

APPENDIX

GN AR # 01	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Vegetation – Invasive and Rare Plant Species
Terms and Conditions	NIRB Project Certificate 009 T&C 17
References	<ul style="list-style-type: none"> • Project Certificate No. 009 • Wildlife Mitigation and Monitoring Plan, Appendix E of the 2020 NIRB Annual Report
IDENTIFICATION OF ISSUE	
<p>Term and Condition 17 states that “the Proponent shall maintain a section in the Wildlife Mitigation and Monitoring Plan (WMMP) on invasive plant species and rare plant species with details on the following:</p> <ol style="list-style-type: none"> a) Mitigation to prevent the introduction of invasive plant species, for example, via inspection of vehicles and equipment brought to site; b) Protocols for monitoring for invasive plant species, with reference to geographic scope and frequency, and commitment to monitor through post-closure; c) Measures to ensure that any introductions of non-indigenous plant species are promptly reported to the Government of Nunavut – Department of Environment; d) Mitigation to prevent the successful establishment of invasive species that may be introduced to the project area as a result of project activities.; and e) Summary of loss of potential rare plant habitat when construction occurs in new areas.” <p>The WMMP contains only a brief section on mitigation and management for invasive species of vegetation (Section 2.11.1). This section includes:</p> <ul style="list-style-type: none"> • Preventing the introduction and establishment of invasive plant species by ensuring vehicles brought to site are clean. 	

- Invasive plant species observed will be reported to the GN's Department of Environment.

Additionally, the WMMP reports the loss of special landscape features that may support rare plant species. Mitigation for rare plants is included in the revised WMMP (April 2021).

The updated WMMP fails to mention:

- b) Protocols for monitoring for invasive plant species, with reference to geographic scope and frequency, and commitment to monitor through post-closure; and
- c) Mitigation to prevent the successful establishment of invasive species that may be introduced to the project area as a result of project activities.

Although an invasive plant survey was planned for summer 2020, Covid-19 restrictions prevented them from being conducted.

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

There is no focused monitoring program or methods included in the 2020 WMMP for invasive or rare plant species even though an invasive plant survey was planned for the summer of 2020. The Proponent indicated that no invasive species have been identified since the Doris Site during Phase 2 Project baseline surveys conducted in 2010 and the rare plant survey conducted in 2014. Although the Proponent did state that monitoring would continue every 3 to 5 years in conjunction with other monitoring programs or as required when triggered by invasive species observations. Therefore, with the last monitoring conducted in 2014, monitoring for invasive plant species should be conducted in 2021

Furthermore, there is no sperate section detailing the potential rare species that may be found within the project area or the rare species survey monitoring methods, even those used in the 2014 survey.

RECOMMENDATION

The GN offers the following recommendations with respect to this issue. The Proponent should update the WMMP for invasive and rare plant species with the following:

1. Provide a field monitoring protocol for invasive and rare plant species;

2. Provide a monitoring frequency table identifying when monitoring for invasive or rare will be conducted;
3. Provide mitigation strategies to prevent the establishment of invasive species based on species likely to be found within the project area; and
4. Provide summary of the potential for loss of rare plant habitat when construction occurs in new areas, based on species likely to be found within that area as well as through rare species surveys.

GN AR # 02

Department	Environment
Organization	Government of Nunavut
Subject/Topic	Wildlife and Wildlife Habitat – Wildlife Mitigation Measures
Terms and Conditions	NIRB Project Certificate 009 T&C 20 12MN001 Final Hearing Commitment 52
References	<ul style="list-style-type: none"> • Project Certificate No. 009 • 2020 Nunavut Impact Review Board Annual Report, Section 6 - Performance on Project Certificate Terms and Conditions • 2020 Wildlife Mitigation and Monitoring Program Compliance Report, Section 2.2 – Traffic • Proponent’s Response to Comments received on the 2019 NIRB Annual Report (September 4, 2020), Comment GN-6

IDENTIFICATION OF ISSUE

Table 4.5-1 in the Final Environmental Impact Statement (FEIS) Vol. 3 presents peak traffic rates for five road segments; Term & Condition No. 20 requires traffic monitoring to ensure realized traffic volumes comply with the predicted volumes in the FEIS. The summarization of traffic volumes in the 2020 Wildlife Mitigation and Monitoring Program Compliance Report, Section 2.2 – Traffic does not align with the five road segments presented in Table 4.5 in the FEIS and it is therefore difficult to confirm compliance with the peak traffic volumes. Furthermore, the response provided by the Proponent to the GN’s 2019 Comment GN-06 regarding this matter does not provide a clear explanation

for how the predicted volumes of traffic in the Wildlife Mitigation and Monitoring Plan (WMMP) Compliance Report align with the predicted volumes in Table 4.5-1 in FEIS Vol. 3.

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

The predicted traffic volumes provide levels which, if surpassed, could result in negative impacts to wildlife. Term & Condition No. 20 states “Where traffic levels exceed levels predicted for the Project, the Proponent shall develop and implement appropriate enhancements to its wildlife protection measures”. The uncertainty around compliance with the predicted volumes does not allow for an evaluation of whether enhanced protection measures are warranted.

In Final Hearing Commitment 52 for the Hope Bay Project, the Proponent committed that “[i]f 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.” The need for this revised assessment cannot be determined due to the current uncertainty surrounding compliance with predicted traffic levels.

RECOMMENDATION

The GN’s recommendation from 2019 remains consistent for 2020:

1. The GN recommends that the Proponent update Section 2.2 of Appendix C-3 of the WMMP Compliance Report to provide a direct comparison of 2019 traffic monitoring results with FEIS thresholds. Tables 2.2-1 and 2.2-2 of Appendix C-3 of the Annual Report should be revised to cover all five road segments in Table 4.5-1 in the FEIS. These revisions should include text descriptions that provide a clear and transparent comparison to FEIS predictions to establish whether the requirement for a revised assessment of traffic impacts on wildlife has been triggered. Should this revised comparison show that the FEIS predictions of traffic levels have been exceeded the GN recommends that the Proponent produce a revised assessment of traffic effects on wildlife as per Final Hearing Commitment 52.

GN AR # 03

Department

Environment

Organization	Government of Nunavut
Subject/Topic	Wildlife and Wildlife Habitat – Wildlife Mitigation Measures
Terms and Conditions	NIRB Project Certificate 009 T&C 21
References	<ul style="list-style-type: none"> • Project Certificate No. 009 • 2020 Nunavut Impact Review Board Annual Report, Section 6 - Performance on Project Certificate Terms and Conditions • 2020 Wildlife Mitigation and Monitoring Plan, Section 2.9 – Blasting Management

IDENTIFICATION OF ISSUE

Term & Condition No. 21 provides that:

In consultation with the Government of Nunavut and other relevant authorities, the Proponent shall include criteria and procedures within its Wildlife Mitigation and Monitoring Plan (WMMP) governing the deterrence of wildlife from blast zones and the relaxation of mitigation measures for animals deemed Project-tolerant.

The 2020 Annual Report refers the reviewer to Section 2.9 of the Wildlife Mitigation and Monitoring Plan; however, this section only addresses pre-blast checks and does not include a discussion of deterrents or mitigation measures for animals deemed tolerant.

The lack of discussion of deterrents and mitigation regarding animals deemed tolerant is not in compliance with Term & Condition 21.

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

Proactive measures to deter wildlife from blast zones are preferable and could prevent the need for more invasive reactive measures to encourage wildlife to leave the blast area should they persist following pre-blast checks. Limiting interactions with wildlife and minimizing wildlife disturbance should be prioritized at all times.

RECOMMENDATION

The GN makes the following recommendations:

1. Include a discussion of deterrents and mitigation measures for animals deemed tolerant in the WMMP to be compliant with Term and Condition No. 21.
2. Consult with the Government of Nunavut and other relevant authorities on proposed mitigation measures prior to their implementation.

GN AR # 04

Department	Environment
Organization	Government of Nunavut
Subject/Topic	Wildlife and Wildlife Habitat – Caribou and Muskox Mitigation Measures
Terms and Conditions	NIRB Project Certificate 009 T&C 22
References	<ul style="list-style-type: none"> • Project Certificate No. 009 • 2020 Nunavut Impact Review Board Annual Report, Section 6 - Performance on Project Certificate Terms and Conditions • 2020 Wildlife Mitigation and Monitoring Plan, Section 2.2.2 – Mitigation for Disturbance • 2020 Wildlife Mitigation and Monitoring Plan Compliance Report, Sections, 3.2, 3.3, 3.4, 3.5 • Proponent’s Response to Comments received on the 2019 NIRB Annual Report (September 4, 2020), Comment GN-2

IDENTIFICATION OF ISSUE

The GN provided comments on the Proponent’s camera monitoring program in 2015, 2016, 2018 and 2019 and noted issues with the lack of year-round monitoring data. Loss of monitoring capacity has occurred due to challenges with snow obscuring the camera lens in winter months (typically October – April), damage to camera structures from grizzly bears and programming errors.

From September 2019 – September 2020, Appendix 3.2-1 of the Wildlife Mitigation and Monitoring Plan (WMMP) Compliance Report shows that data from only 10 of the 57 cameras in the Doris Bay – Madrid project areas were retrieved from the Treatment Zone (i.e. within 2 km of the Project). The GN acknowledges that the COVID-19

pandemic introduced new challenges with accessing cameras in the ZOI and Control Zone (i.e., 2-10 km from the Project and >10km from the Project, respectively).

The 2020 WMMP Compliance Report, S. 3.3.1 advises that

Camera effort was low from November through February (Average monthly efforts 3-7 days per month; Table 3.3-1). Snow occluding the camera lenses during this period results in loss of effort for most days.

In the Boston Area where baseline data is being collected via 29 cameras, data from only 2 cameras were retrieved. During a review of the data from the two cameras, it was discovered that one of the cameras was not functioning as a result of a programming error resulting in the collection of data from only one camera in the Boston area from September 2019 – September 2020. The one functioning camera was obscured with snow from November through March (snow cleared on April 19). A programming error also occurred from 2017-2018 as discussed in the GN's 2019 comments.

The results of snow obscuring camera lenses, grizzly bear damage and programming errors has been a lack of reliable and comparable year-round monitoring data.

The Proponent responded to the GN's 2019 comments on this matter and noted challenges with accessing the cameras in the Control Zone due to their remote locations and frequency of storms which results in obscured lenses and that cameras in the Treatment Zone and ZOI are serviced more frequently (note the only cameras retrieved in 2020 were from the Treatment Zone and these cameras were still obscured on most days from November – February). The Proponent also noted the camera effort is accounted for in the statistical model. With regard to grizzly bears, the Proponent has committed to considering various methods to reduce the likelihood of grizzly bears damaging the camera stands and that the cameras are currently checked in the spring and fall.

A recommendation provided in GN Comment # 02 from the GN's 2019 annual report comments stated

The GN requests that the Proponent address all outstanding issues related to wildlife camera monitoring for caribou and muskox, including an update to its wildlife camera monitoring program to include more frequent equipment checks on camera traps so as to ensure their operation and to prevent further losses of camera effort and data gap. The GN also recommends that the Proponent investigate and implement the use of alternate cameras or methods of setting up the cameras that may be more capable of and reliable for data collection during winter; and that the Proponent makes concerted effort to address the GN's previous and ongoing comments on redesigning the camera program to prevent prolonged outages.

The response provided by the Proponent does not address the GN's 2019 recommendation in GN Comment # 02 and does not improve the reliability and comparability of data collected year-round.

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

Monitoring data is an essential component of analyzing effects on Caribou and Muskox populations; the effects analysis is a key component of T&C 22.

Snow obscuring the camera lenses, grizzly bear damage and programming errors result in a lack of reliable and comparable year-round monitoring data. Due to low availability of camera data from 2020, no statistical analysis was performed.

RECOMMENDATION

The GN's recommendation from 2019 remains consistent for 2020:

1. The GN requests that the Proponent address all outstanding issues related to wildlife camera monitoring for caribou and muskox, including an update to its wildlife camera monitoring program to include more frequent equipment checks on camera traps so as to ensure their operation and to prevent further losses of camera effort and data. The GN also recommends that the Proponent investigate and implement the use of alternate cameras or methods of setting up the cameras that may be more capable of and reliable for data collection during winter; and that the Proponent makes concerted effort to address the GN's previous and ongoing comments on redesigning the camera program to prevent prolonged outages.

GN AR # 05

Department	Environment
Organization	Government of Nunavut
Subject/Topic	Wildlife and Wildlife Habitat – Caribou and Muskox Mitigation Measures
Terms and Conditions	NIRB Project Certificate 009 T&C 22

References	<ul style="list-style-type: none"> • Project Certificate No. 009 • 2020 Nunavut Impact Review Board Annual Report, Section 6 - Performance on Project Certificate Terms and Conditions • 2020 Wildlife Mitigation and Monitoring Plan, Section 2.2.2 – Mitigation for Disturbance • 2020 Wildlife Mitigation and Monitoring Plan Compliance Report, Sections, 3.2, 3.3, 3.4, 3.5
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IDENTIFICATION OF ISSUE

Table 2.2-1 and Table 2.2-2 provide mitigation measures for helicopter flight heights in the event of Caribou observations.

The 2020 Wildlife Mitigation and Monitoring Plan Compliance Report, Section 2.3 provides an overview of the amount of helicopter and fixed-wing aircraft flights in relation to the predicted amounts from the FEIS. S. 2.3.4. Section 2.3 does not examine the average or daily flight elevations above ground, and this information does not appear to be provided elsewhere in the Annual Report.

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

Reviewers require a discussion of flight heights or Caribou observations during flights in order to accurately evaluate Proponent adherence to mitigation for project disturbance. The lack of this discussion prevents adequate review of the annual report.

RECOMMENDATION

The GN offers the following recommendations with respect to this issue:

1. Include a discussion of Caribou observations during flights including whether flight height was adjusted in response and Caribou reaction in the Wildlife Mitigation and Monitoring Program Compliance Report.

GN AR # 06

Department	Environment
Organization	Government of Nunavut

Subject/Topic	Noise
Terms and Conditions	<ul style="list-style-type: none"> • NIRB Project Certificate 009 T&C 4 • Final Hearing Report Commitment #41
References	<ul style="list-style-type: none"> • Final Hearing Report Commitment #41 • 2020 Nunavut Impact Review Board Annual Report, Appendix C-1 – Status Update with Project Certificate Commitments, NIRB Commitment ID GN-14 • Wildlife Mitigation and Monitoring Plan, Appendix E of the 2020 NIRB Annual Report

IDENTIFICATION OF ISSUE

Final hearing Commitment 41 provides that:

- a) The Proponent will conduct noise measurements during quarry blasts at 2.8 and 4 km to confirm predictions.
- b) The Proponent will confirm that the overpressure value of 96 Lpeak dBZ will not exceed at 2,800 m from the location of the blast.
- c) The Proponent will conduct a behaviour monitoring program during blasts if caribou are observed beyond 2.8 km to evaluate how caribou respond to blasts.
- d) The Proponent will include methods in WMMP to determine potential calving ground overlap with the Project.

Additionally Term and Condition 4 states:

The Proponent shall, in consultation with the Government of Nunavut-Department of Environment, Environment and Climate Change Canada, and Health Canada, maintain a Noise Abatement Monitoring Plan that addresses the following areas/issues:

- a) *measures to protect people, fish, and wildlife, from mine activity noise and vibration, including blasting, drilling, equipment, vehicles and aircraft;*
- b) *monitoring of noise at least once during each phase of the Project and following quarry blasts to demonstrate that noise levels remain within predicted levels and below applicable guidelines and standards; and*
- c) *adaptive management and monitoring measures to be implemented should monitoring identify an exceedance; and*
- d) *the procedure employees should follow if they have any noise complaints.*

In Section 2.5 of Appendix D-3 the 2020 Annual Monitoring Report the Proponent provides:

Since 2018, the Proponent has been testing a standard operating procedure (SOP) for noise measurement during quarry blasts. Very little above ground blasting has occurred from 2018 - 2020, which has slowed the ongoing development of this SOP. The current draft of this SOP is provided in Appendix 2.5-1.

There is no further information on the results of this testing, nor confirmation that any noise measurements have been taken during the blasts that have occurred between 2018-2020. It is noted that the SOP has been provided in Appendix 2.5-1.

The Proponent has stated the information is to be included in the Wildlife Mitigation and Monitoring Plan (WMMP) (April 2021). The WMMP however fails to provide confirmation on whether or not noise measurements were collected during quarry blasts at 2.8 and 4 km from 2018-2020 to confirm predictions.

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

Noise disturbance from blasting is likely to have deleterious effects on caribou. As such adequate mitigation and monitoring must be in place and reported to relevant management authorities to minimize impacts. Despite low amounts of above ground blasting taking place reporting of the events that do occur and the mitigation measures corresponding to those events should be included in Proponent reporting.

The Proponent is required to implement measures to protect people, fish and wildlife from the site's noise generating activities, as per T&C 4. They are further required to conduct noise measurements during quarry blasts to confirm the actual noise levels remain within predicted levels, and as such, within applicable guidelines and standards. Failing to conduct noise measurements or failing to report on noise measurements within the WMMP does not allow for confirmation that the site is operating within predicted noise levels designed to be protective of wildlife. Furthermore, this does not allow for confirmation of whether adaptive management and monitoring measures are required to bring the noise-generating activity into compliance with the predicted levels.

Monitoring and if required, adaptive management, is critical for ensuring the site is operating within the parameters of the FEIS. These are the parameters upon which the Terms and Conditions are based.

RECOMMENDATION

The GN offers the following recommendations:

1. The dates of quarry blasting occurring in 2020 should be reported in the 2020 WMMP Report and all subsequent WMMP Reports. A rationale be provided if why noise monitoring does or did not occur during a blasting event. The results of noise monitoring should be provided in the WMMP Annual Report.

GN AR # 07

Department	Environment
Organization	Government of Nunavut
Subject/Topic	Behavioral observations from height-of-land surveys and a snow track study
Terms and Conditions	Final Hearing Report Commitment #46
References	<ul style="list-style-type: none"> • Final Hearing Report Commitment #46 • 2020 Nunavut Impact Review Board Annual Report, Appendix C-1 – Status Update with Project Certificate Commitments, Phase 2 FH Commitments, NIRB Commitment ID GN-18(ii) • Proponent’s Response to Comments received on the 2019 NIRB Annual Report (September 4, 2020), Comment GN-3

IDENTIFICATION OF ISSUE

Final Hearing Report Commitment #46 states

The Project’s effects on caribou movements will be monitored at a local scale using behavioral observations from height-of-land surveys and a snow track study. The design of these monitoring programs will be developed in consultation with the Government of Nunavut and the Inuit Environmental Advisory Committee, will use methods supported by peer reviewed literature and will consider statistical power.

The GN provided comments in 2019 (GN Comment # 03) indicating the height-of-land (HOL) surveys and snow track studies were not included in the 2019 WMMP methods for monitoring Caribou. In the GN’s 2019 comments the GN recommended:

1. The Proponent update the Annual Report to include methods used for HOL and snow track surveys that are developed in consultation with the Government of Nunavut and the Inuit Environmental Advisory Committee (IEAC); and

2. The Proponent update the Annual Report to summarize the results of HOL and snow track surveys completed in 2019.

In a response letter dated September 4, 2020 from the Proponent indicated draft methods for HOL and snow track surveys were presented to the IEAC for discussion in December 2019; however, due to COVID-19 restrictions a site visit could not be conducted and the methods for these surveys would continue to be developed in 2021.

Methods for these surveys are included in the 2020 Wildlife Mitigation and Monitoring Plan, Section 3.1.6.2 with a commitment to consult with the GN and IEAC; however, the September 4, 2020 response from the Proponent only discusses consultation with the IEAC. It is unclear whether the GN has been consulted on the methods for the HOL and snow track surveys.

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

To fulfill this commitment, consultation with the GN on the methods for the HOL and snow track surveys must occur. Omitting the GN from the consultation process could result in missing key input pertinent to the methods and therefore the protection of local Caribou populations.

RECOMMENDATION

The GN offers the following recommendations with respect to this issue:

1. Consult with the GN on the methods for HOL and snow track surveys.