine hairs that give them a grayish green color. Attachment is alternate
- Stems are densely hairy, single or multiple from the base and usually branching
- Fruit is a round, play pod that is $\frac{1}{4}$ inch long with the stub of a style at the top. They run along the length of the elongated branching stems



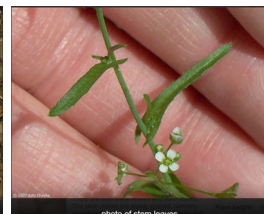
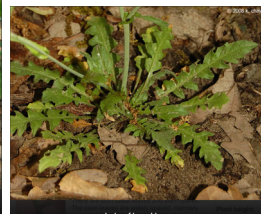
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41

Invasive: *Capsella bursa-pastoris* (shepherd's purse)

Capsella bursa-pastoris (Shepherd's Purse): Minnesota Wildflowers

- Flowers are in rounded clusters at the end of the stems and at the top of the plant
- Individual flowers are about $\frac{1}{4}$ inch across when fully open with 4 rounded white petals and 6 greenish yellow stamens in a ring
- A plant will have few to several flowering branches, depending on ground conditions
- Basal leaves and stem leaves are present, with stem leaves being widely spaced, narrowly arrowhead shaped, up to about 1 inch long and about $\frac{1}{4}$ inch wide, and stalkless
- Basal leaves are stalked, about 4 inches long, up to 1 inch wide, deeply lobed with lobes pointed or rounded at the tip
- Stems are erect to sprawling, variously hairy and usually branched



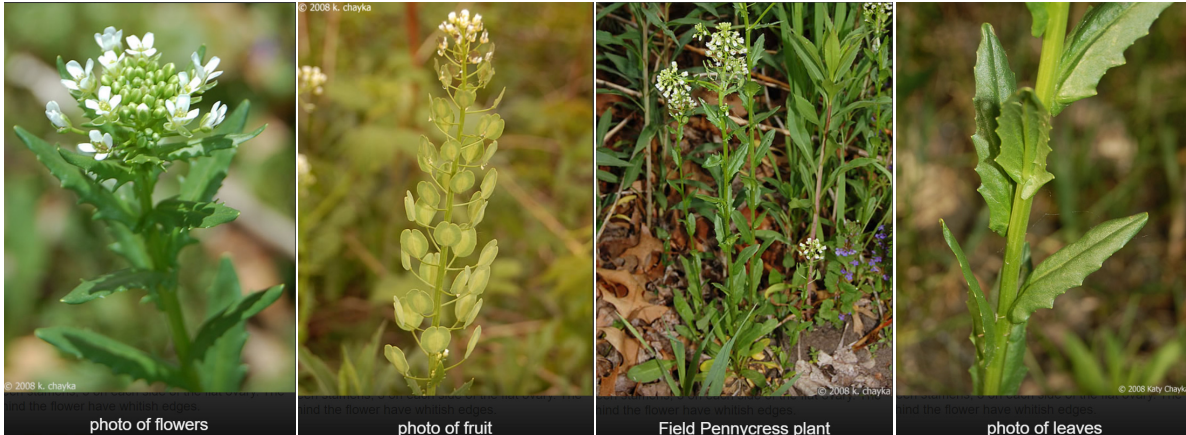
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Invasive: *Thlaspi arvense* (field pennycress)

Thlaspi arvense (Field Pennycress): Minnesota Wildflowers

Native Look-alike: Native mustards



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Invasive: *Carum carvi* (wild caraway)

Capsella bursa-pastoris (Shepherd's Purse): Minnesota Wildflowers

- Flowers are several flat clusters 1 to 2 ½ inches across, made up of 3 to 10 smaller clusters each with up to 20 1/8-inch white to pinkish flowers. Individual flowers have 5 petals, notched at the tip, 5 stamens and a creamy white center
- Up to 4 short, thread like bracts that may or may not be present where the main umbel attaches to the stem and non are present at the base of the umbellets. The umbellet and flower stalks are all rather unequal in length
- Leaves are alternate, compound, lance-oblong in outline, 2 to 3 times dissected into slender thread-like segments ¼ inch or less in length. Basal and lower leaves are long stalked
- Stem leaves are sheath-like where the stalk joins the stem, with a pair of small leaf-like appendages at the base of the stalk. Upper leaves are reduced in size
- Stems are usually single, rarely up to 8, hairless and glossy, branched in the upper plant
- Fruits are elliptic, slightly flattened, between 1/10 and ¼ inch long and 1/3 as wide, with prominent length-wise ridged when mature. It splits in to 2 oblong to crescent shaped seeds



www.erm.com

44

Invasive: *Cirsium arvense* (creeping thistle)

Cirsium arvense (Canada Thistle): Minnesota Wildflowers

Native Look-alike: None

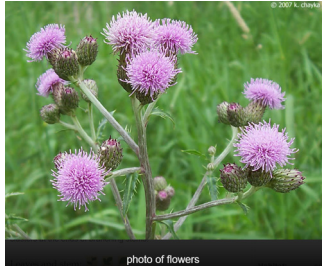


photo of flowers

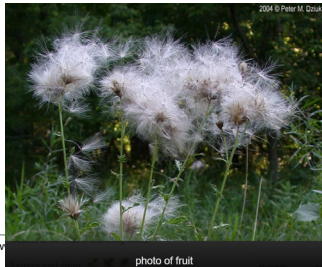


photo of fruit



budding Canada Thistle plant



photo of leaves

45

Invasive: *Leucanthemum vulgare* (oxeye daisy)

Leucanthemum vulgare (Ox-eye Daisy): Minnesota Wildflowers

Native Look-alike: None

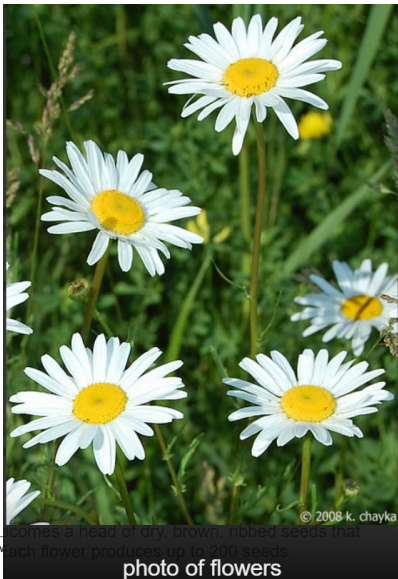
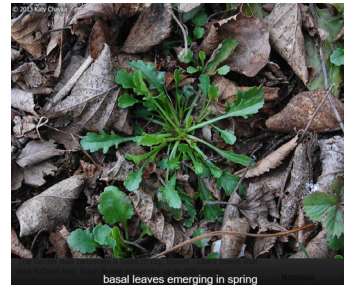


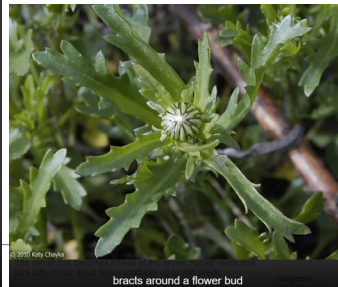
photo of flowers



photo of stem and mid-stem leaves



basal leaves emerging in spring



bracts around a flower bud



invasion of Ox-eye Daisy

46

Invasive: Scentless Chamomile (*Tripleurospermum inodorum*)

Tripleurospermum inodorum (Scentless False Mayweed) - Minnesota Wildflowers

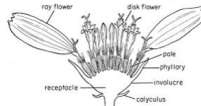
- Flowers: Daisy-like
- Leaves: Compound, dissected, dill-like, not fleshy
- Phyllaries (bracts under flowers): **relatively narrow, margins light brown**
- Resin glands: **± circular** (lengths mostly 1–1.5x widths)
- Stems: typically **ascending** to erect
- **Annual**

- Native Look-alike: *Tripleurospermum maritimum* subsp. *phaeocephalum*

ID Keys:

http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=133732

<https://inspection.canada.ca/plant-health/seeds/seed-testing-and-grading/seeds-identification/tripleurospermum-inodorum/eng/1405513897968/1405513898734>



www.erm.com



2007 © Peter M. Dziuk

47

Invasive: *Matricaria discoidea* (pineapple chamomile)

Matricaria discoidea (Pineapple-weed): Minnesota Wildflowers



photo of fruit



Pineapple-weed plant



photo of leaves



photo of flowers

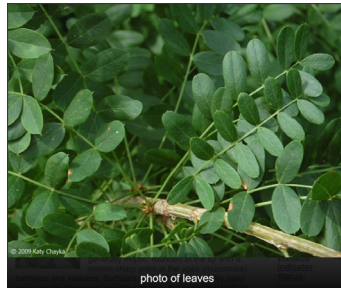
www.erm.com

48

Invasive: *Caragana arborescens* (Siberian peashrub)

Capsella bursa-pastoris (Shepherd's Purse): Minnesota Wildflowers

- Woody plant
- Flowers are yellow, pea-shaped, sides often curled back, fragrant
- The 2 lateral petals (wings) are broad and much longer than the lower petal (keel)
- Leaves are compound with 8 to 12 leaflets 3 to 5 inches long
- Lack of a terminal leaflet
- Fruit is slender, straight, bean-like pod 1 to 2 inches long that ripens from green to yellow to brown

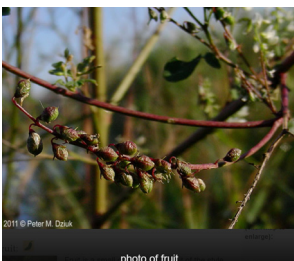


www.erm.com

49

Invasive: *Melilotus albus* (sweet white clover)

Melilotus alba (White Sweet Clover): Minnesota Wildflowers



www.erm.com

50

Invasive: *Melilotus officinalis* (sweet yellow clover)
Melilotus officinalis (Yellow Sweet Clover): Minnesota Wildflowers

© 2009 k. chayka © 2008 k. chayka

photo of flowers
more flowers
Yellow Sweet Clover plant
photo of leaves

www.erm.com

51

Invasive: *Medicago sativa* (alfalfa)
Medicago sativa (Alfalfa): Minnesota Wildflowers

© 2008 Katy Chayka © 2009 Katy Chayka

photo of flowers
photo of developing fruit
more flowers
photo of leaves
Alfalfa plant
Alfalfa plant

www.erm.com

52

Invasive: *Vicia cracca* (tufted vetch)

[Thlaspi arvense \(Field Pennycress\): Minnesota Wildflowers](#)

Native Look-alikes: Native peas



53

Invasive: *Papaver somniferum* (opium poppy)

[Papaver somniferum \(opium poppy\): Go Botany \(nativeplanttrust.org\)](#)



www.erm.com

54

Invasive: *Plantago major* (common plantain)

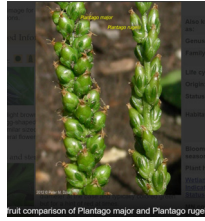
Plantago major (Common Plantain): Minnesota Wildflowers



photo of magnified flowers



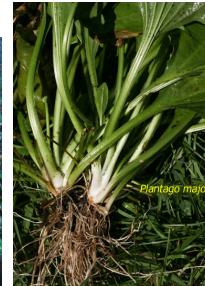
photo of leaves



fruit comparison of *Plantago major* and *Plantago rugelii*



Common Plantain in pavement cracks



Plantago major



photo of fruit

www.erm.com

55

Invasive: *Polygonum aviculare* (prostrate knotweed)

Province of Manitoba | agriculture - Prostrate Knotweed (gov.mb.ca)



Photo property of MAFR



Photo property of MAFR



Photo property of MAFR



Photo property of the Government of Manitoba



Photo property of the Government of Manitoba



Photo property of MAFR



Photo property of the Government of Manitoba

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56

Invasive: *Ranunculus acris* (tall buttercup)

Ranunculus acris (Tall Buttercup): Minnesota Wildflowers

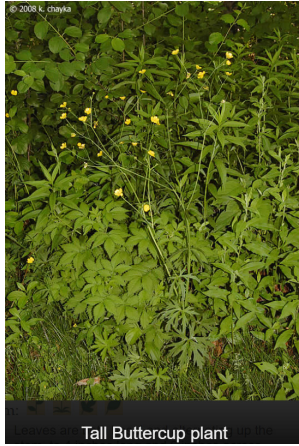
Native Look-alike: Native buttercups



photo of flower



photo of leaves



Tall Buttercup plant



more plants

www.erm.com

57

Invasive: *Tanacetum vulgare* (common tansy)

Tanacetum vulgare (Common Tansy): Minnesota Wildflowers

Native Look-alike: None

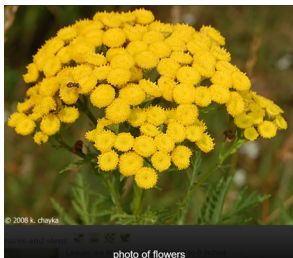


photo of flowers

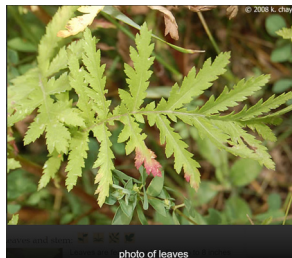


photo of leaves



leaves emerging in spring

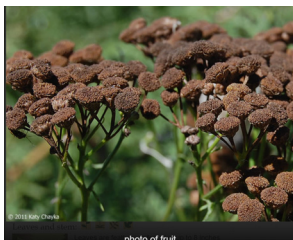
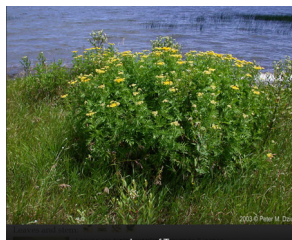
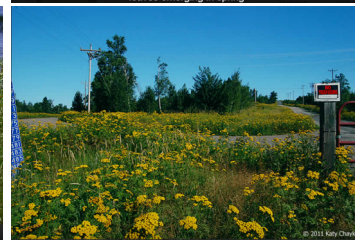


photo of fruit



a clump of Tansy



© 2011 Katy Chavka

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58

Invasive: Common Dandelion (*Taraxacum officinale*)

Taraxacum officinale (Common Dandelion) - Minnesota Wildflowers

- Flowers: Solitary yellow seed head is very dense with ray flowers
- Stems: Stout and hollow
- Leaves: **Undersides typically hairy**, deeply lobed
- Phyllaries (bracts under flowers): **usually hairless**, equal in length to the rays and are arrayed in 2 rows with the outermost row spreading out or curled down
- Fruit: dry seed, olive green, dull brown or grayish, with a tuft of white to grayish brown hairs to carry it off into the wind
- Other: Leaves/roots/stems exude milky sap when broken
- Native Look-alikes: *T. ceratophorum*, *T. hyparcticum*, *T. phymatocarpum*, *T. scopulorum*, *T. holmenianum*

ID Resources:

[Dandelion | Cornell Weed Identification](#)
[E-Flora BC Atlas Page \(ubc.ca\)](#)



photo of flower



photo of fruit



Common Dandelion plant



photo of typical leaf

www.erm.com

59

Invasive: *Sonchus arvensis* (field sow thistle)

Sonchus arvensis (Perennial Sowthistle): Minnesota Wildflowers

Native Look-alike: None



photo of flowers



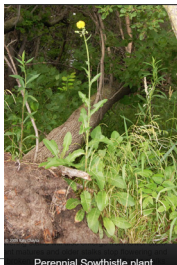
basal rosette of leaves



Perennial Sowthistle plant



more plants



Perennial Sowthistle plant

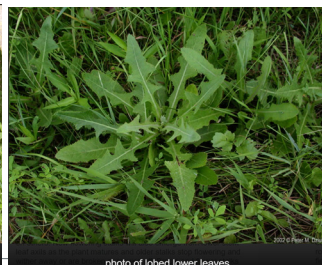


photo of lobed lower leaves



photo of upper leaves



photo of fruit

www.erm.com

60



61

Invasive: *Puccinellia distans* (spreading alkali grass)
Puccinellia distans (Weeping Alkaligrass): Minnesota Wildflowers
 Native Look-alikes: native *Puccinellia* species (e.g., *P. nuttalliana* [most similar], *P. andersonii*, *P. angustata*, *P. arctica*, *P. banksiensis*, *P. bruggemannii*, *P. phryganodes*, *P. tenella*, *P. vaginata*, *P. vahliana*)

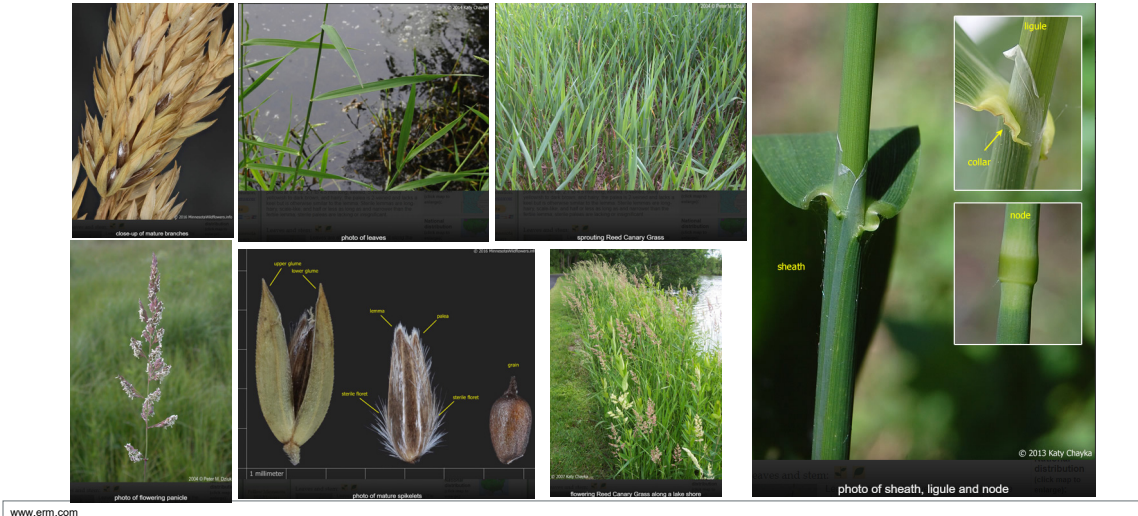
© 2018 MinnesotaWildflowers.info
 © 2017 © Herb. M. Oost

Key: <http://floranorthamerica.org/Puccinellia>

62

Invasive: *Phalaris arundinacea* (reed canary grass)

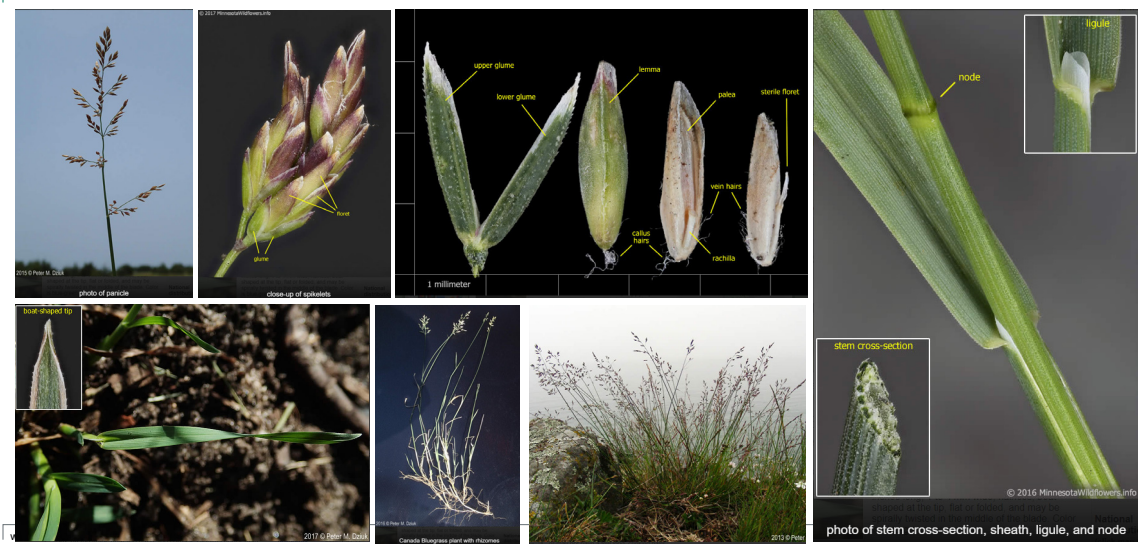
Phalaris arundinacea (Reed Canary Grass): Minnesota Wildflowers
 Native Look-alike: *Arctagrostis latifolia* (Broadleaf Arctagrostis)



63

Invasive: *Poa compressa* (flat-stem blue grass)

Poa compressa (Canada Bluegrass): Minnesota Wildflowers
 Native Look-alikes: native *Poa* species (e.g., *P. alpina*, *P. glauca*, *P. hartzii*, *P. abbreviata*)



64

Invasive: *Poa pratensis* (Kentucky blue grass)

[Kentucky Bluegrass \(*Poa pratensis*\) \(illinoiswildflowers.info\)](http://illinoiswildflowers.info)

Native Look-alikes: native *Poa* species (e.g., *P. alpina*, *P. glauca*, *P. hartzii*, *P. abbreviata*)



www.erm.com

65

Invasive: *Bromus inermis* (awnless brome/smooth brome)

[Smooth Brome - Montana Field Guide \(mt.gov\)](http://mt.gov)

Native Look-alike: *Bromus pumpellianus* (Pumpelly's Bromegrass)



www.erm.com

66

Invasive: *Agropyron cristatum* (Crested Wheatgrass)

Agropyron cristatum (Crested Wheatgrass): [Minnesota Wildflowers](#)
 Native Look-alike: *Elymus alaskanus*



Photo of flowering panicle



Close-up of Spikelet



Photo of sheath, ligule, and node



Crested Wheatgrass Plant

www.erm.com

67

Invasive: *Hordeum vulgare* (common barley)

Hordeum vulgare (common barley): [Go Botany \(nativeplanttrust.org\)](#)
 Native Look-alike: None



68

Native Plants

Learn to identify native plants to be able to notice when non-native plants are introduced

69



70



71



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APPENDIX Z CARIBOU HEIGHT OF LAND MONITORING SOP



Hope Bay

Caribou Height of Land Monitoring

STANDARD OPERATING PROCEDURE

February 2023

Version 1.0

Scope of Work: This SOP provides guidance for triggering and carrying out caribou height of land surveys

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	Hannah Visty ERM Wildlife Biologist	Hannah.visty@erm.com 236-260-1880

1. INTRODUCTION

Agnico Eagle Mines Ltd. (Agnico Eagle) has committed to monitoring caribou near the Hope Bay mine site during times of increased caribou activity, such as migration periods. Monitoring will be undertaken as Height of Land (HOL) surveys to identify when and where caribou may be interacting with site activities and ensure mitigation measures are enacted.

Height of Land surveys are based on a traditional Inuit method of scanning the landscape from high points such as hills and bluffs. The monitoring locations and survey methods have been developed in consultation with the Hope Bay Inuit Environmental Advisory Committee (IEAC) and will be carried out by an Inuit representative from a local community (e.g., Cambridge Bay) and/or on-site technicians.

Hope Bay and the IEAC discussed HOL monitoring in December 2018 and identified a draft set of methods. Detailed methods were developed and discussed with the IEAC in December 2019, with a plan to conduct a site visit and test the methods in spring 2020. The Covid-19 pandemic prevented site visits during 2020 and 2021, holding up the program. During 2021, ERM biologists identified locations for hilltop monitoring which were presented to and discussed with the IEAC in December 2021.

During summer 2022, ERM biologists worked with Inuit technicians from Hope Bay to refine the list of potential HOL survey locations. In August 2022, the IEAC visited site and conducted a site tour. This tour included visiting the proposed sites and discussing methods for HOL surveys.

This SOP is the result of the consultation and feedback from the IEAC.

1.1 Objectives

The objectives of the HOL monitoring program at Hope Bay are to:

- Conduct caribou monitoring during periods of elevated caribou presence near Hope Bay, and
- Provide data on the presence and abundance of caribou near Hope Bay mine site, to guide mitigation.

1.2 Responsible Parties

The Hope Bay Environment team will be overall responsible for triggering and conducting the HOL surveys. The Environment team will work together with the Cambridge Bay Hunters and Trappers

Organization (HTO) to trigger and enact caribou HOL monitoring. The responsibilities of each party are described in Table 1.2-1.

Table 1.2-1. Responsible Parties for Caribou Height of Land Monitoring

Party	Responsibility
All on site personnel	Report caribou sightings to Environment Department.
On site Environmental Manager	Trigger caribou HOL monitoring by contacting the Cambridge Bay HTO.
Cambridge Bay HTO	Select a local Inuit representative for caribou HOL monitoring on site.
Inuit Monitor	Carry out HOL monitoring on site, record and provide data to Hope Bay Environment Department.
Hope Bay Environment Department/ERM	Conduct HOL monitoring with Inuit monitor, or in place of Inuit monitor if no one is available. Report caribou monitoring activities in the annual WMMP Report.
Inuit Environmental Advisory Committee (IEAC)	Provide feedback on the caribou HOL monitoring program for continuous improvement.

2. TRIGGERS FOR MONITORING

2.1 Monitoring Initiation

Caribou HOL monitoring will be triggered based on reported caribou sightings.

- All site personnel are provided training and guidance for reporting sightings of caribou and other wildlife as part of the Wildlife Incidental Sightings program, described in the Wildlife Mitigation and Monitoring Plan (WMMP).
- Reports of caribou on site, near work areas, or along Project roads are called in to the Environment Department on radio Channel 7. Sightings of caribou from further afield are either called in by radio or reported via paper slips available near the camp kitchen.

The onsite Environmental Manager will contact the Cambridge Bay HTO if 25 or more individual caribou are reported within 5 km of project activities (including all site facilities and Project roads) in a 24 hour period. Multiple reports of the same individual will be counted as one reported caribou.

Additionally, information provided by the HTO regarding caribou activity near Hope Bay may trigger monitoring (e.g., through local reports or caribou collar data available to the HTO).

- The Cambridge Bay HTO will identify an available local Inuit monitor to travel to Hope Bay site as soon as possible.
 - If an Inuit monitor cannot be resourced within one week of the monitoring trigger day, Hope Bay environment personnel will initiate monitoring for up to one additional week. If an Inuit monitor is still not available after two weeks, monitoring will be concluded if criteria for caribou abundance are met, described in Section 2.2.
- Note: additional site mitigations are triggered if 50+ female and calves are reported during calving season (June 5 to June 20), see WMMP for more details.

2.2 Monitoring Period and Discontinuation

Monitoring activities will be carried out for a minimum of six days (based on flight access to site occurring one day per week), with termination of monitoring based on reported caribou abundance. Monitoring will be continued for subsequent 6 day periods if:

- data from the Inuit monitor and/or incidental sightings total more than 25 individual caribou over a 24 hour period for at least 2 of 6 monitoring days, or
- data from the Inuit monitor and/or incidental sightings indicate a single group of more than 100 caribou are within five kilometres of site on any monitoring day, or
- input from the HTO indicates that monitoring should continue.

Continuation of the monitoring period will be carried out in 6 days blocks; for example if monitoring indicates caribou abundance remains high during the initial 6 day monitoring period, monitoring will continue for another 6 days, after which caribou abundance will be reassessed, and so forth.

3. HEIGHT OF LAND MONITORING PROTOCOL

3.1 Overview

Height of Land monitoring will be carried out by an Inuit monitor and a Hope Bay Environment team member at least twice per day during the monitoring period.

- Additional monitoring should be conducted if groups of caribou (e.g., > 10 individuals) are reported near site activities or roads.
- Daily surveys should be spaced out across a shift as much as possible (e.g., beginning and end of shift),
 - These surveys are separate from those conducted prior to blasting or other site activities which may cause disturbance for caribou. See the Quarry Management Plan for pre-blasting survey protocol.

3.2 Survey Locations

Three survey locations have been identified by an Inuit Hope Bay Environment team member, wildlife biologists and IEAC members as optimal HOL survey locations (Figure 3.2-1).

- Sites were chosen for good visibility across the broadest possible area, with consideration of site access; all sites are within 30 m of a road pullout.
- If any sites are inaccessible (e.g., due to snow conditions), surveys should be conducted from the road, in the location with the best visibility close to the site. The change in survey location should be noted in the data sheet comments (see Section 3.3 below).
- **HOL-1:** The pull out is at km 1 on Windy Road. The monitoring location is just east of the road at the small rocky peak (~30 m)
- **HOL-2:** The monitoring location is to the west of the road, on the cliffs above Windy Lake (~20 m)
- **HOL-3:** The monitoring location is at the top of the Madrid waste rock stockpile. Surveyors may need to communicate with work crews if trucks are actively working at the stockpile. Visibility is excellent in all directions if surveyors walk or drive around the perimeter at the top of the stockpile.

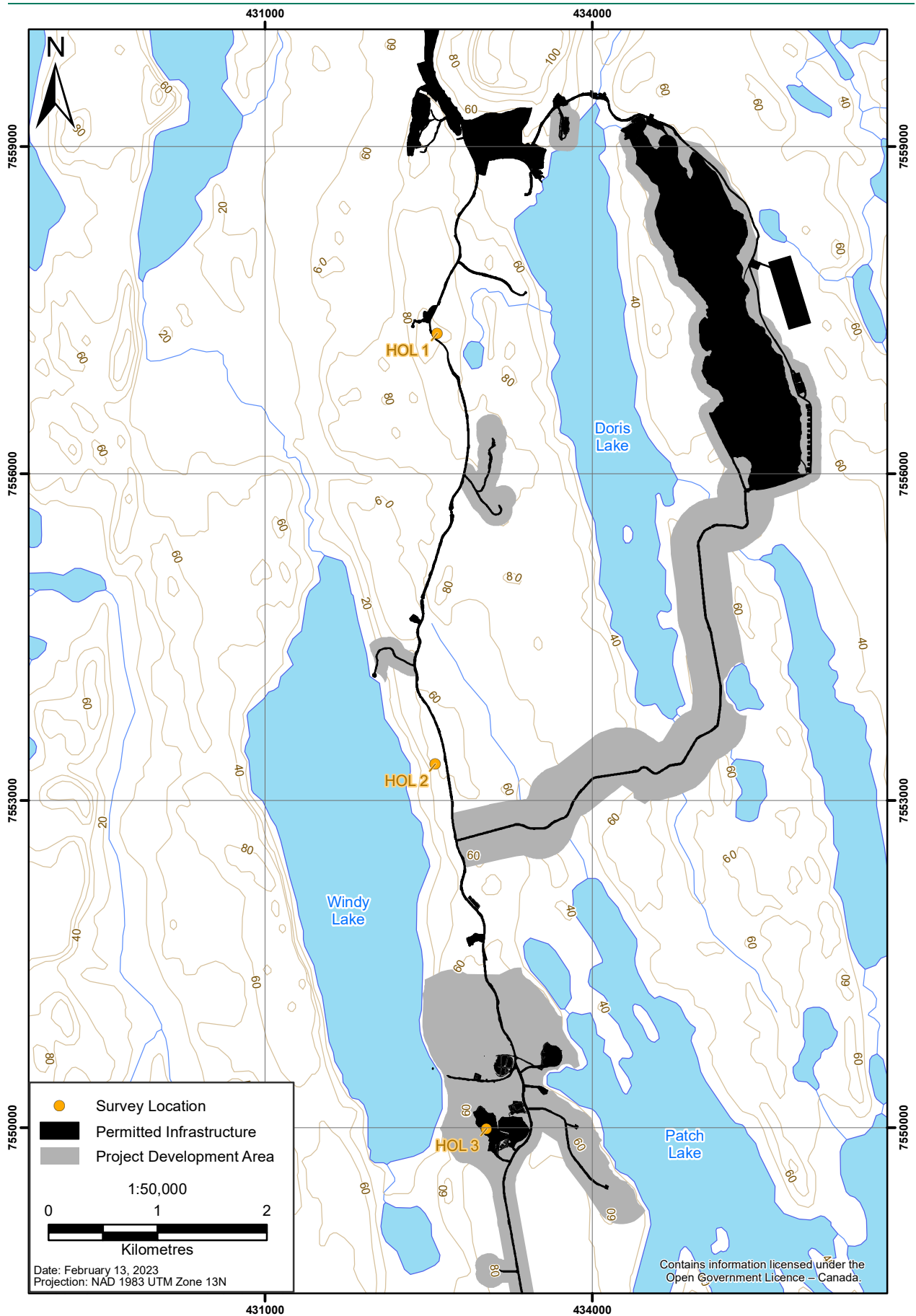


Figure 3.2-1: Height of Land Survey Locations

1.1 Equipment List

- A GPS unit with waypoints of survey locations
- Field data sheets (Attachment A), clipboard, pencils, or tablet with data form
- A watch or timer (e.g., smartphone timer)
- Binoculars and/or spotting scope
- Compass (or use compass function on GPS unit)
- Portable weather station (temperature and wind speed)
- Camera
- Rangefinder (optional but recommended)

3.3 Survey Methods

Each survey location should be visited for 10 minutes, with both observers scanning the landscape for caribou.

- Binoculars and a spotting scope (if possible) should be used to help monitors identify caribou from greater distances.
- Surveys should be carried out at each HOL site location, and at any additional non-standard locations if groups of caribou are reported in other locations (e.g., at Roberts Bay, near the TIA).

Data for each survey will be recorded onto field data sheets supplied in Attachment A. All locations surveyed at a given time will be included on one datasheet, with additional sheets as necessary to record all observations.

3.3.1 General Survey Data

Information about each survey period is recorded at the top of the data sheet (Appendix A), at the beginning and end of each survey:

- Survey date
- Field personnel (full names)
- Weather, recorded at the beginning of the first site surveyed and end of the last site surveyed:
 - Temperature, wind speed, rain/snow, and general weather conditions
- Site locations, start and end times
 - If site is *not* a standard HOL monitoring location: enter GPS coordinates, waypoint number, and site description (e.g., road name and distance marker)
- Photographs or video:
 - For any photographs taken, record the picture IDs in the “Photo Numbers and Site Notes” section
 - Write descriptions of any photos or video taken for specific reasons
- General notes about the survey or changes from the survey methods

Note: When in doubt, take pictures and make field notes explaining the situation. It is better to have more data/notes than not enough.

3.3.2 Caribou Observation Data

Each group of caribou will be counted together recorded as one line in the datasheet; individual caribou should be recorded as their own observation.

- **Site:** The site location where caribou were seen
- **Time:** Time of observation
- **Number Male:** Number of adult male caribou
- **Number Female:** Number of adult female caribou
- **Number Unknown:** Number of caribou of unknown sex
- **Number Young:** Number of young (calf or yearling) caribou
- **Direction:** Cardinal direction from the monitoring location to the caribou (e.g., N for north, or SE for south-east). Use a compass, or compass on a GPS.
- **Distance:** Estimated number of meters from caribou to the monitoring location; a *range finder* is helpful for determining estimates
- **Behaviour:** General behaviour (resting, standing, feeding, alert, walking, trotting)
 - Additional behaviour notes such as males sparring, females nursing young, or insect response behaviour (twitching, stamping, head tossing) should be noted in the comments
 - For groups of caribou, select the behaviour which most of the group is exhibiting, or select multiple behaviours
- **Observation Notes:** Any additional comments about the observation or group

4. DATA PROCESSING AND REPORTING

Data will be checked for Quality Assurance/ Quality Control (QA/QC) after each survey period. All data will be compiled and stored long-term in a digital database.

Results and outcomes of surveys will be reported in the annual Wildlife Mitigation and Monitoring Plan (WMMP) Report. This includes:

- A summary of when and why caribou HOL monitoring was triggered, based on the triggers in this SOP;
- A summary of when and why caribou HOL monitoring was discontinued, based on the conditions listed in this SOP;
- Any management or mitigation actions undertaken, including outcomes and communications with stakeholders;
- Data summaries for general survey data (time and weather parameters) and caribou observations; and
- Full data provided in appendices.

Hope Bay – Caribou Height of Land Survey

Example Data Entry

Date August 1 1990

Personnel H Visty, G Dumont Vandewinkel

Weather	Temp (°C)	Wind (km/hr)	Rain/Snow	General Weather (clouds, recent storms)
Start	21 C	10 km	None	partly cloudy
End	25 C	15 km	Light rain	storm incoming

General: warm day, few caribou reported near road looking to escape bugs.

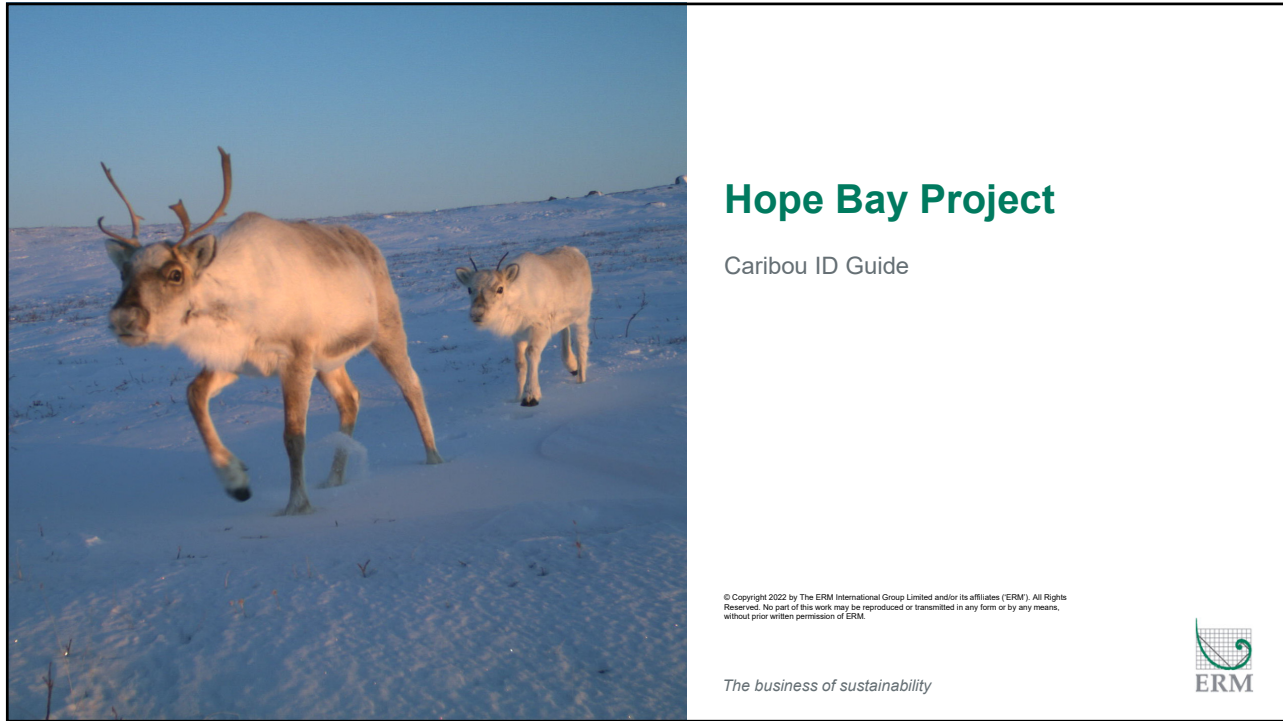
Additional stop at TIA after one caribou reported nearby.

Sites Visited	Start Time	End Time	Photo Numbers and Site Notes (include coordinates and WPT number if non-standard site)
HOL-1	07:03	07:13	
HOL-2	07:21	07:31	
HOL-3	07:40	07:55	stayed longer to watch caribou
TIA	08:15	08:25	13W 0434173 E, 7559478 N. Waypoint TIA-HOL

Site ID (HOL-)	Time (HH:MM)	# Male	# Female	# Unkn	# Young	Direction (N/E/S/W)	Distance (m)	Behaviour*	Observation Notes
HOL-1	07:10	1	0	0	0	E	100m	twitching, walking	male standing near road, occasional twitching, walked away
HOL-2	07:31	0	0	0	0	-	-	-	No caribou seen
HOL-3	07:50	3	3	0	0	SW	500m	walking, feeding	small group headed roughly N but not travelling fast
TIA	08:15	1	0	0	0	S	250m	walking	
TIA	8:20	-	1	0	0	S	300m	feeding	female nearby male, both feeding/walking slowly away from TIA

*Behaviour can include: resting, standing, feeding, alert, walking, running/trotting, insect response (twitching, stamping, head tossing)

APPENDIX AA CARIBOU IDENTIFICATION PRESENTATION 2023



1

Caribou of Hope Bay

Dolphin-Union (Island caribou)

- SARA Status: Special Concern
- COSEWIC Status: Endangered
- Occur in the Hope Bay area during winter, and during spring and fall migration

Beverly and Ahiaik (Mainland caribou)

- SARA Status: Not on Schedule 1
- COSEWIC Status: Threatened
- Occur in the Hope Bay area during summer, fall, and winter

The Project area does not overlap any caribou calving or post-calving grounds, or any key migratory areas, summer, rutting, or winter areas.

Source: Digitized and adapted from Northwest Territories; Environment and Natural Resources, 2015

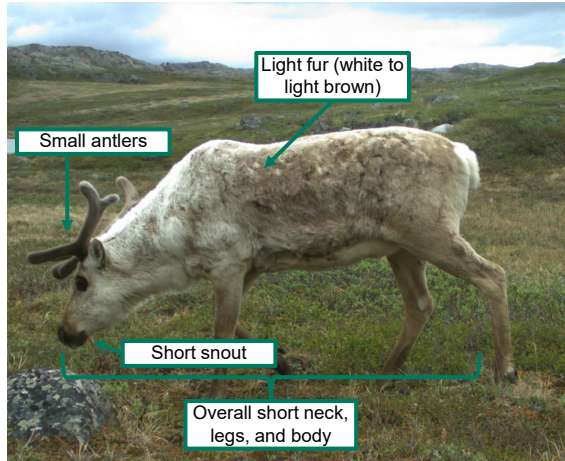
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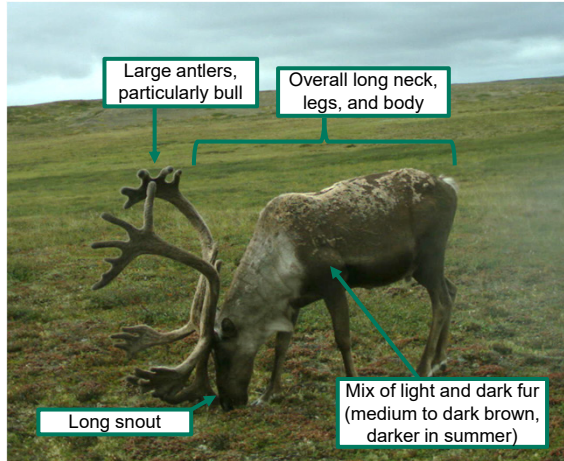
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Dolphin-Union vs Beverly/Ahiak Characteristics

Dolphin-Union



Beverly and Ahiak



3

Examples of Dolphin-Union Caribou

Overall body and colour



4

Examples of Dolphin-Union Caribou

Overall body and colour



5

Examples of Dolphin-Union Caribou

Face structure



Narrower, more petite face and short snout



6

Examples of Mainland Caribou

Overall body and colour



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7

7

Examples of Mainland Caribou

Face structure



Broader, longer, and wider face and snout



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8

8

Unidentifiable Individuals



- Certain individuals may illustrate mixed characteristics (left photos)
- If the face shape and snout length cannot be seen, and the body is not fully visible, the individual cannot be easily identified (right photo)
- In cases where ID is uncertain, photos will be sent to the IEAC for identification assistance

APPENDIX AB MARINE MAMMAL MONITORING SOP

- A watch or timer (e.g., smartphone timer)
- Binoculars
- Compass
- Portable weather station (temperature and wind speed)
- This SOP

2.3 Monitoring Periods and Frequency

Presence/absence of marine wildlife (primarily seals) with and without the presence of ships will be recorded in Roberts Bay using a Before-During-After study design, as described below.

2.3.1 *Pre-Vessel Surveys (Before)*

Marine mammal surveys will be conducted prior to a vessel arriving in Roberts Bay. In the four days immediately prior to the vessel's arrival in Roberts Bay, Environment staff will conduct one survey daily. Pre-vessel surveys will follow the same methods as anchored and post-vessel surveys in the Bay (Section 2.4).

2.3.2 *Anchored Vessel Surveys (During)*

Barges transport goods from the anchored vessel in Roberts Bay to the Hope Bay mine site over a period of one week or more. During this period when the vessel is anchored, Environment staff will be deployed for a minimum of one 30-minute surveys daily, following the same methods as pre- and post-vessel surveys (Section 2.4).

2.3.3 *Post-Vessel Surveys (After)*

Following the departure of a vessel from Roberts Bay Environment staff will conduct four days of surveys with one 30-minute survey daily. Post-vessel surveys will follow the same methods as pre- and anchored vessel surveys in the Bay.

2.4 Marine Mammal Monitoring Methods

Marine mammal shore-based surveys will be completed from the shore of Roberts Bay, in locations with the best visibility (Figure 1).

- There are two preferred locations for surveying: the jetty and the 730 building (Figure 1).
- Surveys will be conducted from an approved observation location with a minimum of one observer actively surveying for 30 minutes per survey (Figure 1).
- One survey per day will be conducted before, during, and after vessels are in the Bay, as described in Section 2.3.

General environmental and marine mammal sightings information will be collected and recorded by filling out the form in Attachment A. Data for each survey will be recorded on its own datasheet with all general survey information (including the date, time, observer, and weather) filled out regardless of whether marine mammals were detected or not.



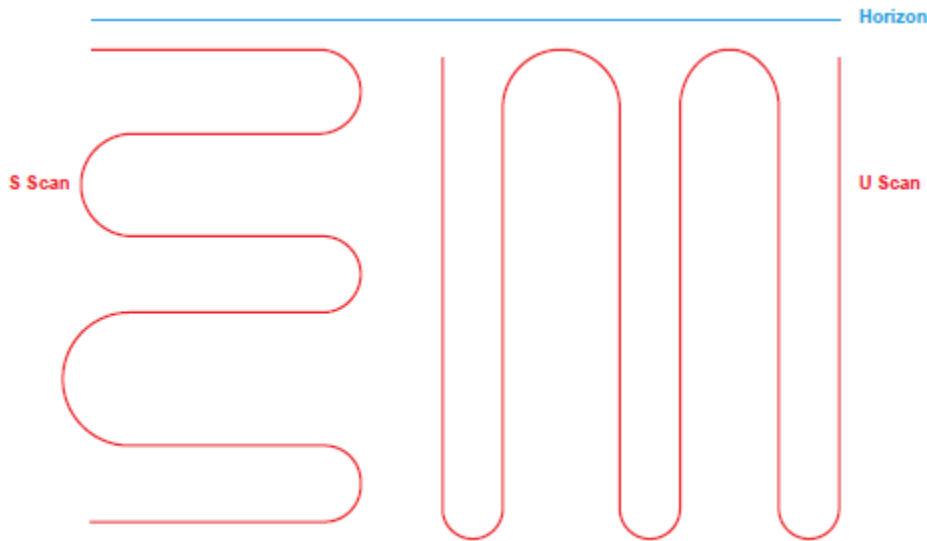
Figure 1: Marine Mammal Observation Locations 2023

2.4.1 Scanning Routine

The following outlines the proper scan routine for marine mammal surveys.

- Scan the water from the observation location outwards to the horizon with the naked eye and use binoculars to confirm possible sightings.
- Scans should occur across the visible area of Roberts Bay between shore and the horizon in a uniform fashion.
- Perform S and U scans of the Bay about every 20 seconds looking for signs of marine mammals (Figure 2).
- If a marine mammal is observed, record the sighting on the data sheet (Section 2.4.2).

- If a vessel is observed during the survey, this should be recorded in the data sheet by indicating the location, and if it is moving (including direction of travel) or anchored. Also record if the vessel leaves Roberts Bay or docks at the container yard during the scan.



Source: Agnico Eagle 2020.

Figure 2: Illustration Showing S & U Scanning Techniques

2.4.2 Recording Observation Data

- If a marine mammal is observed during the survey, they will be recorded on the data sheet including:
 - Distance to animal from observation location and angle of sighting relative to observation location;
 - Species of marine mammal observed;
 - Number of marine mammal individuals;
 - Unknown species – if a species is unknown or if a blow is the only detection of the animal observed, then mark the sighting as unknown or record the general species group (e.g., whale, seal, walrus), and provide a description of what was seen (e.g., colour of animal, how many were observed, behaviour, dorsal fin present or absent, etc.); and
 - Behavior (e.g., travelling, feeding, other).
- Marine mammals in large groups that are close together should be marked as a single sighting.
- Sightings of pinnipeds (seals, walrus) hauled-out on land will be recorded with a description in the “Notes” section indicating the animal(s) were observed on land.
- If a marine mammal is counted twice or more in the sightings record, then a note of a re-sighting should be marked.

- When possible, photographs of marine mammal sightings will be taken and the photo name/number recorded alongside the sightings record(s). These photos must be stored along with the entered data, managed by Environment staff.
- Even if no marine mammals are observed during a survey period, the rest of the survey data sheet must be filled out with an indication that no animals were observed.
- The entire data sheet must be filled in (no blank cells).

2.4.3 Recording General Survey Data

Information about each survey period is recorded at the top of the data sheet (Attachment A), at the beginning and end of each survey:

- Survey date and location.
- Eye height of observer at observation point.
- Field personnel.
- General notes about the survey or changes from the survey methods.
- Weather, recorded at the beginning of each survey:
 - Cloud cover/precipitation, wind force and direction, visibility, sea state, wave height, and glare conditions.
- Start and end times.
- Number of vessels, vessel names and locations, and vessel activity in Roberts Bay.

Note: When in doubt make field notes explaining the situation. It is better to have more data/notes than not enough.

3. REPORTING

Information from marine mammal surveys will be included in the annual WMMP reports for Hope Bay. This information may also be used to inform mitigations and adaptive management within Roberts Bay.

ATTACHMENT A. ROBERTS BAY MARINE MAMMAL SURVEY DATA SHEET

Roberts Bay Marine Mammal Survey Data Sheet

MARINE MAMMAL OBSERVATION DATA KEY

Height of Eye	Estimated height of observation platform + eye height of observer
Beaufort Wind Force	Beaufort scale <i>0 = sea smooth and mirror-like</i> <i>1 = scale-like ripple w/o foam crests</i> <i>2 = large wavelets (4-6 kts wind)</i> <i>3 = large wavelets, some crests starting to break (7-10 kts wind)</i> <i>4 = small waves, fairly frequent white foam crests (11-16 kts wind)</i> <i>5 = moderate waves, many whitecaps (17-21 kts wind)</i>
Visibility	Estimated distance able to see towards the horizon. Clear days are approx. 8 to 12 miles depending on height of eye
Group Size	Enter either exact number of animals or a range (Min & Max) and include your best estimate in comments
Angle of Sighting	Location of the animal estimated in degrees relative to the observer`s heading (Straight Ahead = 0, Right = 90, Left = -90)
Wind Direction	Location the wind is coming from estimated in degrees relative to the observer`s heading (Straight Ahead = 0, Right = 90, Left = -90)
Distance	Distance to the animal in meters
Comments	Include any other details of the observation that may be relevant (description of animal, behaviour, calves or pups, etc.). If more space is required, make notes on a separate comment sheet and correspond the two sheets using the Sighting Number. Include Photo # if photo taken.

COMMON WHALE ID GUIDE

Narwhal

Size: 4 - 5 m

Body: Small head, stocky body, short/round flippers, tusk

Dorsal Fin: No

Colour: Mottled black and white, grey or brownish



Beluga

Size: 4 - 5 m

Body: Stout body, small head, short, broad paddle-shaped flippers

Dorsal Fin: No

Colour: Adults white, calves brown/grey



Bowhead Whale

Size: up to 19 m

Body: Large and rotund

Dorsal Fin: No

Colour: Black/brown, white lower jaw

Blow: Bushy V-shaped

Fluke: Shows fluke when diving



Fin Whale

Size: up to 23m

Body: Streamlined and long

Dorsal Fin: hooked

Colour: Grey body, white lower jaw right-side only

Blow: Tall and straight

Fluke: Rarely shows fluke



Orca/Killer Whale

Size: 7-9 m

Body: Long rounded body

Dorsal Fin: Tall dorsal fin

Colour: Black-and-white, saddle patch (grey area) behind dorsal fin, white underside



COMMON PINNIPED ID GUIDE

Walrus

Size: 2.5 - 3m

Body: large, blubbery, long tusks

Head: Large thick neck, dark mouth with whiskers

Colour: Dark brown



Harbour Seal

Size: 2m

Body: Medium size, spindle shaped body

Head: like dog, heart-shaped snout

Colour: Blue-grey with dark spots/speckles



Hooded Seal

Size: 2.5 m

Body: Large, robust

Head: Broad head short narrow snout, males of "hood" they inflate

Colour: Black head, silver/grey fur, dark patches



Harp Seal

Size: 1.5 - 2 m

Body: Medium size, robust

Head: Small head, pointy snout

Colour: Light grey, harp-shaped black patch on back, black face



Bearded Seal

Size: 2 - 2.5 m

Body: Large, robust

Head: Small head, short snout, long whiskers

Colour: Dark brown/grey with dark rings/spots



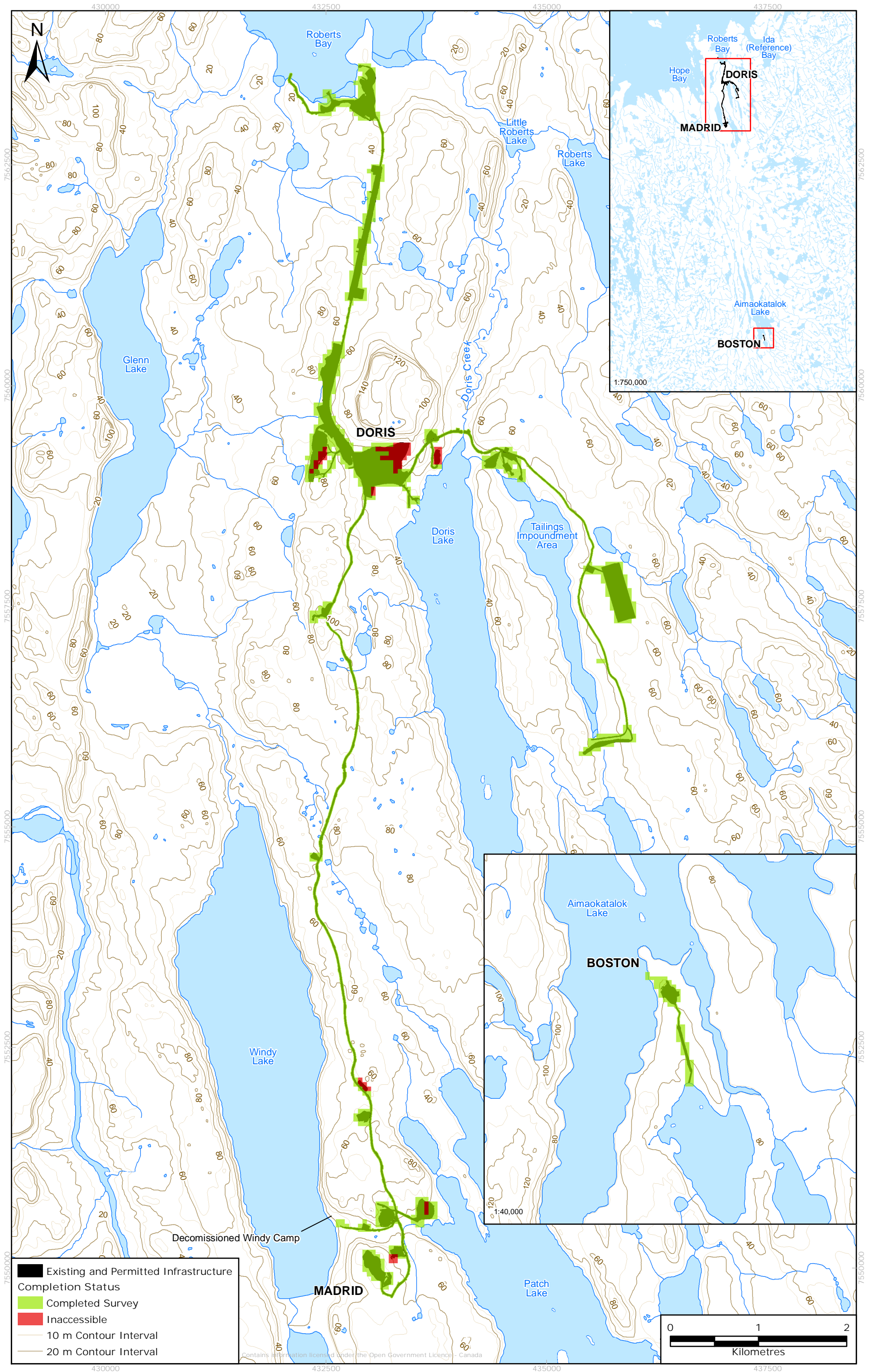
APPENDIX AC SUMMARY OF THE AT SEA VESSEL WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2023

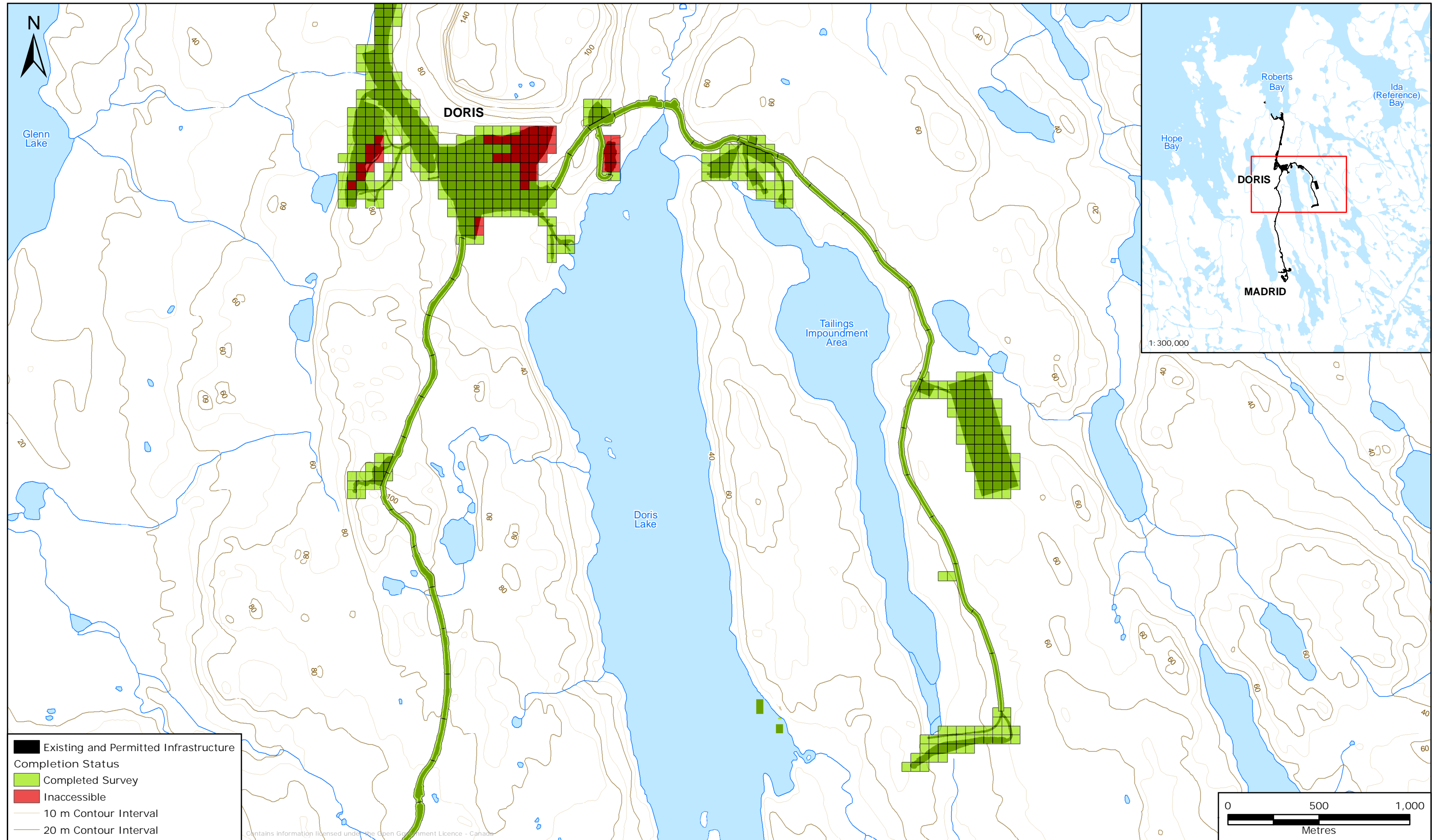
APPENDIX AC: SUMMARY OF THE AT SEA VESSEL WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2023

Date	Time	Zone	Easting	Northing	Species	No. Individuals	Age	Sex	Behaviour	Mitigation Action	Comments
8/29/2023	12:21	15N	494947	8241920	Harbour Seal	1	Not recorded	UNK	Travel	N	
8/29/2023	12:32	15N	491870	8241900	Bearded Seal	2	Not recorded	UNK	Travel	N	
8/29/2023	12:36	15N	487885	8241829	Northern Fulmar	1	Not recorded	UNK	Flying	N	
8/29/2023					No observations						
8/29/2023	12:45	15N	484307	8238386	Northern Fulmar	2	Not recorded	UNK	Flying		
8/29/2023	12:45	15N	484307	8238386	Pomarine Jaeger	1	Not recorded	UNK	Flying		
8/29/2023	20:00	17N	542585	8210952	Northern Fulmar	2	Adult	UNK	Flying		
8/30/2023	8:25	16N	413189	8253439	Northern Fulmar	1	Not recorded	UNK	Flying	N	
8/30/2023	9:00	15N	577179	8254703	Black Guillemot	3	Not recorded	UNK	Rafting		
8/30/2023	9:00	15N	577179	8254703	Northern Fulmar	1	Adult	UNK	Flying		
8/30/2023	9:30				No Observations						
8/30/2023	17:00	15N	408344	8175418	Herring Gull	4	Not recorded	UNK	Flying		
8/30/2023	20:00				No Observations						
8/30/2023	20:30				No Observations						
8/30/2023	22:30	14N	599697	8043696	Northern Fulmar	5	Not recorded	Not recorded	Resting on ocean surface	N	
8/31/2023	20:00	14N	386350	7621643	Common Loon	15	Adult	UNK	Flying		
8/31/2023	20:00	14N	386350	7621643	Long Tail Duck	1	Adult	UNK	Rafting		
8/31/2023	21:05	13N	525580	7624760	Hooded Seal	1	Adult	UNK	travel		
8/31/2023	21:20	13N	512015	7630232	Hooded Seal	1	Adult	UNK	Travel		
8/31/2023					No observations						
8/31/2023					No observations						
8/31/2023					No observations						
8/31/2023					No observations						
9/2/2023					No observations						
9/2/2023					No observations						
9/3/2023					No observations						
9/3/2023					No observations						
9/4/2023	16:00	13N	381779	7489853	Duck (Common Loon)	Not recorded	Not recorded	UNK	Flying	N	
9/5/2023					No observations						
9/6/2023					no observations						
9/7/2023					No observations						
9/8/2023	13:10	13N	432281	7566060	Pomarine Jaeger	1	Not recorded	UNK	Flying		
9/9/2023					No observations						
9/10/2023					No Observations						
9/11/2023					No Observations						
9/12/2023	12:00	14N	398006	7656482	Canadian Geese	10	Not recorded	UNK	Flying		V-Formation
9/13/2023	18:00	15N	464583	8236650	Whale	1	Not recorded	UNK	Diving		Diving without tail outside the water, only back out of the water

APPENDIX AD INVASIVE PLANT SPECIES SURVEY GRID AND SURVEY LOCATIONS JULY 26 TO AUGUST 1, 2023

APPENDIX AD INVASIVE PLANT SPECIES SURVEY GRID AND SURVEY LOCATIONS JULY 26 TO AUGUST 1, 2023

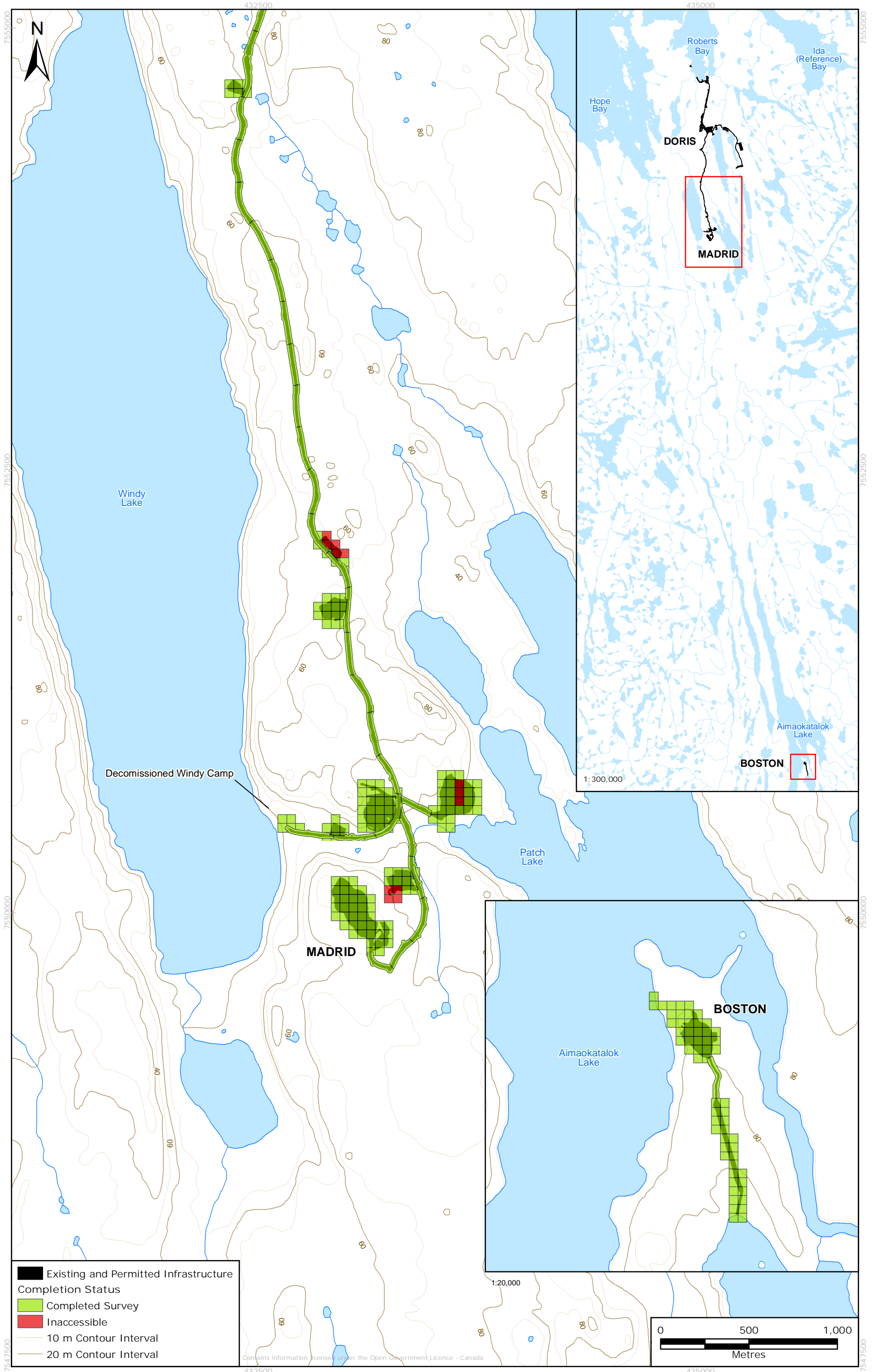




Existing and Permitted Infrastructure
 Completed Survey
 Inaccessible
 10 m Contour Interval
 20 m Contour Interval

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