



BACK RIVER PROJECT
Responses to 2020 Annual Report Comments

July 6, 2021

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1. Introduction

Sabina Gold & Silver Corp. (Sabina), submitted its 2020 Annual Report to the Nunavut Impact Review Board (NIRB) on 8 April 2020, as required by the Back River Gold Mine Project Certificate No. 007. Interested Parties were then requested by the NIRB to provide comments on the 2020 Annual Report

On or before 2 June 2020 the NIRB received comments from the following interested parties:

- Kitikmeot Inuit Association (KIA) = 29 comments
- Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) = 4 comments
- Government of Nunavut (GN) = 11 comments
- Environment and Climate Change Canada = 0 comment
- Fisheries and Oceans Canada (DFO) = 2 comments
- Transport Canada (TC) = 5 comments

Section 2 provides responses to the comments received.

2. Responses to Comments

2.1 RESPONSE TO KITIKMEOT INUIT ASSOCIATION

KIA-01: Aquatic Baseline Synthesis Report and AEMP

References:

Annual Report Section 4.5.7 Groundwater and Surface Water Quality

Summary:

Aquatic Baseline Synthesis Report and AEMP are not included in Back River 2020 Annual Report.

Detailed Review Comment

“An aquatic baseline synthesis report was submitted to the NIRB on September 21, 2020. The report presented the methods and results of the 2018 sampling program. It compiled and evaluated the predevelopment data set to support the update to the AEMP design. The report also addressed commitments made during the Water Licence application process in relation to evaluating sampling area compatibility, suitability of baseline data to support the AEMP design, and sufficiency of baseline data to support normal range calculations.”

The synthesis report and AEMP Report were not included within the Annual Report and therefore does not allow a determination as to whether project pre-development activities have had an impact on the aquatic environment.

Recommendation/Request:

Annual AEMP reports should be completed such that they can be appended to the project Annual Report in future years.

Monitoring programs and associated results for all VECs should be summarized within the body of the Annual Reports in future years.

Sabina Response:

Sabina agrees that a summary of annual results from the AEMP (once implemented) will be appended to the NIRB Annual Report.

The aquatic baseline synthesis report was submitted to the Nunavut Water Board (NWB), reviewed by regulators, the KIA, and other stakeholders, before being accepted by the NWB. This report was a specific requirement of NWB Water Licence (No: 2AM-BRP1831) to support an update of the Water and Load Balance Model (as an appendix to the approved Water Management Plan). The Water Management Plan is currently under review as part of the Back River Project Type A (2AM-BRP1831) Water Licence Amendment Application currently subject to Final Hearings on July 13-14, 2021.

KIA-2: Issues arising from inspections.

References:

Annual Report Section 4.4 Agency Inspections and Site Visits

Summary:

Outcomes of inspections are not reported in Back River 2020 Annual Report.

Detailed Review Comment

Sabina notes that “*Regulatory in person audits of the Project site were postponed in lieu of inspection pictures and commentary provided to the KIA, the NIRB, and the NWB at their request.*”

No outcomes of these submissions were discussed in the annual report nor within the appendices.

Recommendation/Request:

Please include a summary of issues highlighted during project inspections and Sabina’s response to them in future Annual Reports.

Sabina Response:

Sabina reiterates that the specific inspection pictures and the specific commentary were provided at the request of the KIA.

KIA-3: Water Management Plan**References:**

Appendix B

Summary:

Goose Property Groundwater Inflows

Detailed Review Comment

Table 5.1-1 indicates groundwater inflows ranging from 100 m³/day to 800 m³/day at Umwelt Underground and between 0 m³/day to 900 m³/day at Llama Open Pit. It is not clear the reason why the Goose Main underground and the Llama underground inflows have not been considered in the total inflow estimate.

The estimates above mentioned seem different from the results of the Groundwater model developed by SRK as part of the hydrogeological baseline study in support of the Black River Project. The Hydrogeological Characterization and Modelling Report for the Project (October 2015) indicates that:

- Umwelt Underground groundwater inflow ranges between 0 m³/day and 596 m³/day.
- Goose Main underground groundwater inflow ranges between 0 m³/day and 85 m³/day.
- Llama underground groundwater inflow ranges between 0 m³/day and 350 m³/day.

Llama open pit groundwater inflow ranges between 0 m³/day and 120 m³/day.

Recommendation/Request:

The consultant should clarify the rationale of using different groundwater inflow rates for the water balance model.

Sabina Response:

The Water Management Plan is currently under review as part of the Back River Project Type A (2AM-BRP1831) Water Licence Amendment Application currently subject to Final Hearings on July 13-14, 2021. Any further direction from the NWB Process will be incorporated into the Water Management Plan, and the approved plan will be provided to the NIRB for review.

KIA-4: Water Management Plan

References:

Appendix B

Summary:

Saline Water Pond

Detailed Review Comment

The Saline Water pond is designed to temporarily store the saline water from Llama Open Pit and the underground mine workings. Water inflow at the Llama open pit consists of saline water inflows from the associated Llama Lake (trough talik) and meteoric inflows.

It is unclear if the meteoric inflows at Llama Open Pit have been estimated and, consequently, considered in determining the overall pond storage volume.

Recommendation/Request:

Please clarify and update the inflows as required.

Sabina Response:

The Water Management Plan is currently under review as part of the Back River Project Type A (2AM-BRP1831) Water Licence Amendment Application currently subject to Final Hearings on July 13-14, 2021. Any further direction from the NWB Process will be incorporated into the Water Management Plan, and the approved plan will be provided to the NIRB for review.

KIA-5: Water Management Plan**References:**

Appendix B

Summary:

Umwelt reservoir

Detailed Review Comment

The groundwater seepage into Umwelt Underground workings is expected to be around 380 m³/day (and as high as 600 m³/day) and, during the operation phase, will be pumped out to the Saline Water pond. Upon closure, the saline water will be pumped back to the Umwelt Underground workings.

It is not clear how the groundwater seepage rates into the underground workings were accounted for during the re-injection of the saline water back into the underground workings. How will this affect the saline water to be managed, considering that the Umwelt Underground workings will also be reflooded due to groundwater seepage from talik?

Recommendation/Request:

Please clarify how groundwater seepage rates will be accounted for when saline water is re-injected into underground workings.

Sabina Response:

The Water Management Plan is currently under review as part of the Back River Project Type A (2AM-BRP1831) Water Licence Amendment Application currently subject to Final Hearings on July 13-14, 2021. Any further direction from the NWB Process will be incorporated into the Water Management Plan, and the approved plan will be provided to the NIRB for review.

KIA-6: Water Management Plan

References:

Appendix B

Summary:

Umwelt Pond

Detailed Review Comment

The water management plan does not mention throughout the body text the mine infrastructure “Umwelt Pond”, but the flow diagrams indicate that Llama Pit and the Umwelt underground will discharge to the “Umwelt Pond” during Operations Year 1 to Year 2.

It seems that The Umwelt Pond should be renamed Saline Pond, to be consistent with the text body.

Recommendation/Request:

Please clarify name of pond.

Sabina Response:

The Water Management Plan is currently under review as part of the Back River Project Type A (2AM-BRP1831) Water Licence Amendment Application currently subject to Final Hearings on July 13-14, 2021. Any further direction from the NWB Process will be incorporated into the Water Management Plan, and the approved plan will be provided to the NIRB for review.

KIA-7: Umwelt Underground Extension

References:

Modification Package Version 2-IMLE

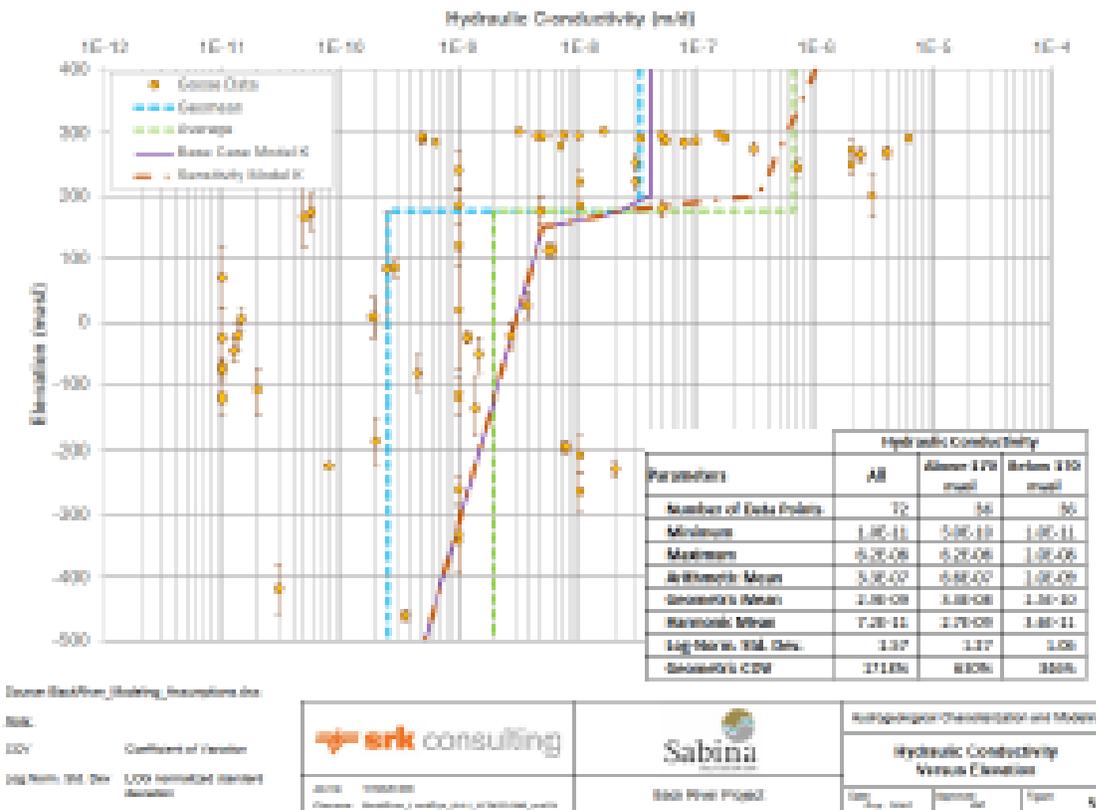
Summary:

Increased mine depth

Detailed Review Comment

Sabina is proposing to increase the maximum depth of the Umwelt underground from 650 m (actual maximum authorized depth) to 900 m.

No hydraulic conductivity values have been collected deeper than approximately 750 m. We agree that the hydraulic conductivity values are expected to decrease with increasing in depth (see below, Hydrogeological Characterization and Modeling of the Proposed Back River Project - Figure 5 (Hydraulic Conductivity Versus Elevation)). However, it is important to note that the extremely low hydraulic conductivity values (10-11 m/s range) are associated with the estimated permafrost depth and are not necessarily reflective of the hydrogeological conditions below -150 masl where the hydraulic conductivity values are likely more consistent with the geometric mean below 170 masl value.



Recommendation/Request:

The consultant should clarify what hydraulic conductivity values are expected for the Umwelt Underground expansion to 900 m and what hydrogeological conditions are expected to be following the increase of the maximum excavation depth at Umwelt underground.

Sabina Response:

RESPONSES TO 2020 ANNUAL REPORT COMMENTS

The Water Management Plan is currently under review as part of the Back River Project Type A (2AM-BRP1831) Water Licence Amendment Application currently subject to Final Hearings on July 13-14, 2021. Any further direction from the NWB Process will be incorporated into the Water Management Plan, and the approved plan will be provided to the NIRB for review.

KIA-8: Goose Groundwater model

References:

Modification Package Version 2-IMLE

Summary:

Increased mine depth

Detailed Review Comment

The Numerical Model developed to support the Goose Sabina is built with 34 layers, ranging in elevation from 341 masl to -500 masl (total thickness 841 meters).

Recommendation/Request:

The consultant should clarify how the dewatering rates have been determined and validated considering that the new Umwelt underground depth is deeper than the bottom of the model.

Sabina Response:

KIA-9: Saline Pond

References:

Modification Package Version 2-IMLE

Summary:

Saline / Non-Saline Groundwater

Detailed Review Comment

The Saline Pond will temporarily store the water from the Llama Pit and Umwelt Underground. It is not clear how the shallow groundwater (freshwater) circulating in the active layer during the open season will be managed to avoid contacts with the saline water stored temporarily in the pond.

Recommendation/Request:

Please clarify.

Sabina Response:

The Water Management Plan is currently under review as part of the Back River Project Type A (2AM-BRP1831) Water Licence Amendment Application currently subject to Final Hearings on July 13-14, 2021. Any further direction from the NWB Process will be incorporated into the Water Management Plan, and the approved plan will be provided to the NIRB for review.

KIA-10: Landfill and Waste Management Plan**References:**

Appendix B - Annual Monitoring Report

Summary:

Paragraph 7.4.1 Leachate Management Detailed Review Comment

Detailed Comment

The consultant states that deep groundwater contamination (saline environment) is not expected to be affected by any leachate. The reviewer agrees with this approach.

Nevertheless, it is not clear how the shallow groundwater circulating in the active layer during the open season will be managed to avoid contacts between waste and water, and to prevent fresh water infiltrating into the landfill.

Recommendation/Request:

Please clarify.

Sabina Response:

Landfills (of which none are currently constructed/operational) are contained with Waste Rock Storage Areas (WRSAs). The WRSAs are located on permafrost terrain; seasonally, as a result of the presence of the active layer, there is a shallow perched water table (no evidence of circulation). Sabina has assumed that all WRSA surface contact water will require containment and therefore water management infrastructure has been designed to contain this water. Runoff containment from the WRSAs is captured in containment ponds; the dam faces of these containment ponds are lined, and keyed into the permafrost to ensure a seal between the permafrost foundation and the water management structure.

KIA-11: Climate and Meteorology / Greenhouse Gas Reduction Plan

References:

Project Certificate Condition No. 6

Summary:

Under this condition, Sabina will have to monitor and reduce greenhouse gas emissions produced by the Project. It is understood that Sabina is continuing to implement their Greenhouse Gas (GHG) Reduction Plan mitigative and adaptive strategies.

Detailed Review Comment

The science regarding the emission of GHG from permafrost environments is rapidly evolving. It is now estimated, that the GHG emission from thawing permafrost are potentially significant (Shuur et al., 2015; Turetsky et al., 2019).

Sabina is currently ignoring the potential impacts of permafrost thaw on GHG emissions in their monitoring program. However, without any local quantification of GHG emissions from permafrost thaw, its significance within the project area compared to those emitted from other activities remains unknown.

Schuur, E., McGuire, A., Schädel, C. et al. Climate change

and the permafrost carbon feedback. *Nature* 520, 171-179 (2015).

<https://doi.org/10.1038/nature14338> Turetsky, M. R., Abbott, B. W., Jones, M. C., Anthony, K. W., Olefeldt, D., Schuur, E. A., ... & Sannel, A. B. K. (2019). Permafrost collapse is accelerating carbon release.

Nature 569, 32-34 (2019).

<https://doi.org/10.1038/d41586-019-01313-4>

Recommendation/Request:

It is recommended that Sabina consider and monitor how permafrost thaw within the project area may impact project-related emission of GHG over the Project's life.

Sabina Response:

Sabina acknowledged that they will be required to provide GHG emission quantifications following the federal guidance under the GHGRP.

KIA-12: Climate and Meteorology / Weather Monitoring and Adaptive Management**References:**

Project Certificate Condition No. 8

Summary:

Some weather parameters that should be reported under this condition appear to be missing and changes to the assessment are recommended

Detailed Review Comment

Sabina provides weather data for the Goose Station and the MLA station, and compares those data with the climate normal (1981-2010) that had been generated by ECCC for Lupin. Sabina further reported that the MLA station has been demobilized.

In addition, only some of the data that are requested to be reported under PCC No.8 are presented, for example and as stated in PCC No. 8: the onset of seasonal freeze and thaw cycles, as well as a highlighting of weather extrema or outlying weather events were missing.

Recommendation/Request:

It is recommended that the weather station at MLA is reinstalled to obtain a better understanding of the regional climate conditions.

It is requested that Sabina provides the missing information as per PCC No.8.

It is further recommended that comparison is made using satellite-derived weather data, for example those provided by NASA, in addition to the comparison to Lupin. Not only is the station at Lupin located ~224 km to the East from the project, but it is also affected by local conditions (Contwoyto Lake / large water body) and the climate normal data (1981 - 2010) are outdated, specifically considering the changes that had occurred over the last decade in the Arctic. As such, a comparison of the project weather data with the climate normal from Lupin does not provide information on evaluating extrema and abnormal weather conditions, which is the purpose of this condition.

Sabina Response:

Running climate stations in the north is difficult, as is evidenced by the scarcity of regional stations, and by the limited data available at the nearby government ran ECCC station in Bathurst Inlet. However, Sabina has maintained and is enhancing the weather station at the Goose property as construction commences. Remote stations such as at the MLA are not feasible to maintain nor is it required per the AQEMP, and given the proximity to the ECCC station, Bathurst Inlet is a reasonable analogue. When the Project becomes a year-round staffed project as opposed to an exploration camp, data for freeze/thaw cycles and extreme weather events can be better typified, especially as a net radiometer is scheduled to be installed on the lakeshore this field season. Note that extremes in the weather data are noted in the reporting and climate normals. Satellite data does not necessarily reflect the local conditions, and is of a coarse grid nature. Climate normal data from Lupin are appropriate to characterize Project conditions, given that both stations are on the barren lands and are in similar climatic conditions.

KIA-13: Terrestrial Environment / Permafrost Mapping and Monitoring

References:

Project Certificate Condition No. 11

Summary:

No information has been provided under PCC No. 11, however, as stated in the condition, such information should be made available during pre-construction to inform the detailed design of project infrastructure.

Detailed Review Comment

Sabina did not provide additional information regarding permafrost temperature, thickness of seasonal thaw and amount of ground ice in the project development area to improve the permafrost characterization. Sabina states that they have “[...] not constructed any waste or waste managed infrastructure where permafrost monitoring thermistors can be installed to assess thermal conditions.” However, a monitoring program has been performed as part of the project development and any associated data should be updated and provided as they would provide ongoing baseline information. It is understood that this condition not only refers to the thermal behaviour of new infrastructure, but also the existing environment, and as such, the statement by Sabina that “Sabina has not constructed any waste or waste managed infrastructure where permafrost monitoring thermistors can be installed to assess thermal conditions.” is not considered applicable in the context of this condition.

Recommendation/Request:

It is requested that Sabina provides updated information on the permafrost characteristics annually, regardless of construction activities.

Sabina Response:

Sabina would suggest that this Term and Condition does not apply to areas where physical Project infrastructure is not planned. The Term and Condition specifically states that “this information will be made available to inform the detailed design of project infrastructure”, and also that “once monitoring has demonstrated that the area(s) assessed are stable, every two (2) years... updates to the Proponent’s permafrost mapping results”.

The above mentioned language is explicit and intended to inform on permafrost conditions prior to, and during construction of, planned Project infrastructure. Sabina would suggest it not feasible or practical to monitor permafrost conditions over the entire Back River Project Potential Development Area, which is greater than 60km². Sabina notes that verifying proper foundation conditions exist prior to and during construction of infrastructure is a highly regulated process through the Nunavut Water Board and established engineering best management practices in Nunavut and the Canadian Arctic. Sabina also highlights that multiple terms and conditions exist in the Back River Project Type A Water Licence to verify detailed design is properly completed, reviewed and approved, and applicable Construction Summary Reports are provided as an outcome.

KIA-14: Terrestrial Environment / Permafrost Monitoring**References:**

Project Certificate Condition No. 12

Summary:

Similar to PCC No. 11 (KIA-NIRB-13), no information has been provided.

Detailed Review Comment

The condition is not limited to the construction of tailings facility and/or waste storage facilities but it does include roads, trails, and quarries. Similar to PCC No. 11, data from existing permafrost monitoring is expected to be included in the annual report as it provides ongoing baseline information and helps with improving the understanding of the local permafrost conditions. Together with the assessment of the weather conditions, it allows to evaluate natural vs. project related environmental impacts.

Recommendation/Request:

It is requested that Sabine provides updated information on the permafrost characteristics within the project area.

Sabina Response:

Please see Sabina's response to KIA-13.

KIA-15: Missing correlations and equations.

References:

Appendix D; Section 2.2.1 Climate Data

Summary:

Section 2.2.1.2 has missing correlations and equations.

Detailed Review Comment

In Section 2.2.1.1 equations and correlations are provided to support the combination of temperature records and filling of missing data in the Lupin and Back River Site records. Section 2.2.1.2 - Precipitation includes a similar method for filling missing data but does not provide the same correlations and equations for data filling.

Recommendation/Request:

Please provide a discussion as to why these correlations and equations are missing from the hydrotechnical assessment.

Sabina Response:

Sabina will review the missing correlations and equations highlighted in KIA-15 and provide the missing data if appropriate in the 2021 annual report.

KIA-16: Quarry site denning site avoidance**References:**

Hope Bay Project, 2020 Nunavut Impact Review Board Annual Report, Pre-Construction Wildlife Mitigation and Monitoring Plan Report, Section 5.3.1.2, Results, p. 5-7:

“Of the 31 quarry sites surveyed, eight were classified as moderately high to high suitability for bear and winter denning. One potential quarry site (Photo 5.3-1) had high bear den habitat suitability, and seven sites had moderately high bear den habitat suitability. The remaining 23 quarry sites were considered moderate to nil suitability for bear denning habitat.”

Summary:

Sabina provides pre-construction suitability survey information for denning potential of eskers being considered for quarry material. It is not clear that these data are used in the mitigation hierarchy, which is Internationally accepted as Best Practices in Impact Assessment, where a stepwise approach to minimizing impacts is undertaken follows the steps in the following order: avoid, mitigate, restore, offset.

Detailed Review Comment

How will Sabina use this pre-construction survey information collected from the 31 quarry sites to make decisions? Following the International Best Practices of the mitigation hierarchy, this survey information should first be put applied to decision making in step 1 of the mitigation hierarchy (avoid) before moving to mitigation to minimize the effect (e.g., temporal construction to avoid peak use periods).

These eskers are landforms that will not return once destroyed, having formed over thousands of years. These landforms, particularly those with rooted vegetation like shrubs that hold the sandy soils in place above constructed dens are essential for successful mammal denning in Nunavut. Considering that so many potential quarry sites (31) have been identified and surveyed, the proponent should apply the mitigation hierarchy to first avoid the highest quality quarries for wildlife denning potential wherever possible, prior to moving through the hierarchy towards mitigation, restoration, and offsetting?

The eskers with the highest suitability values are likely those that should be avoided.

Recommendation/Request:

The KIA makes the following recommendations and requests:

As there is limited suitable esker denning habitat in the area, some of which supports Sabina should apply the mitigation hierarchy to the habitat suitability survey data collected for the 31 potential quarry sites and provide information on how this was done.

Sabina Response:

Sabina identified a variety of potential borrow sources, including eskers and some false beaches along the route of the Winter Ice Road (WIR). The objective of identifying many sources is to provide options to reduce the distance that material must be moved along the WIR. Having options also allows Sabina to choose borrow sources and parts of borrow sources that avoids higher quality denning habitat, per the mitigation hierarchy.

KIA-17: Aircraft pilot incidental sightings reports

References:

Back River Project, 2020 Pre-Construction Wildlife Mitigation and Monitoring Program Report

- Section 5.1.1
- Section 5.1.2
- Section 5.6.1

Summary:

Fixed wing pilots and helicopter pilots are instructed to report all incidental wildlife sightings. Throughout all flights in 2020, there were three reported incidental wildlife sightings by fixed wing or helicopter pilots.

Detailed Review Comment

Fixed wing pilots and helicopter pilots are instructed to report all incidental wildlife sightings. Throughout all 140 flights made in 2019, helicopter pilots reported no wildlife sightings. As a result, the KIA, in their previous review of the concomitant 2020 Annual Report, had noted that the program was likely not functioning as intended. This comment was corroborated by the fact that there were so many corresponding on-site incidental observations by employees over a similar time-period within which flights were occurring. It was difficult to imagine that in a landscape where personnel were reporting large groups of caribou over multiple days that helicopter pilots would not have seen any, for example. Therefore, it was likely that pilots were underreporting and that the monitoring from the air was not occurring as planned.

In 2020 the aircraft reporting protocols resulted in a slight improvement of three observations: one caribou sighting (one individual seen on October 8, 2020; no mitigation triggered), one wolverine (individual), and one muskox sighting (25 individuals; not close enough to require mitigation). This is an improvement over the 2019 program. However, underreporting by pilots is still suspected to be occurring due to a comparison with Table 5.6-2, which indicates 3,332 wildlife observations by on the ground staff around the Goose project location., 3,071 of which were caribou and likely visible from aircraft prior to any level 4 responses. Two level 4 responses also were enacted when large numbers of caribou were observed in proximity to Goose site (July 30 and August 20. Of these over 3,000 caribou, only one was reported by a helicopter pilot on October 8, 2021.

The KIA understands that pre-construction aircraft were used at levels below those predicted in the FEIS due to covid-19 (however, the number of helicopter or fixed wing flights per month could not be easily understood from reading the relevant sections dealing with aircraft and wildlife in the annual report). However, pilots still likely underreported observed wildlife when considering on site personnel logs versus pilot logs.

As the pilot reporting program is an important one that will help to inform staged mitigation responses for large groups of caribou observed at a distance from the Project, it needs to function as intended. While there was some uptake in reporting by pilots in 2020 compared to 2019, it was a very small improvement

(and it is not clear if reporting was undertaken by one pilot only or more than one). There likely still remains an issue of underreporting wildlife by helicopter pilots, which could be improved in the 2021 seasons.

Recommendation/Request:

The KIA recommends the following:

- Ensure that pilot wildlife reporting training is thorough and that pilots are reminded frequently (daily safety meetings?) of their reporting duties, while emphasizing the value of incidental wildlife

report data in the project's compliance to monitor wildlife in the project area and as an important trigger for caribou mitigation and work stoppages.

- Work to further identify any potential obstacles to pilot reporting and find ways of removing barriers.

Look at testing monitoring reporting compliance by cross-referencing recorded flight paths with caribou collar data or with large numbers of incidental observations by ground crews within areas flown over or within visual range.

Sabina Response:

Sabina recognizes and understands the importance of aircraft management for wildlife management. Helicopter management is described in the Wildlife Mitigation and Monitoring Program Plan (WMMP Plan) for wildlife, particularly caribou.

Sabina has acted on this management objective through four methods:

- 1) Reporting wildlife observations is a condition of the contracts established with helicopter operators.
- 2) Sabina produced a Fixed Wing and Helicopter Operations SOP (SOP # ENVIRO-3) that is delivered to helicopter operators.
- 3) Sabina produced a Fixed Wing and Helicopter Operations Guidance and Wildlife Log that is delivered to pilots who are instructed to read and complete the forms to ensure all sightings are logged.
- 4) The camp manager instructs pilots in the importance of wildlife mitigation and monitoring when they arrive on site, and are reminded daily.

During 2020, pilots reported caribou during flying operations on three occasions. This is an improvement from 2019 when no sightings were recorded, and Sabina will actively continue to encourage pilots to record sightings. It is uncertain whether pilots only say caribou on three occasions to report, or if they failed to report all animals that they saw. It is possible that there were simply three occasions when caribou were observed by pilots.

Sabina will increase efforts to communicate monitoring expectations for helicopter pilots through:

- 1) Delivering a letter to helicopter companies reminding them of their responsibility and including:
 - a. the aircraft SOP; and
 - b. the brochure on pilot responsibilities;
- 2) Signage and brochures will be available at site and posted in prominent locations and the helicopter shack.

Sabina receives near real-time collar information from the Government of Northwest Territories. Information on the approach of collared caribou will be delivered to the camp manager and helicopter pilots. Note that maps of these data cannot be freely distributed.

KIA-18: Information and analyses from camera and radio-collar data

References:

Back River Project 2020 Pre-Construction Wildlife Mitigation and Monitoring Program Report

Appendix 2A: Overview of Wildlife Mitigation and Monitoring Programs during Phases of the Back River Project

Summary:

A table is presented that outlines the mitigation and monitoring to occur by phase. During the Baseline and Pre-construction phase, Sabina indicates that the following monitoring will be done: 1. Human Activity Monitoring, 2. Noise Monitoring, and 3. On-site Camera Monitoring,

Detailed Review Comment

The KIA recognizes that Sabina typically releases a separate report highlighting the results of monitoring programs such as those listed in Appendix 2A. Some monitoring programs trigger management and would therefore be useful to review alongside the Annual Report, current mitigation, and SOPs.

Recommendation/Request:

The KIA recommends the following:

- Please indicate when Sabina will be releasing the monitoring report for the 2020 season, which contains the outstanding pre-construction monitoring data and analyses for human activity monitoring, noise monitoring and on-site camera monitoring analyses.
- The 2020 radio-collar analysis will be particularly important in explaining the large number of caribou seen on site between late July and late August; it will be important to understand if a range shift is occurring and how this may impact future years of operations.

Sabina Response:

The WMMP Plan, V.10, Table 6.2-1 and 6.2-2 list the monitoring for wildlife during each Project phase, including Baseline/Pre-Construction. Baseline studies are referred to by the number of years that they were completed during the Baseline phase of the Project. Others are listed as ongoing, including recording incidental sightings and monitoring the site using remote trail cameras. Noise monitoring was completed during baseline, and is indicated as “one time” during the baseline/pre-construction phase; therefore, noise monitoring will not be conducted again until Construction (one time).

Human activity monitoring involves reporting hunting and fishing on the Project site. There was no hunting or fishing observed at the Project site in 2020.

Sabina will be installing cameras to monitor interactions with the site during the summer of 2022.

The GNWT conducts range mapping for their collared caribou in the Bluenose, Bathurst and Beverly herds on a yearly basis and Sabina suggests that the KIA discuss the matter with the GNWT, who are the owners of this data.

KIA-19: Habitat suitability mapping and habitat loss comparisons for caribou**References:**

Back River Project 2020 Pre-Construction Wildlife Mitigation and Monitoring Program Report (Version B.1)

Section 3.2, page 3.2-2

Summary:

Predicted vs. actual habitat loss for caribou was only analyzed for summer and fall. It is unclear why Sabina did not compare loss of suitable winter and spring habitat, especially because the majority of incidental caribou observations made in 2018 and 2019 occurred during those seasons. In 2020, just over 7% of caribou observations occurred during the winter, and very few occurred in the Spring; this could appear to be a deviation from prior trends. However, in reality this temporal pattern was due to the absence of personnel on site during April and May (leading to no ability to record the peak Spring migration period), and no personnel at site in January or February. As a result of these missed high use periods, the highest incidental reporting occurred in July and August in 2020, corresponding to two months with the collectively highest number of personnel on site. Personnel recorded a very large number of animals (3,071 caribou) between July 21 and August 31 in 2020 that made up a large portion of the total number of animals seen. However, part patterns of 10-15, 000 animals seen in the spring, and winter still need to be considered and preferred habitats for travel and foraging during these seasons are important.

Detailed Review Comment

Section 3 of the 2020 Pre-Construction WMMP Report compares the FEIS predicted habitat loss with the area of habitat loss due to pre-construction activities up until 2020. The methods described include GIS analysis of the existing footprint compared to habitat suitability mapping for caribou (summer and fall). It is unclear why habitat suitability mapping for winter and spring were not analyzed.

Since caribou are known to occur in the area during the winter, and since extremely large numbers of caribou have been observed during the Spring migratory season, the reason(s) why habitat suitability mapping for these seasons has not been completed, and reasons why losses due to the project are not being enumerated in these seasons, should be provided. Further, radio-collar data could be used to examine 50%, 80%, and 95% Kernel UD's to look at the periods of greatest caribou overlap with the project among herds.

The KIA had previously requested, after reviewing the 2020 Annual Report, that winter habitat be mapped and subsequent WMMP reports should include a comparison between predicted vs. actual suitable habitat loss for caribou in all seasons where they may interact with the project.

Recommendation/Request:

The KIA requests the following:

- Clarification for why the 2020 Pre-Construction WMMP Report does not report suitable winter (and potentially spring) habitat loss for caribou.
- Clarify whether Sabina completed habitat suitability mapping for caribou, as requested in previous years, for these high use seasons (winter, spring). An analysis of landscape features modifying snow depth and underlying vegetation (high percentage of ground cover of suitable lichen and herbaceous forage, proximity to frozen rivers and lakes) may be key factors in these seasonal suitability maps.
- The 2020 annual report demonstrated that in seasonal patterns of wildlife (e.g., caribou) observations collected from personnel wildlife logs can completely change based on when personnel are on site. Please consider providing such data also as an index (e.g., # caribou observed/ number of personnel on site). Such an exercise being done in 2020 would have quickly alerted the reader to the

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fact that prior patterns of high winter and spring use by caribou did not likely change, people were just not on site in these periods.

Sabina Response:

The FEIS included a Habitat Suitability Report, which reported models of habitat suitability for Summer and Fall, the seasons when data indicated caribou were mostly likely to interact with the Project area. The annual WMMP Report, reports the total area of habitat lost due to the Project, as well as the area of high quality summer and fall habitat.

The KIA has requested that a winter habitat suitability model be produced and the area of high quality winter habitat also be reported. Sabina will update the habitat suitability modeling to include the winter season and report the area of high quality winter habitat lost in future WMMP Reports, beginning in 2021.

The KIA has requested the Sabina consider reporting caribou observations relative to the number of personnel on site. Sabina will consider providing the incidental caribou observation data as an index of the number of caribou observed/number of personnel on site in the 2021 annual report.

KIA-20: Missing Appendix Critical to Wildlife Data**References:**

Back River Project 2020 Pre-Construction Wildlife Mitigation and Monitoring Program Report (Version B.1)

- Section 5.6.2
- Appendix 5D

Summary:

The Back River 2020 Pre-Construction Wildlife Mitigation and Monitoring Program Report is missing caribou collar data and analyses.

Detailed Review Comment

The 2020 pre-construction monitoring obligations for Sabina include an analysis of caribou collar data.

There is a statement within the WMMP regarding incidental observations of caribou and calves seasonally (Section 5.6.1 of the Annual Report, below Table 5.6-2) that states “During the summer period, group sizes ranged from one individual to greater than 1,000 animals, and were observed near Good Camp, and calves were reported on six occasions (22% of sightings during the summer). This is consistent with the collar data from 2020 (Appendix 5D)

Appendix 5D does not include collar data or analyses of collar data and is instead titled: “Waste Management SOP: Pre-Construction, Construction, and operations: Enviro-08.”

There appears to be an error and this information is missing. These data and analyses are critical to the KIA’s understanding of the distribution and overlap of 2-3 caribou herds with the Back River Project.

Recommendation/Request:

The KIA requests the following:

- Please submit the missing collar data and analyses to the KIA and the NIRB.
- Allow for additional time to submit review comments on these data and analyses, alongside consideration of the 2020 Annual Report findings, to the NIRB.

Sabina Response:

Sabina is aware that a reference to Appendix D was referred to in error. The reference to collar data from 2020 and Appendix 5D is an error and was a hold-over from last year’s report when the caribou crossing analysis was completed. Thank you for pointing this out and we will ensure to remove this reference from the report.

KIA-21: SOP for wildlife (carnivore) interactions and deterrents

References:

Back River Project 2020 Pre-Construction Wildlife Mitigation and Monitoring Program Report (Version B.1) Standard Operating Procedure

Summary:

The KIA has previously requested the inclusion of the Wildlife Interaction and Deterrent SOP. In the prior Back River 2019 Pre-Construction Wildlife Mitigation and Monitoring Program Report, the KIA also made this request, as it did not include this SOP, despite this SOP being followed in the incident of a grizzly sow and two cubs being observed near the MLA quarry and camp.

Detailed Review Comment

Neither the Back River Project 2019, nor the 2020 Pre-Construction Wildlife Mitigation and Monitoring Program Report included the SOP for Wildlife Interaction and Deterrents. It would be helpful if all applicable SOPs and other relevant documents were all appended to the WMMP Report such that a comprehensive review of Project staff compliance to Sabina's policies and procedures can be completed.

This SOP, in particular, is likely to be highly relevant to future years into construction and project operations. The KIA would like to review procedures followed for deterrence and prevention and responses to wildlife interactions.

Recommendation/Request:

The KIA requests the following:

Please supply the SOP for wildlife (carnivore) interactions and deterrents in further Annual reports.

Sabina Response:

Sabina will include the SOP for carnivore interactions and deterrents in future annual reports.

KIA-22: Marine mammal and seabird sensitive habitats along the Project shipping route**References:**

Back River 2020 Annual Report (Version B.1)

- Appendix 7A. SOP: Marine Shipping Wildlife Mitigation and Monitoring (Version 3.0, August 2020)
- Appendix 7B: Shipping Management Guidelines, Page 4

Summary:

Figures 2.1-1 and 2.1-2 of the SOP show the sensitive habitat for seabirds/seaducks and marine mammals along the shipping route, respectively. Several key habitats defined by the ECCC have now been added based on prior KIA comments. The KIA still notes several that could be added based on other information sources.

Detailed Review Comment

Several key migratory bird habitat sites in Nunavut as defined by ECCC (2016), and in Northwest Territories (NT) as defined by Latour et al. (2008), exist along this route and bird areas from NT are missing from the shipping route maps. Though these areas are not specified in PC Condition No. 58, they are still considered sensitive migratory bird areas by government regulators (ECCC/CWS). This includes the following key locations:

- Cape Parry (NT)
- McKinley Bay - Phillips Island (NT)
- Kugluktuk and Hutchinson Bays (NT)
- Lower Mackenzie River Islands (NT)
- Middle Mackenzie River Islands (NT)
- Mills Lake (NT)

The KIA requests that Sabina consider including these sensitive migratory bird habitats in the Shipping Management Plan as well to reduce transboundary effects of the project.

Recommendation/Request:

The KIA requests/recommends the following:

Please consider including these sensitive migratory bird habitats in the Shipping Management Plan.

Sabina Response:

As recognized by the KIA, the migratory bird habitat sites in the NWT are not specified in PC Condition No. 58 and are not required in the Shipping Management Plan. Nevertheless, Sabina will add these habitat areas on the maps within the Shipping SOP and the Shipping Management Guidelines to ensure captains are aware of these areas.

KIA-23: Shipping Management Guidelines additions and Marine Shipping SOP

References:

Back River 2020 Annual Report (Version B.1):

Appendix 7A: Marine Shipping SOP-Wildlife Mitigation and Monitoring: Enviro-02 (Version 0.3, 28 August 2020), especially: Figure 2.1-2, Sections 3.2, Table 3.5-1.

Appendix 7A: Marine Shipping SOP-Wildlife Mitigation and Monitoring: Enviro-02 (Version 0.3, 28 August 2020), especially: Figure 2.1-2, Sections 3.2, Table 3.5-1.

Summary:

For two years the KIA has requested that a shipping management SOP or guideline booklet be modified to describe additional sensitive marine habitats and associated setback distances. Page 4 of this booklet, found within the 2020 annual report now includes those recommendations. Thank you. Some typographic issues/discrepancies, however, are noted between documents meant to relay the same information.

Detailed Review Comment

The KIA acknowledges the full integration of their past comments and recommendations. The shipping management guidelines found in Appendix 7B are clear, easy to use, and much improved.

While this booklet contains the KIA's past recommendations in terms of sensitive areas and setback distances, there are now discrepancies between the text found in Appendix 7A (the Marine Shipping SOP) and information found in Appendix 7B (The Shipping Management Guidelines Booklet. Most of the errors are found within Section 3 and not within Appendix 7B.

For examples of these discrepancies and areas for improvement:

- Appendix 7A, Figure 2.1-2: "Sensitive Habitat for Marine Mammals along the Shipping Route" only identifies sensitive habitat for marine mammals from Lancaster Sound to Franklin Strait. As 5 additional sensitive bird habitats are noted just prior to this map, it may make sense to include these on Figure 2.1-2 as well, if possible.
- While Section 2.2 (Shipping Setback Distances) of Appendix 7A includes 3 setback distances around sensitive habitats, including for Ivory Gulls, Table 3.5-1 (Recommended Shipping Mitigation Responses for Seabirds and Marine Mammals does is missing the setback distance of 2 km for Ivory Gulls in Section 2.2. This setback distance is also missing from Appendix 7B.

As a small typographical note: this SOP within Appendix 7A is labelled as Version 0.3; the reviewer suspects that the proponent means to have written version 3.0.

Recommendation/Request:

The KIA is pleased to see the addition of this booklet included in the Annual Report. However, Appendix A (Marine Shipping SOP) needs a careful edit and QA/QC check to ensure that it has been modified to match all changes made in Appendix 7B.

Sabina Response:

Sabina will ensure Appendix 7A (Marine Shipping SOP) and Appendix 7B (The Shipping Management Guidelines Booklet) are reviewed for consistency and carefully edited and QA/QC'd. Updated versions will be included in the 2021 Annual Report.

KIA-24: Marine shipping wildlife monitoring staff and procedures**References:**

Appendix 7B. Shipping Management Plan Booklet:

Marine Mammal and Seabird Surveys, Page 5

Summary:

The 2020 version of the shipping management plan contains a modification from previous plans. Previously, the plan assumed that bridge staff could dedicate nearly half a day to wildlife monitoring. The KIA had expressed concerns about this plan in 2019 because though they are assigned this task, a bridge crew will have other roles on the ship and their availability will vary.

Detailed Review Comment

Sabina indicated in their Jul 19, 2019 response to a previous technical comment and query made by the KIA about the role of the wildlife monitoring on the shipping vessel, that they committed to using the vessels' bridge crew to conduct monitoring. This remains a decision in lieu of hiring a separate and dedicated marine monitor. Sabina did not clarify which or how many bridge staff would be tasked with monitoring.

The KIA stated in 2019 that they felt there may be a need for a contingency plan if it is not feasible for regular bridge staff to dedicate 4 hours a day to wildlife monitoring. Indeed, it was the case in 2019 that some shipping trips were devoid of monitoring.

The updated wording now found in the shipping management plan, page 5, states that:

- For marine mammals: *“If timing allows, have the dedicated marine mammal and seabird observer conduct at least 1 dedicated survey per day, lasting 1.5 to 2 hours.”*
- For Seabirds: *“If timing allows, conduct 1 to 3 dedicated surveys per day, lasting 30 min each”*

While Sabina is now using the term “dedicated MMSO”, the KIA still understands this to be a bridge crew who has been assigned this role, if they have time, alongside their regular duties. Is this correct? If so, the word dedicated is likely a misnomer.

The monitoring obligations of the MMSO each start with the caveat “if timing allows”. Is there a minimum, acceptable amount of time that must be met to achieve the objectives of this monitoring program? If so, it is still unclear as to how the proponent will manage the risk of this MMSO not having enough time.

The KIA suggests that a local Inuit worker could be trained to provide the role of the MMSO during shipping and this would provide a known personnel resources to meet the objectives of this program. Without adequate wildlife monitoring occurring, the use of all of the contingent shipping management plans for wildlife is questionable.

Recommendation/Request:

The KIA recommends the following:

Please consider hiring a dedicated, temporary Inuit monitor, for the MMSO role. Ideally this role could be filled by a local Inuit familiar with the Arctic waterways and wildlife that could be encountered.

Sabina Response:

There was no shipping activity in 2020 for the Back River Project. During 2018, the MV Kelly Ouayuak collected marine mammal and seabird observations correctly during their voyage between Tuktoyaktuk and the MLA. Therefore, with proper motivation, the vessels crew are capable of collecting this type of observations and no additional Sabina personnel are required to conduct this work.

In addition, given the size of the tugs used for transit between the Mackenzie River and the Marine Laydown Area (MLA), there is no room for additional personnel to be housed and work on the vessel.

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Sabina has re-iterated the importance of collecting these observations to the shipping company and will continue to do so prior to any sailings in 2021. In addition, the Shipping Guidance Booklets will assist shipping companies in understanding the importance of collecting marine mammal and seabird observations.

KIA-25: Clear and comprehensive information about waste management**References:**

Back River Project 2020 Pre-Construction Wildlife Mitigation and Monitoring Program Report (Version B.1)

- Appendix 5D – Back River Project: Standard Operating Procedures - Pre-construction, Construction and Operations Waste Management (March 31, 2021, Enviro-08, Version B.1)

Summary:

The March 31, 2021 Version B.1 of the SOP for Pre-Construction, Construction, and Operations Waste Management could be improved by including a table clearly showing how various waste types expected at the project sites should be handled and disposed, including wastes compatible for incineration. Additional signage should be posted project staff.

Detailed Review Comment

Section 7 of this SOP describes items that can be incinerated, cannot be incinerated, can be incinerated with special precautions, or disposed of in other ways. It would be much clearer and practical for regular use by project staff if Sabina presented waste management information in a table with the following information:

- Waste material (e.g., absorbents)
- Waste type (e.g., petroleum)
- Classification (e.g., hazardous)
- General management method (e.g., collect in Quatrex bags or open top drums. Keep in hazardous waste storage areas until final disposal.)
- Final disposal (e.g., off-site disposal)

This table, or a simplified version, can be posted at waste collection areas. Note that the KIA also commented on this issue in our previous review of the 2018 and 1019 Pre-Construction WMMP Reports.

Recommendation/Request:

The KIA recommends the following:

- Please revise SOP to include a table that shows proper waste handling and disposal for various waste types.
- Post additional signage at waste collection sites to ensure that incompatible wastes are not sent for incineration.

Sabina Response:

Sabina will be reviewing the Back River Project waste management plans and SOP will include the described table in the updated documents. Signage is currently clearly posted at all Project waste management areas to ensure that wastes are appropriately segregated. This will be mentioned in the updated Waste Management Plan and Incineration Management Plan, as appropriate. Any updates to these plans will be filed with the submission of the annual report.

KIA-26: Vegetation Monitoring Schedule

References:

Appendix F. Back River Vegetation Monitoring Plan, January 2020

- Section 2.0
- Table 3-1 (Term & Conditions 34a)
- Table 5-1. Monitoring Components of the Vegetation Monitoring Plan

Summary:

It is unclear if the proposed vegetation monitoring plan and schedule will be sufficient to adequately quantify potential impacts to vegetation in and around the project sites and the WIR for all phases of the Mine project.

Detailed Review Comment

Section 2.0 (Scope and Objectives) of the 2020 Vegetation Monitoring Plan states that this Plan “has been developed with the core objective, to **quantify (annually)**, the impacts of the Mine components (i.e., footprint increases) on vegetation throughout the Construction, Operations, Closure and Post-Closure phases of the Mine...Additionally, the Plan will support the collection of data to assist in proactively identifying and managing potential impacts to vegetation.”

Furthermore, *Table 3-1. Project Certificate No. 007, Vegetation Management, Mitigation, and/or Monitoring Related Terms and Conditions* states that the Vegetation Monitoring Plan must establish pre-construction and post-operation vegetation conditions annually with supporting photographs to allow for long-term comparisons of vegetation conditions along winter ice road/trail routings and around project sites.

Table 5-1. Monitoring Components of the Vegetation Monitoring Plan indicates that the planned monitoring schedule is:

- Project footprint - annually during Construction and Operation.
- WIR - annually with photos; every 3 years in the field.
- Vegetation and lichen monitoring outside potential development areas - every 3 years; and,
- Non-native plant monitoring - every 3 years

The monitoring schedule does not include closure and post-closure phases and does not allow for annual monitoring (field-based or photographic) for vegetation and lichen outside potential development areas.

Recommendation/Request:

The KIA requests/recommends the following:

- Please include closure and post-closure phases as part of the vegetation monitoring schedule for the project footprint.
- Please amend the monitoring schedule to include annual monitoring of vegetation and lichen outside the project development area. While annual photographs are considered a minimum measure, field-based monitoring will provide more detailed information to better quantify potential changes in vegetation over time. For this reason, annual field-based monitoring is recommended for the WIR as well.

Sabina Response:

The vegetation monitoring schedule (Table 5-1) for the Project Footprint will be amended to include closure and post-closure sampling schedules.

Sabina will adaptively manage the frequency of the lichen, vegetation monitoring and Winter Ice Road (WIR) monitoring programs at three year intervals during construction and operations. Data will be examined to identify a divergence in the previous and current observed temporal and spatial patterns of plant species abundance and composition, and sampling frequency be adjusted as appropriate. The 95% confidence limit (i.e. two standard deviations from the mean) will be used as the threshold/trigger for changing the frequency of the monitoring program.

KIA-27: Number and allocation of vegetation monitoring plots outside the Potential Development Area (PDA) for the Goose and MLA sites.

References:

Appendix F. Back River Vegetation Monitoring Plan, January 2020

- Table 5.2-1 Vegetation Monitoring Plot Location Summary
- Appendix C. 2019 Vegetation Monitoring Program (Technical Memorandum, 18 February 2020)
- Table 1 - Number of Vegetation Monitoring Plots by Project Component

Summary:

It is unclear how Sabina decided to allocate vegetation monitoring plots outside the Potential Development Area (PDA). The proposed number and location of plots within specific vegetation associations may be statistically insufficient to quantify vegetation abundance and diversity. Further rationale (e.g., power analysis) and relevant background information are needed to understand the methodology (e.g., how are sites selected within distance bins and habitat strata?).

Detailed Review Comment

Table 5.2-1 Vegetation Monitoring Plot Location Summary presents the number of plots by Project Component (Goose Property, MLA). The table indicates 9 existing and 19 proposed plots for a total of 36 (sic) plots at the Goose Project and 5 existing and 4 proposed plots for a total of 9 plots at the MLA. The table indicates that combined, there are total of 45 (sic) plots. If the number of existing and proposed plots stated in the table is correct, the table should indicate that the total number of plots is 28 for the Goose Project and 9 for the MLA, for a total of 37 plots (instead of 45 as stated in the table). Note that this table does not coincide with the 2019 Vegetation Monitoring Program Memorandum, which describes 5 plots for the Goose Project, 5 plots for the MLA site, for a total of 10 monitoring plots.

Table 5.2-1 indicates that 5 plots will be established at a distance of 0 m, 4 plots at 150 m, 4 plots at 500 m, 4 plots at 1 km, 4 plots at 5km, and 7 plots at 10 to 20 km from the PDA boundary for the Goose Project. The number of plots proposed at each distance (i.e., sample size) may be insufficient to support a statistically valid quantitative analysis of plant distribution and abundance.

Table 5.2-1 does not indicate how many plots are allocated within the two vegetation associations - Mesic Dwarf Tundra (TL) and Dry Sparse Tundra (TH) that are proposed for monitoring. Other vegetation associations such as Cottongrass Sedge Fen (WC), Raised Bog Complex (WB), Tundra Seepage (TS), and Undifferentiated Tundra (TU) are not proposed for monitoring, which leaves a potential data gap. Ideally, the number of monitoring plots should be proportional to the area covered by each vegetation association, or a modifier should be used to ascribe more importance and sampling effort to more important vegetation types.

Table 5.2-1 indicates a discrepancy in plot distances from the PDA boundary for the Goose Project and MLA. Whereas the Goose Project has plots established to distances of 0 m, 150 m, 500m, 1km, 5 km, and 10 - 20 km from the PDA, the MLA establishes plots to a maximum distance of 150 m from the PDA. No explanation is provided for this discrepancy. It would be helpful if an explanation were provided.

It would be helpful if Sabina can provide rationale for the allocation and distribution of monitoring plot locations outside the PDA for the Goose and the MLA project sites. Without scientifically justified rationale for plot allocation and sample sizes, it is difficult for the KIA to determine whether Sabina's vegetation monitoring program methodology can meet its stated objectives.

Recommendation/Request:

The KIA requests/recommends the following:

- Please provide further rationale for vegetation monitoring plot allocation.

- Please perform and/or provide results of a power analysis that indicates the minimum sample size necessary to quantify diversity and abundance comparisons and support the monitoring program (e.g., power analysis estimates showing the numbers of plots needed to detect the targeted effect size with a reasonable power level (~0.80)) generally accepted in biological studies.
- Further rationale for the distribution of plots for capturing impacts of project components and activities to various vegetation associations, and distances from PDA boundaries.

Sabina Response:

Vegetation monitoring plots were allocated to align with AQMMP dustfall sampling distances which is based on a distance gradient design.

The number of plots required was developed based on review of study designs for similar northern mining vegetation monitoring programs.

The rationale for the difference in sampling distances between the MLA and Goose project components, is that there will be no active construction or mining at the MLA site, and therefore fewer dust effects were predicted. Based on the predicted zone of influence, plots established at 5 km and greater distances can be considered far-field.

KIA-28: Number and Distribution of Vegetation Monitoring Plots along the WIR

References:

Back River Project Responses to 2020 Annual Report Comments (June 29, 2020)

- KIA-21: Number and allocation of vegetation monitoring plots
- KIA-22: Vegetation monitoring plots in 2019 compared to 2018.
- Back River Vegetation Monitoring Plan, January 2020
- Section 5.5

Summary:

The number of sample plots for vegetation monitoring was reduced by 26 along the WIR (for a total of 46 paired plots). The sample size and distribution of sample plots should allow for statistically defensible conclusions to be reached in terms of quantifying and comparing vegetation diversity and abundance and should support the monitoring program to assess potential mine effects of interest (i.e., pre-defined effect size of biological importance) with a reliable level of confidence (e.g., Power value of 0.8 or more). Further rationale (e.g., power analysis) is required to support the methodology and determine if there is “sufficient experimental plot coverage on the WIR footprint.”

Detailed Review Comment

Sabina stated in its response to the 2020 Annual Report Comments that “the selection of plots was chosen to be representative of landform, and vegetation within the study area. Given the extent of the Project Area and length of WIR, plots were established to capture variation introduced by terrain, landforms, drainage etc. Additionally, final plot locations were chosen based on available imagery, site access, and distributed along the entire length of the WIR to capture representative vegetation types.”

Sabina further stated that despite the reduction in monitoring plots along the WIR, “Forty-six paired monitoring plots *should* be sufficient to capture variation in disturbance, and vegetation communities, within the WIR.” There is no further evidence provided for why the 46 paired monitoring plots should be sufficient for this purpose, and it would be helpful for such supporting evidence to be provided with the response.

It is unclear if the number of plots allocated in the vegetation monitoring program (as it currently stands) provides a statistically valid sample size. Furthermore, the distribution of sample plots within the targeted vegetation associations does not appear to be proportional to the total area that these vegetation associations cover.

Recommendation/Request:

The KIA requests/recommends the following:

- Please consider the merits of something like a Generalized Random Tessellation Stratification Sampling program (GRTS), which is ideal when trying to characterize the average vegetation along a long N-S or E-W transect, like a road or railway, and which allows for distance and DEM/habitat unit stratification.
- Please perform and/or provide results of a power analysis that indicates the minimum sample size necessary to quantify diversity and abundance comparisons within each representative vegetation types/target vegetation communities and support the monitoring program (e.g., power analysis estimates showing the numbers of plots needed to detect the targeted effect size with a reasonable power level (~0.80)) generally accepted in biological studies.

Sabina Response:

Given the length of the WIR, monitoring plots were chosen based on available imagery, site access, and distributed along the entire length of the WIR to capture representative vegetation types. A GRTS is not necessary given the temporary nature of the road.

KIA-29: Dustfall monitoring (Lichen)

References:

Appendix F. Back River Vegetation Monitoring Plan, January 2020

- Section 5.4 Lichen Monitoring
- Back River Project Air Quality Monitoring and Management Plan, July 2019
- Section 7.2 Dustfall Monitoring

Summary:

Sabina has stated that dustfall monitoring will occur under the Vegetation Monitoring Plan through the evaluation of lichen tissue metal concentrations. Monitoring will be aligned with and occur concurrently with dustfall monitoring conducted as part of the Air Quality Monitoring and Management Plan (AQMMP) and in close association with Permanent Monitoring Plot locations.

Sample plot locations have not been finalized; however, they are expected to occur along a distance gradient from the project footprint and consider dominant wind direction and local site conditions. The proposed distance gradient is 0 m and 150 metres for the MLA and 0 m, 150 m, 500 m, 5 km, and 10 to 20 km for the Goose Project Area.

It is unclear how many plots will be established along these distance gradients and whether the number and location of dustfall monitoring plots will be sufficient to properly evaluate dustfall effects outside the Project Development Area at the Goose Project Area and MLA sites, and along the WIR. Lichen tissue sampling locations associated with the WIR have not been specified or could not be located in the documents provided.

Detailed Review Comment

Fugitive dust from roads, mines, and other sources has been shown to have some of the most damaging effects on vegetation communities in northern arctic ecosystems (Farmer, 1993). Direct and indirect impacts to vegetation communities extend well beyond the construction period and can have estimated recovery times of centuries to millennia (Chapin & Shaver, 1985; Forbes et al, 2001).

Demonstrated effects of dust include alterations to vegetation communities due to changing pH. This often leads to an increased amount of graminoids, which can outcompete sphagnum, mosses, shrubs, lichens, and forbs. Loss of sphagnum is of particular importance as it is considered a keystone species in arctic ecosystems

(Myers-Smith et al., 2006) due to its acidifying and insulating qualities. Road dust may also contain significant concentrations of metals (Santelmann & Gorham, 1988). Lichens are sensitive to heavy metals and sulfur dioxide, which can be introduced through dust and other emissions (Myers-Smith et al., 2006).

Dust is expected to have significant impacts regardless of road location (Leadley et al, 1996). Factors which influence the distance dust will travel include traffic, gravel properties, size and amount of dust particles, moisture content, use of dust suppressants, and wind direction (Everett, 1980). Dust impacts have been shown to increase over time, with significant changes in vegetation communities observed beyond 100 metres from roadside (Myers-Smith et al, 2006). Dust effects have been measured 200 metres (Santelmann and Gorham, 1988) to over a kilometre away from roadside (Everett, 1980). Dust effects (e.g., vegetation alteration) have been modeled to occur up to 600 metres away on the Dalton Highway, dependent on road location

(Leadley et al., 1996). Another study on road dust observed that Lakes within 1 km of the Dempster Highway generally had higher values for alkalinity, conductivity, TDS, pH, and minerals (Gunter, 2017).

The Air Quality Monitoring and Management Plan indicates that a total of 5 off-site dustfall monitoring stations will be established (3 at Goose Project at 0 m, 150 m, and 10 to 20km, and 2 at the MLA at 0 m and 150 m). The AQMMP does not specify locating dustfall monitoring stations next to/at different distances from the WIR. The locations selected for dustfall monitoring do not allow sampling in the 200

to 1 km range, a zone of influence where fugitive dust impacts on vegetation have been demonstrated. Based on the results of other previous studies, it is likely that some alteration of vegetation communities will occur beyond 150 metres from roadside, particularly in later years of operation and as dust levels accumulate.

Recommendation/Request:

The KIA requests/recommends the following:

- Please add off-site dustfall monitoring stations (as part of the AQMMP) at the Goose Project and MLA sites to measure dustfall at ranges between 200 metres and 1 km, to better assess potential fugitive dustfall effects on vegetation communities.
- Please ensure lichen tissue sampling locations correlate to distances for known dustfall effects (i.e., beyond 1 km) at both the Goose Project Area and MLA project sites.
- Please establish lichen tissue sampling locations (and dustfall traps) at appropriate distances from the WIR.

Sabina Response:

Per the AQMMP, a distant baseline monitoring location 10 km to 20 km distance from the Goose Property will be deployed. The station will include passive NO₂ sampling and dustfall sampling, plus a duplicate of each sample, and will correspond to a lichen sampling location. Given that dustfall monitoring stations have not yet been established, their chosen locations will be correlated with lichen tissue sampling sites. The WIR is only in operation during the winter months (on snow/ice) and will not produce dust - therefore no dustfall monitoring along the WIR is required.

2.2 RESPONSE TO CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA

CIRNAC-#1: Project Certificate (PC) Term and Condition (T&C) #8: Weather Monitoring and Adaptive Management

References:

- 2019 Annual Report, Page 4-18
- 2020 Annual Report, Page 4-17
- Responses to 2018 Annual Report Comments, July 19, 2020 Responses to 2019 Annual Report Comments, June 19, 2020

Summary:

n/a

Detailed Review Comment

T&C #8 requires Sabina to “...provide a summary report of meteorological conditions experienced within the project area...” during all project phases (Pre-construction, Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure).

During the review of the 2018 Annual Report for Back River, CIRNAC recommended that Sabina provide justification for not providing a summary report of the meteorological conditions experienced within the project area during pre-construction or alternatively, provide summary results and analysis of pre-construction meteorological conditions within the project area in subsequent annual reports. In response, Sabina stated that “In 2018, Sabina was undertaking on-site field inspections of existing monitoring equipment to assess its health and ensure its proper working order. With the completion of Atmospheric baseline data collection related to the Back River Project Environmental Assessment, meteorological stations on-site received minimal service. While servicing of the Project’s meteorological stations is ongoing, Sabina will provide any available summary results and analysis of the 2019 meteorological conditions in the 2019 Annual Report”.

The 2019 Annual Report provided for review did not contain any summary report of meteorological conditions nor justification for not providing this information. CIRNAC’s 2019 Annual Report review comments also recommended that Sabina provide justification for not providing a summary report of the meteorological conditions experienced within the project area during the pre-construction phase. In response to CIRNAC’s 2019 Annual Report comments, Sabina stated “Due to site logistics, meteorological station data were not available at the time of the report. The George and Goose meteorological stations have since been accessed and a summary of the meteorological conditions is presented below. Sabina continues to review the station conditions and is planning to perform scheduled routine maintenance in 2020.

The available data range was from 13 June to 9 September 2014 for the George Station, and 28 April 2017 to 1 June 2019 for the Goose Station.

Averages in the graphs refer to the average hourly data over the monthly time periods presented. “

As cited above, in response to CIRNAC’s comments on its 2019 Annual Report for George station meteorological data, Sabina provided data only for three months for 2014 and no other data were

provided in its 2020 Annual Report. Sabina has not provided any explanation as to why they did not provide data for the George station for the period from September 2014 to present nor did they indicate if they will continue to collect and report data, for the George station, in the future Annual reports.

Recommendation/Request:

CIRNAC recommends that Sabina clarify why they did not provide meteorological data for the George station for the period from September 2014 to present. In addition, Sabina should confirm if they will continue to collect, and report meteorological data from the George station in future annual reports.

Sabina Response:

The George Project Area was removed from the Back River Project EIS when progressing from the DEIS to the FEIS during the NIRB Process, and is therefore not represented under the Back River Project NIRB Project Certificate No. 007.

CIRNAC-#2: PC T&C # 94: Fuel Transportation

References:

- 2019 Annual Report, Page 4-142
- 2020 Annual Report, Page 4-151
- Responses to 2019 Annual Report Comments, June 19, 2020

Summary:

Detailed Review Comment

T&C #94 requires Sabina to submit in its annual report, a summary of results of the applicable maintenance schedules and summary of inspections throughout all project phases.

The 2018 and 2019 Annual Reports did not contain any maintenance schedules or inspection results. During our review of the 2018 Annual Report, CIRNAC requested that Sabina provide a rationale for not providing this information in the 2018 Annual Report. In response, Sabina indicated that there were no fuel trucks operating at the project site in 2018; hence no maintenance schedule or summary inspection data was provided.

In the 2019 Annual Report Sabina did not provide summary maintenance schedules or inspection data and did not indicate if there were fuel trucks or other vehicles in operation at the Back River project site in 2019. Instead, they stated that “a summary of the results of the applicable maintenance schedules and a summary of inspections shall be included in Sabina’s 2020 Annual Report to the Nunavut Impact Review Board”, without providing any rationale why the information could not be provided in the 2019 Annual Report.

In review of Sabina’s 2019 Annual Report CIRNAC recommended that Sabina provide a rationale for not providing summary results of the applicable maintenance schedules and summary of inspections in the 2019 Annual Report.

In response to CIRNAC review comments to 2019 Annual Report, Sabina stated “Sabina acknowledges that there were fuel trucks active during the 2019 field season; however, while maintenance was appropriately completed on the mobile equipment fleet, these records are currently located on the Project site and cannot be submitted at this time. Sabina acknowledges that providing this record of work completed is an oversight for the 2019 season and Sabina will provide a summary of all maintenance and inspection data in the following 2020 Annual Report.”

In the 2020 Annual Report, in the “Methods” section, Sabina stated that “Sabina ensures all fuel trucks meet industry design standards and receive regularly scheduled maintenance of fuel lines, nozzles, and dust caps. Fuel trucks are not mobilized to the Back River Project without a thorough mechanical investigation, as well as review of the equipment’s documentation by the Project’s mechanics. “, and in the “Next Steps” section, it indicated that “Maintenance schedules and a summary of inspections are kept on site and they have not been scanned. Sabina will endeavour to scan and incorporate inspection records in Sabina’s 2021 annual report to the Nunavut Impact Review Board. “

CIRNAC notes that Sabina has failed to meet the requirements of T&C # 94 since 2018 despite repeated requests from the department.

Recommendation/Request:

CIRNAC recommends that Sabina provide a rationale for not providing summary results of the applicable maintenance schedules and summary of inspections in the 2020 Annual Report as required. Furthermore, CIRNAC recommends that Sabina complies with T&C # 94 by providing summary of results of the applicable maintenance schedules and summary of inspections for the period spanning 2018 to 2020.

Sabina Response:

Project Certificate Term and Condition (T&C) 94 states that “The Proponent shall ensure fuel trucks meet industry design standards and receive regularly scheduled maintenance of fuel lines, nozzles and dust caps” and that “A summary of the results of the applicable maintenance schedules and a summary of inspections shall be included in the Proponent’s annual report to the Nunavut Impact Review Board.” Sabina explained in the 2020 Annual Report that a summary of fuel lines, nozzles and dust cap maintenance and inspection was not included as the materials were only available in hardcopy on site, which was seasonally closed. Sabina will ensure that these records are available for 2021 reporting and will also include information for previous years in the 2021 Annual Report to the NIRB, as requested by CIRNAC.

CIRNAC-#3: PC T&C # 85: Cross-cultural Awareness

References:

2020 Annual Report, Page 4-140

Summary:

Detailed Review Comment

Pursuant to T&C #85: “The Proponent is encouraged to work with the Kitikmeot Inuit Association to establish cross-cultural training initiatives which promote respect and consideration for the importance of Inuit Qaujimajatuqangit to the Inuit identity and to make this training available to Project employees and on-site sub-contractors. The Proponent should actively monitor the implementation of these initiatives, including the following items:

- a. Descriptions of the goals of each program offered;
- b. Language of instruction;
- c. Schedules and location(s) of when each program was offered;
- d. Uptake by employees and/or family members where relevant, noting Inuit and non-Inuit participation rates; and
- e. Completion rates for enrolled participants, noting Inuit and non-Inuit participation rates.”

The 2020 Annual Report submission states that cross-cultural training has been provided to select staff in the past and a revised training program has not yet been finalized with the Kitikmeot Inuit Association. No details are provided on any relevant training initiatives delivered during the year.

CIRNAC understands that the objective of this T&C is to eliminate cultural barriers and promote the importance of Inuit Qaujimajatuqangit to allow for a healthy workplace for all employees. Furthermore, the T&C applies to all project phases, including pre-construction.

Recommendation/Request:

CIRNAC recommends that Sabina work toward implementing cross-cultural training initiatives for employees and contractors on a consistent basis throughout all of its project phases.

Sabina Response:

Sabina acknowledges Term and Condition No. 85 requests the Company work with KIA to establish cross-cultural training initiatives which promote respect and consideration for the importance of Inuit Qaujimajatuqangit (IQ) to the Inuit identity and to make this training available to Project employees and on-site sub-contractors. As described in the Human Resources Plan (Sabina 2018), Sabina may provide a cross-cultural orientation program for employees. Cross-cultural training has been successfully developed and offered to select Project staff in the past, but this training program is currently in need of revision. A revised training program has not yet been developed with KIA.

As discussed with CIRNAC and other members of the Back River Socio-Economic Monitoring Working Group (SEMWG) during its May 21, 2021 video meeting, Sabina intends to advance plans in this area in 2021. Sabina will work with KIA to develop a revised cross-cultural training program. Updates on this topic will be provided in Section 7.1.2 (Hours of Training (by Type) Completed) of future Socio-Economic Monitoring Reports.

CIRNAC-#4: Multi-year Monitoring Data**References:**

Appendix I: 2020 Socio-Economic Monitoring Report

Summary:**Detailed Review Comment**

The 2020 Socio-Economic Monitoring Program Report does not include multi-year monitoring data for certain indicators. This Report would benefit by including prior years monitoring data whenever possible to establish trends and an increased understanding of performance results. Examples of indicators that solely present 2020 monitoring data include:

- Number of Back River Project Employees and Contractors by Origin & Ethnicity (Table 3-2, p. 14).
- Hours of Project Labour Performed in Nunavut (Table 4-1, p. 16).
- Hours of Project Labour Performed in Nunavut, by Ethnicity and Gender (Table 4-2, p. 17).
- Project Business Expenditures by Business Type (Table 5-1, p. 25).
- Employee Payroll Amounts (Table 6-1, p. 27).
- Hours of Training (by Type) Completed (Table 7-2, p. 31).

CIRNAC recognizes that the 2020 monitoring data for certain indicators is substantially different from prior years due to the implementation of measures to prevent the spread of COVID-19 in Nunavut. This variance should be explained in the discussion and analysis portion of future Annual Report submissions.

Recommendation/Request:

CIRNAC recommends that Sabina include multiple years of monitoring data in future Socio-Economic Monitoring Program Report submissions. This would allow for an improved understanding of possible trends and performance results.

Sabina Response:

Sabina intends to present multiple years of monitoring data for relevant indicators in future Socio-Economic Monitoring Reports, and to discuss related trends and performance results. In some cases, Sabina has already begun doing this (e.g. with available data from the Nunavut Bureau of Statistics). In other cases, multiple years of Project data are only now becoming available and/or trends remain unclear. As the 2020 Socio-Economic Monitoring Report is only the third annual report prepared by Sabina, and because the Project has not yet started construction and begun engaging a larger workforce, many Project trends will take time to develop and decipher. Sabina will begin presenting multiple years of monitoring data for additional indicators beginning in its 2021 report (e.g. through tables, charts, or figures). Sabina intends to continue refining its socio-economic monitoring and reporting program as the Project advances into operations.

2.3 RESPONSE TO GOVERNMENT OF NUNAVUT

GN-#01: Adaptive Management within Roads Management Plan

References:

- Air Quality Monitoring and Management Plan [July 2019] (Sabina)
- Road Management Plan [March 2021] (Sabina)
- Back River Project Annual Report [March 2021] (Sabina)
- Dust Management Protocol for the Mary River Project Roads [July 2013] (Baffinland Iron Mines Corp. - BIMC) as a portion of the Air Quality and Noise Abatement Management Plan [March 2020] (BIMC)

Summary:

The Road Management Plan (RMP) acknowledges that fugitive dust from all-weather access roads will be an issue (RMP S. 6.1.2) but does not identify clear guidance on the use of dust suppressants or other mitigative measures. Additionally, the RMP appears to rely heavily on adaptive management, stating that mitigation measures would be initiated “when excess dust is observed” (RMP S.7). What constitutes “excess dust”? The Air Quality Monitoring and Management Plan (AQMMP) describes adaptive management responding to “unusual amounts of dust generated along roadways, airstrip, or crushing activities” (AQMMP S.8). There is no additional detail or definition for “unusual amounts of dust”. Additional clarity and guidance on identifying fugitive dust and appropriate action are needed within one or more of the plans (e.g., RMP, AQMMP, etc.) that address the impacts of dust.

Detailed Review Comment

The dust monitoring plan is intended to address long-term, project-level dust impacts. It is not intended to manage short-term, local-scale fugitive dust issues. Per NIRB PC #007 T&C 3, the Proponent is required to include a description of the frequency and timing of dust suppressant application [3(b)], as well as outline specific adaptive management measures [3(d)] to deal with dust deposition. The current AQMMP and RMP do not provide detail or guidance on the thresholds or amounts of dust that would initiate adaptive management.

Recommendation/Request:

The GN makes the following recommendations:

- The GN recommends that the Proponent revise the relevant plan(s) (e.g., RMP, AQMMP, etc.) to offer site staff supportive guidance to implement adaptive management measures to reduce overall fugitive dust. Existing industry practices could be used to initiate adaptive management action, and recognized as a trigger for dust suppression efforts, for example, “As a guideline, dust that is visibly being carried as a cloud off the roadway should be considered significant” (BIMC 2013).
- The GN recommends the Proponent investigate the use of simple, visual assessments and/or measurements taken the field, such as length of dust train behind a vehicle or time required for a dust cloud to dissipate, for establishing clear, thresholds for adaptive management.

Sabina Response:

Similar to other Nunavut roads, the Back River Project’s all weather roads are unpaved and generate dust with use. Sabina applies water as dust suppression between snowmelt and freeze-up (typically July - October) on an as-needed basis based on site observations. However, Sabina filed notification on July 6, 2021 with the KIA, NIRB, and the GN of intent to utilize the following approved dust suppressants in Section 3.2 of the attached Environmental Guideline for Dust Suppression on Unpaved Roads (Nunavut Department of Environment, 2014): EK35 and Dust Stop. EK35 will be utilized to minimize dust at Sabina’s

Back River Project all-weather airstrips and Dust Stop will be utilized around the Project site with a focus on the exploration decline. These products will help ensure dust is more consistently minimized.

As suggested by the GN, Sabina will also investigate simple visual assessment guidelines/measurements for determining when additional dust suppression should be applied. Appropriate guidance will be included in the relevant plan(s) to guide to staff on when dust suppressant should be adaptively applied. Any updates to Project plans will be submitted with the annual report.

GN-#02: Vegetation Monitoring

References:

- Back River Vegetation Monitoring Plan [January 2020] (Sabina)
- Back River 2019 Vegetation Monitoring Program (Golder 2020).

Summary:

An Annual Vegetation Monitoring Summary Report is required as part of the Proponent's Vegetation Monitoring Plan reporting (S.8) and is to be submitted with the Annual Report; this report was not provided.

There also appear to be discrepancies in the total number of plots listed in the Vegetation Monitoring Plan (Table 5.2-1).

Detailed Review Comment

Section 8 of the Vegetation Monitoring Plan provides that:

“An annual Vegetation Monitoring Summary Report for the Mine will be completed and submitted with the annual report to the NIRB. This report will summarize the footprint change and photographic monitoring results, as well as the results of any vegetation sampling conducted that year. The purpose of the report will be to identify and communicate natural variation and potential mine-related changes in vegetation populations and health.”

This Annual Vegetation Monitoring Summary Report should collate the various vegetation monitoring results. It should also clearly indicate what monitoring activity was completed in the reported year. Using 2020 as an example, ecosystem/vegetation losses associated with the footprint were recorded and provided in the annual report. Similarly, no winter ice road (WIR) was constructed in 2020, so WIR vegetation plots were not evaluated pursuant to the Vegetation Monitoring Plan. This is valuable information that should be provided within the Annual Vegetation Monitoring Summary Report.

While specifically excluded from the Vegetation Monitoring Plan, WIR plot data collected for years where the WIR is not constructed would allow for year over year comparisons and would offer the potential to assess rates of recovery for damaged areas within the different disturbance classifications described within the Sabina 2019 Vegetation Monitoring Program (Golder 2020).

The total number of sites presented in Table 5.2-1 Vegetation Monitoring Plot Location Summary of the 2020 Vegetation Monitoring Plan appears to be in error, with the total number of sites at the Goose and Marine Laydown Area (MLA) sites being 37, instead of the 45 indicated. Furthermore, 23 (62%) of these plots are proposed, with no stated timeline for their establishment. Clear timelines for implementation of any monitoring program expansion should be provided within the vegetation monitoring plan and/or annual summary report.

The plot location summary table should also include the total number of WIR sites, some of which are counted as Goose Project sites. The 2019 vegetation report states there are 46 WIR sites, and 10 sites (5 each) at the Goose and MLA project areas, for a total of 56 sites (Golder 2020).

As of 2020, this has not changed; there are 5 existing sites at each of the Goose and MLA project areas, and 46 WIR sites. None of the 56 existing vegetation sites were evaluated in 2020. This should be clearly indicated within the Annual Vegetation Monitoring Summary Report.

Recommendation/Request:

The GN makes the following recommendations:

- The Proponent should draft an Annual Vegetation Monitoring Summary Report for each Project year. The Proponent should ensure that each report should include the following:
 - o The basic photographic monitoring of the WIR should be included for all years, including those where no WIR is constructed. This additional data creates a continuous data set, supports year-over-

year comparison, and allows for assessment of regrowth and recovery of damaged vegetation along the WIR.

o That the summary tables of the Vegetation Monitoring Plan and the Annual Vegetation Monitoring Summary Report clearly indicate the number of active monitoring sites, differentiating from planned or proposed sites, which should have anticipated implementation dates.

Sabina Response:

A vegetation field program is currently (July 2021) underway to establish monitoring plots in locations proposed in the Vegetation Monitoring Plan. The Annual Vegetation Monitoring Summary Report will clearly indicate the number of active plots, associated development, distance from PDA, and year sampled.

GN-#03: Waste Management Plan, Incineration Management Plan

References:

- 2020 Pre-Construction Wildlife Mitigation and Monitoring Plan (WMMP) Report [March 2021] (ERM)
- Back River Waste Management Standard Operating Procedures [March 2021] (ERM)
- NIRB 2020 Annual Monitoring Report Back River Gold Mine Project [December 2020] (NIRB)
- Incineration Management Plan [July 2019] (Sabina)
- Back River Project Landfill & Waste Management Plan [October 2019] (Sabina)
- Ekati Waste Management Plan [Dec. 2017] (Dominion Diamond Mines)
- Mary River Waste Management Plan [Mar. 2014] (Baffinland Iron Mines)

Summary:

Relatively little guidance has been provided in Project waste management resources in describing how wildlife attractants are managed from the point of collection through handling to eventual incineration.

To date, problem interactions with wildlife resulting from attractants has not been an issue. This is attributable to Sabina's management practices but likely also to the intermittent site occupation and relatively small number of staff on site. As the project grows, site staff and waste managers will need more explicit guidance and planning to manage the waste stream.

Detailed Review Comment

Segregation at the source is an important part of waste management. The Project's Waste Management SOP directs staff to place any and all waste into "the appropriate waste bin" with no reference to how waste is segregated at the point of collection (i.e., the bins). A description of waste segregation should be provided within the SOP and should be specific to the location (e.g., kitchen/mess hall, maintenance garage, domestic buildings, etc.), as there are different types of waste generated in each location.

S.7 of the Waste Management SOP describes three waste disposal methods (incineration, on-site landfill, and off-site shipping), but it is not clear if waste generators (i.e., site staff) are provided with these same options for waste segregation at the point of collection (i.e., the bins). Collection and storage efforts (timing, frequency, etc.) lack detail, particularly regarding wildlife attractants. Descriptions of different waste management segregation options and protocols (diagrams and flow charts are useful options) should be included in the Waste Management SOP, as is common practice in the industry (Dominion Diamonds 2017).

The current SOP alternatively states daily collection and incineration (S.6, WMMP Report), and "as often as necessary to maintain minimal waste inventory (S.7.1.1 WMMP Report), with no additional detail on where or how waste inventory should be stored, other than in bear-proof containers. Standard industry practice should be applied here, with waste being collected and incinerated daily, or securely stored in bear-proof containers away from the camp kitchen (BIMC 2014).

Personnel on site fluctuate substantially throughout the year (e.g., Goose Camp occupancy was 18 personnel in June, 87 in September, with an occupancy average of 55 personnel (table 5.6-1 Average Number of On-site Personnel in 2020, WMMP Report). The amount of waste generated by these personnel will also fluctuate substantially. The GN recognizes that wildlife attractants have not yet

proven to be a problem, however the number of staff-days on site will increase and so will the generation of food waste and other attractants.

Comments from the 2020 NIRB Monitoring Report (NIRB 2020) indicate that Sabina made changes to the Incineration Management Plan (IMP) (200403-12MN036-App I-Incineration Mgmt. Plan-IMTE.pdf) to address inconsistencies noted by the KIA. The revised IMP does not appear to have been included in the Sabina 2020 Annual Report, nor uploaded to the NIRB Public Registry.

Recommendation/Request:

The GN makes the following recommendations:

- The Proponent should provide additional information about available waste stream sorting and protocols in the Waste Management SOP, and additional information and/or guidance should be provided within the Incineration Management Plan about minimum, maximum, and optimal loads for the incinerator, and how waste, specifically food wastes and other attractants, should be stored and collected to facilitate incinerator operations.
- The most recent Incineration Management Plan should be included with Annual Reports, with updates to highlight changes and new waste management equipment.

Sabina Response:

Sabina confirms that all waste which is a potential wildlife attractant is securely stored in a manner to prevent wildlife access at the Back River Project at all times and is incinerated daily, or transported off site to a licenced waste disposal facility.

Sabina will review the Back River Incineration Management Plan, Landfill & Waste Management Plan and Waste Management Standard Operating Procedures and ensure waste segregation and storage practices are clearly outlined. Any updates will be filed with the submission of the annual report.

Sabina's incinerator operation practices align with the manufacturers operating manuals which are provided in Annex A and B of the Incinerator Management Plan (ICM). These manuals state that "incinerator capacity is dependant on waste composition" and goes on to describe the various factors to be considered in the determination of appropriate batch size given batch composition. Sabina's incinerator operators will be trained to conduct this assessment. Initial incinerator operator training will be provided by a qualified technician during incinerator commissioning, as stated in the IMP. Any updates to this plan will be provided annually with the annual report as requested by the GN.

GN-#04: Camp Waste Management

References:

- 2020 Pre-Construction Wildlife Mitigation and Monitoring Plan (WMMP) Report [March 2021] (ERM)
- Back River Waste Management Standard Operating Procedures [March 2021] (ERM)
- Back River 2018 Annual Report [April 2019] (Sabina) - Caribou Protection Measures
- “March 10 Meadowbank fire cost \$18M in damages: Agnico-Eagle” Nunatsiaq News, April 5, 2011.

Summary:

The expanded kitchen building (as photographed and included in the Annual Report) does not have building skirting as described in the Pre-Construction WMMP Report as a design feature to exclude wildlife.

Photos included in the Pre-construction WMMP Report do offer a good reference for the camp layout and general appearance but don't provide sufficient detail of waste management practices or how wildlife attractants are contained.

Detailed Review Comment

Skirting around buildings is common practice and described as a design mitigation in the WMMP report (S.5.5.1-Mitigation for Attractants), as well as within the Waste Management SOP (S.3.2-Buildings and Facilities) and presented in a diagram showing the requirement in the 2018 Annual Report - Caribou Protection Measures - Wildlife-Proofing Buildings (pg. 376/578).

An example from another Nunavut mine provides important information for the reviewer analysis. Incomplete skirting around a camp kitchen at Agnico Eagle Mine's Meadowbank Mine allowed access under the structure to a wolverine, which contributed to a subsequent fire resulting in an estimated \$18M in costs to the project in 2011 (Nunatsiaq 2011). Excluding wildlife from attractants and camp structures is important for the safety of site personnel and infrastructure, as well as local wildlife VECs.

The GN recognizes Sabina's efforts to maintain a clean camp and manage waste appropriately and generally supports the conclusion that these efforts were successful in minimizing attractants as wildlife interactions were not an issue in 2020. The photos provided in the Annual Report as evidence of this, however, do not illustrate the management of attractants or consistent application of building design intended to exclude wildlife.

Recommendation/Request:

The GN makes the following recommendations:

- The Proponent should Add and/or repair the skirting on all camp structures as a means to exclude wildlife.
- The Proponent document steps taken to manage camp waste and other wildlife attractants and include these in subsequent annual reports.

Sabina Response:

Sabina recognizes that camp buildings in the Arctic can use two methods to exclude wildlife from under buildings. The first is typically used for exploration camps and smaller buildings and involves constructing the building close to the ground and use skirting to exclude wildlife from the crawl-space under the building. This is the method used on most Project buildings to date, including the kitchen building.

The second method is typically used on large buildings and positions the buildings higher off the ground and has a hard bottom on the building. This separation from the tundra allows the wind to blow under the building and protects the permafrost from the heat of the larger buildings. Wildlife are excluded by the hard bottom on the building. This is the construction method used at the recently constructed Meliadine mine, where the primary camp buildings are separated from the tundra by approximately 1.5 to 2 m.

As Sabina proceeds to develop the Back River Project, it will consider which method of construction is the best fit the Project stage, size of the building and likely lifetime of the building. Should the building be built relatively close to the ground with a crawl space underneath, skirting will be used.

GN-#05: Caribou Observations

References:

2020 Pre-Construction Wildlife Mitigation and Monitoring Plan (WMMP) Report [March 2021] (ERM)

Summary:

The Proponent states that no caribou were observed during the calving season in 2020. However, there were no staff at the site during the calving season to make observations. The absence of data for this period is being compared to actual observations made during the 2018 and 2019 calving seasons.

The report uses the high numbers of migrating caribou observed in a single year (spring migration 2019) as confirmation “that the Project does not overlap with the calving grounds” in 2020. There are insufficient data to support this statement.

The report goes on to state that over the 2018-2020 period, “winter and summer are the only two seasons when caribou are consistently observed near the project”. This cannot be verified when there are no operations and site-based observations for 5-6 months of the year.

Infrequent, incidental observations are presented in the report to support statements about caribou range use that can only be validated by a robust research and monitoring program that has yet to be developed and implemented at the site.

Detailed Review Comment

In 2020, Sabina reported that staff were on site from Mar 5-20 (16 days), then June 30 to Dec. 14 (168 days), for a total of 184 operating days (WMMP Report, Table 5.6-1). As a result, no staff were at the site during the Spring Migration period (April 15 - June 4), however, a caribou observation (2 animals) was made during this time, on May 8, 2020. The location, distance from camp, and name of observer were not recorded, but the comment of “1 baby” is included in the observation (WMMP Report, Appendix 4A). This may be a data entry error but clarification from the Proponent is needed to explain this observation.

The report makes a comparison between the large number of observations (13,310) during the 2019 spring migration period and the same period in 2020 when no staff were at the site to make similar observations. Such a comparison cannot be made in the absence of data.

No staff were at the site during the calving period (June 5 - June 15) and, as would be expected, there are no caribou observations reported. However, this does not mean that there were no caribou at or near the site during the calving period and this should not be interpreted as such.

The absence of observations during the spring migration and calving periods, when no staff are at the site to make observations, cannot be used to substantiate the statement that the Project does not overlap with caribou calving grounds. The calving areas, as currently understood, are outside the project development area. A robust, multi-year research and monitoring program in combination with GN and GNWT collar data would be required to redefine the calving area or a shift thereof.

Statements in the report, such as “winter and summer are the only two seasons when caribou are consistently observed near the project”, are not supported by data and cannot be made when observers are not consistently at the site. There were no staff at the main project site (Goose Camp) for 6 months in 2020, and similarly, there were no staff at the main project site for 5 months in 2019; site occupancy data were not provided in the 2018 Annual Report. As with the calving areas, a robust, multi-year research and monitoring program in combination with GN and GNWT collar data would be required to validate statements about caribou range use.

While incidental wildlife observations made by site staff are useful, these observations are incidental, and not part of a dedicated caribou range use study. This opportunistic data collection is dependent on the number of staff on site, their location, total time spent there, and activity, among other variables, and these data are not intended to record caribou range use. Such observations are not part of a deliberate study effort or design and do not have the consistency or statistical power to support

conclusions about caribou range use. Using these incidental observations to make or justify statements about seasonal caribou range use is inappropriate.

Recommendation/Request:

The GN makes the following recommendations:

- That the Proponent amend the Report to describe an absence of observations resulting from no observers being present as no data being collected and not misrepresented as an absence of observations during a period when observers were present and active (i.e., negative data).
- That the Proponent provide clarification regarding the caribou observation made on May 8, during a time when Sabina reported that no staff were at the site.

Sabina Response:

In future years, Sabina will list the periods when personnel are on site and off site more clearly as part of the incidental observation reporting. In addition, the caribou observation made on May 8 was in fact observed on August 5, and this was an error in transcription of the date. This will be corrected and updated in the WMMP Report.

In addition to incidental observations, Sabina tracks caribou distribution through a data sharing agreement with the GNWT, which has collars on a variety of herds, including the Bluenose, Bathurst and Beverly (or Beverly/Ahiak) caribou. Sabina received daily updates to positions during key periods of the year (spring migration, calving, post calving) and weekly maps during the rest of the year. These data indicate that female caribou were on their historic calving grounds, outside of the Project area during the calving period. Unfortunately, per the data sharing agreement, these maps can not be shared publicly.

GN-#06: Aircraft Use and Inconsistent Guidance

References:

- 2020 Pre-Construction Wildlife Mitigation and Monitoring Plan (WMMP) Report [March 2021] (ERM)
- Fixed-Wing and Helicopter Operations SOP [Aug. 2020] (ERM)
- NIRB Project Certificate #005 (Mary River Project) [May 2014](NIRB)

Summary:

There is inconsistency in the approach to aircraft separation from wildlife as described in the Fixed-Wing and Helicopter Operations Standard Operating Procedures (SOP).

The Sabina Fixed-wing and Helicopter SOP recommends 300m for carnivores and muskox, and 610m for caribou, and alternately 300m (SOP S.3.2), 610m, and 650m (Helicopter Operations Guidance and Wildlife Log, pg. 4) for raptors. This inconsistency will likely lead to poor compliance and increased disturbance to wildlife around the site. The standard minimum operational altitude for aircraft often included in NIRB Project Certificates is 610m above ground level (AGL) for all wildlife.

The Helicopter and Fixed-Wing Operations Guidance and Wildlife Log documents require consistency in minimum operational altitude to simplify and clarify direction to pilots.

Pilot observation data sheets lack a direction of travel field for observed wildlife, which is valuable information for the adaptive management and rapid operational shutdown protocols.

Detailed Review Comment

The stated guidance for helicopter flight altitudes within the Wildlife Mitigation and Monitoring Plan Report is that for most VECs pilots should maintain 300m vertical distance, and 610m for caribou. Elsewhere in the document both 300m and 650m vertical separation is used for raptors (written in the Fixed-Wing and Helicopter SOP text S. 3.2, and in Fig. 1, respectively). Additionally, these distances are not clearly described as minimums, with guidance stating that these distances should be maintained.

It's not clear why the vertical separation for helicopters is set at 300m for carnivores and muskox and no justification for this value is provided. The NIRB typically recommends 610m as the minimum altitude for reducing disturbance to wildlife during typical point-to-point travel and has been included as a term and condition of NIRB project certificates (e.g., NIRB 2014 - T&C 59). As a way of standardizing the approach for aircraft use, 610m AGL should be considered the minimum cruising altitude for flights, generally. As is the currently the case, this is a general guideline with exceptions for specific operational purposes, (e.g., takeoffs and landings, slinging loads, drill moves, weather) and pilot discretion to maintain human and aircraft safety.

The aviation SOPs also include guidance for operations near sensitive wildlife and/or habitat features. Most of these can be avoided by flying at the recommended minimum of 610m AGL. Where there are issues of maintaining specified horizontal separation, the Proponent has provided a map of features for pilots to avoid.

For high traffic areas, developing flight corridors which avoid known sensitive habitat features is possibly a more useful tool for pilots, as corridors (i.e., flight paths) can be incorporated into flight navigation systems in the aircraft. These corridors can be updated or modified based on the season and periods when sensitive habitat features are in use or not.

For low traffic areas where specific features need to be avoided, adding buffers that reflect the recommended horizontal separation and collecting these features into a file that can be loaded onto flight navigation systems is much more supportive of compliance efforts to avoid sensitive habitat features and disturbance to wildlife.

The Proponent describes project shutdowns as “unlikely because the project is outside of the calving and post-calving ranges of caribou herds”, despite rapid operational shutdowns occurring twice in 2020, with scheduled cargo flights cancelled on July 30, and all site-based aircraft being grounded on Aug. 2. Recognizing that these shutdowns occurred outside of the calving season, no staff were on site in 2020 during the calving season. Guidance to pilots in these documents should be revised to simply state that short-term project shutdowns may occur throughout the year to minimize the impacts of the project on caribou herds moving through the project area.

The Pilot Incidental Wildlife Observation Datasheet should include a specific field for direction of travel for observed wildlife. Pilots often have the best vantage point for wildlife approaching the site and this advance notice is valuable for site managers charged with mitigation responses.

Recommendation/Request:

The GN makes the following recommendations:

- That the Proponent implement 610m AGL as the minimum altitude for general operations and typical point-to-point flights for all aircraft. The SOPs developed to guide pilots should be updated to reflect this guidance.
- The Proponent should develop flight corridors that avoid known sensitive habitat features should be developed and loaded onto flight navigation systems. Known sensitive habitat features outside these corridors should be mapped with the appropriate buffer and loaded to flight navigation systems to support and simplify pilot compliance during flights outside the typical flight corridors.
- The Pilot Incidental Wildlife Observation Datasheet should be amended to include a ‘direction of travel’ field which would provide valuable information to site managers about wildlife approaching the site.

Sabina Response:

Sabina understands the importance of proper management of helicopter operations to manage potential disturbance to caribou. Helicopters are on site to conduct a variety of activities, including moving exploration drills, moving exploration and environment staff in the field, and moving equipment and personnel between camp infrastructure (e.g., the Goose site and the Marine Laydown Area). As such, Sabina has guidance for aircraft pilots to avoid caribou when observed during flight and has a program of shutting down helicopter operations when large groups of caribou are observed near site.

There are guidelines for operation of helicopters, which do include a minimum elevation of 610 m (2,000 ft), but these are specific to sensitive areas (mineral licks and calving grounds) during sensitive periods when these features are being used. A general prohibition on flying below 610 m is not feasible due to the duties required by helicopters (e.g., moving a drill 500 m across the tundra requires multiple shuttle flights). These flights can not be expected to fly up to 610 m vertically to transit 500 m horizontally. Sabina already has a robust mitigation program in place for helicopters which allows for practical use of helicopters when caribou are not present close by. This approach balances the operations of the project with providing protection for caribou. Sabina will not be implementing a general prohibition on flying below 610 m.

Sensitive features such as raptor nests and lakes used by waterfowl as migratory staging sites are already provided to pilots on maps and adding flight corridors are not required. No sensitive locations for caribou have been identified in the Project area. The calving grounds for caribou are outside of the Project area, no mineral licks have been identified, and the only identified water crossing is ~20 km south of Goose and outside of the area. Therefore, the addition of flight corridors will not add value to pilots, as they are already instructed to avoid particular areas provided on the maps.

Direction of travel is reported incidentally by pilots, but can be added to the Wildlife Observation Datasheet.

GN-#07: Frequency of Helicopter Flights Below 610m

References:

- 2020 Pre-Construction Wildlife Mitigation and Monitoring Plan (WMMP) Report [March 2021] (ERM)
- Fixed-Wing and Helicopter Operations SOP [Aug. 2020] (ERM)

Summary:

The information provided in the Wildlife Mitigation and Monitoring Plan (WMMP) Report Figure 5.1-1 “Frequency of Helicopter Flights Below 610m, July to September 2020” has limited utility as presented.

The Fixed-Wing and Helicopter Operations Standard Operating Procedures (SOP) indicates that many flights will occur below 610m above ground level (AGL), as vertical separation for most wildlife species is 300m AGL.

It is not clear from the figure how many flights outside the Potential Development Area (PDA) occurred below 610m nor why they occurred. Supporting text in WMMP Report S.5.1 states that most flights were related to drill moves and shuttle flights. It is understood that sling loads and drill moves would be below the 610m AGL minimum, but it is not clear why shuttle flights would be conducted below the recommended minimum altitude. The standard minimum operational altitude for aircraft often included in NIRB Project Certificates is 610m AGL for all wildlife.

Detailed Review Comment

The intent of the 610m AGL minimum is to reduce the impacts of aircraft use on local wildlife. The purpose of Figure 5.1-1 is to visually represent the intensity of flights below the minimum to provide reviewers with an idea of the scale and extent of these flights. The figure shows the general pattern of where low-level flights were conducted, but the quantity and relative intensity of these flights is not clear.

The justification for conducting operations below the recommended minimum altitude is useful information for stakeholders and the Proponent alike. Patterns of use can inform site practices that can further mitigate the potential impacts of these low-level flights. Pilot logs should include supporting justification for conducting flights below the recommended 610m AGL minimum.

Recommendation/Request:

The GN makes the following recommendations:

- Modify the presentation of flights below 610m to better reflect the intensity of activity. Grouping flights into corridors radiating from the Goose Property (as is the pattern in the figure) and assigning colour to bins of intensity (e.g., 1 flight, 2-5 flights, 5-10 flights, 10-15 flights, >15 flights, etc.) would be more useful than the present colour gradient. Creating bins this way also allows the data to be presented in a summary table. Excluding the portion of flight paths below 610m and within the PDA may improve data representation.
- Pilot flight logs should include justification for operations conducted below the recommended minimum 610m AGL (e.g., sling loads) and this information should be included in the Proponent’s annual report.

Sabina Response:

Sabina will consider the GN's suggestions regarding presentation of flights below 610m for future WMMP Reports.

Please refer to the response to GN#06. Sabina has a robust program to manage potential disturbance effects of helicopters on wildlife, including caribou. This includes grounding helicopters when large groups of caribou are present and vertical and horizontal distance buffers between helicopters and animals.

Sabina will not be using a blanket prohibition of flying below 610 m for helicopters for several reasons. 1) Guidance on helicopter use from multiple jurisdictions includes vertical avoidance of "sensitive features" such as mineral licks and calving areas during sensitive periods. No sensitive areas for caribou occur in the Project area as described in the response to GN#06. 2) For the majority of days when helicopters are used each year, there are no caribou present and so there is no purpose to fly higher than required. 3) Many helicopter operations including drill moves and moving exploration and environmental personnel and dropping them in the field includes operating at low elevation to drop and move crews.

GN-#08: Vehicle management

References:

- Back River Project Annual Report [March 2021] (Sabina)
- 2020 Pre-Construction Wildlife Mitigation and Monitoring Plan (WMMP) Report [March 2021] (ERM)

Summary:

The guidance to drivers on actions that should be followed if wildlife are observed on/near project roads does not indicate the distance that drivers should maintain from wildlife, nor stopping distance (Wildlife Mitigation and Monitoring Plan Report, Fig. 5.2-1).

Additionally, the guidance suggests that drivers should be evaluating animal behaviour while driving, specifically if the animal has “intent to cross”.

Detailed Review Comment

The intent of the road guidelines is to reduce the impacts of the road and vehicle traffic on wildlife and improve road safety. Figure 5.2-1 “Management of Vehicles when Wildlife are Observed on or along On-Site Roads” contains some useful guidance and information to vehicle operators for actions following their observation of wildlife on or near the road but remains incomplete.

The existing guideline does not include reference to how far away drivers should remain from wildlife when approaching, stopping, or when continuing at reduced speed, all of which have the potential to become vectors for disturbance to wildlife adjacent to the road.

Aspects of the current guidance for drivers are based on what the animal is doing or intends to do, such as intending to cross the road. Evaluating animal behaviour at some distance away from the road, while driving, takes the driver’s attention away from the act of driving, which has the potential to be unsafe for both vehicle operators and wildlife alike.

Recommendation/Request:

The GN makes the following recommendations:

- The Proponent should modify the road guidance to include a minimum distance(s) to be maintained from the vehicle to wildlife in all directions.
- This guidance should specifically include a minimum distance to maintain when approaching wildlife along the road, for example, slowing to a stop ‘x’ meters away from wildlife when waiting for wildlife to cross the road.
- The Proponent should revise the guidance to indicate that drivers should come to a stop when determining if wildlife have “intent to cross”, or not, as the presence of an approaching vehicle (still moving) takes the driver’s focus away from the road and may prevent an animal from crossing.
- The guidance should be consistent for all wildlife species. This consistent application to all wildlife further reduces impacts of the road and vehicle traffic, and simplifies guidance to vehicle operators, supporting compliance.

Sabina Response:

The objective of driver management is to keep the rules as simple as possible, so that it can be remembered without reference to guidelines or documents. For this reason, Sabina does not agree that including more detail on where to stop improves protection for caribou. However, Sabina can add a

statement to “stop as far back as feasible” to the WMMP Plan and driver guidance the next time that these documents are updated.

GN-#09: Fuel and chemical transport and storage

References:

- NIRB 2020 Annual Monitoring Report Back River Gold Mine Project [December 2020] (NIRB)
- 2020 Pre-Construction Wildlife Mitigation and Monitoring Plan (WMMP) Report [March 2021] (ERM)
- 12MN036-GN Comments re 2019 Annual Report

Summary:

The Proponent has provided insufficient details to justify the self-evaluation of “Partially Compliant” in respect to Project Certificate Term and Condition (T&C) 94 which states that “The Proponent shall ensure fuel trucks meet industry design standards and receive regularly scheduled maintenance of fuel lines, nozzles and dust caps”.

Additionally, the 2020 Annual Report does not describe the volumes or types of fuel stored or transported at any of the various project sites. While included as a response in the 2019-2020 NIRB Annual Monitoring Report for the Project (NIRB 2020), the information on compliance with T&C 94 and quantities of fuel (e.g., diesel, gasoline, aviation fuel, heating oil, etc.) for the 2020 season have not been included in the 2020 Annual Report (Sabina 2021).

The lack of this information prevents the adequate evaluation of this aspect of the Proponent’s Annual Report.

Detailed Review Comment

As was indicated by the GN in its comments on the 2019 Annual Report (GN Comment # 06), appropriate spill contingency planning involves a detailed understanding of the volumes and types of fuels stored and transported at the Project site. The GN asserts that this information is a valuable part of the description of Project activities for the year and supports Project monitoring and evaluation undertaken by stakeholders and regulators. The inclusion of this information would allow for a more complete review of the Annual Report.

In the Proponent’s response in the NIRB Annual Monitoring Report (Fuel Transportation T&C 94, pg. 25), “Sabina acknowledges that providing this record of work completed is an oversight for the 2019 season and Sabina will provide a summary of all maintenance and inspection data in the 2020 Annual Report.” Following this statement, the Proponent also provided data for diesel storage at the site for the 2019-2020 reporting year.

Additionally, as there was no marine resupply or ship-based bulk fuel transfer, the Proponent relied on air transport of fuel for 2020, stating in the Wildlife Mitigation and Monitoring Plan (WMMP) Report, “Bulk fuel transportation and cargo were delivered 3 to 5 times a week via an ATR.” Information about the frequency and quantity of bulk fuel delivery is useful for spill prevention and contingency planning, as the likelihood of a spill increases with the number of times fuel is transferred.

Recommendation/Request:

The GN makes the following recommendations:

- That the Proponent provide a description of its efforts toward compliance with T&C 94 to reach the status of “Partially Compliant” and what steps remain to become fully compliant. This is consistent with the GN recommendations made on the 2019 Annual Report.

- The GN requests that the Proponent provide information about the volumes, types, delivery, and transfer schedules of fuel stored and transported at various project sites in 2020. The GN again emphasizes that this information should be included in future Annual Reports.

Sabina Response:

Sabina confirms that the fuel trucks purchased for the Project meet industry design standards. To achieve full compliance with T&C 94, Sabina is currently implementing regular maintenance of fuel lines, nozzles and dust caps will document these activities going forward. A summary of these maintenance and inspections will be provided in the Annual Reports to the NIRB from this point onwards.

All Project activities related to fuel are within the risk and scenarios considered within the Project Spill Contingency Plan approved by the Nunavut Water Board and provided to the NIRB. At the GN's request, Sabina will document the transport of fuel between the MLA and Goose project sites. Sabina will keep these records on site and available to the GN on request. Road usage is summarized in the WMMP annual reports as a measure of potential disturbance to wildlife and may be summarized in annual air quality reports as it relates to dust generation. Any spills that occur on site are immediately reported and are summarized in Sabina's annual reports to the NWB.

GN-#10: Use of Updated WMMP (Version 10)

References:

- Back River Project Annual Report [March 2021] (Sabina)
- Back River Project Wildlife Mitigation and Monitoring Program Plan (Version 10) [October 2019] (Sabina)

Summary:

The Wildlife Mitigation and Monitoring Plan (WMMP) has been updated several times, most recently in October 2019 to Version 10. These changes were discussed at the Caribou Technical Advisory Group (CTAG) meeting in December 2019. Staff were not mobilized to the site until March of 2020, yet the old version of the WMMP (Version 9) was used for the entirety of 2020.

No justification is provided for why the new version of the plan, which addressed outstanding issues with the old plan, and was finalized and discussed prior to 2020 field operations, was not used in 2020.

Detailed Review Comment

Modifications to the WMMP were made to address outstanding issues with the plan and its implementation. It is counterproductive to develop a revised version, then not apply it to site operations.

Project operations must be reflective of the information provided to and the discussions had in the CTAG. This is essential to facilitating efficient and effective adaptive management of the Project.

Recommendation/Request:

The GN makes the following recommendations:

The Proponent should provide additional information to justify the use of the older version of the WMMP (Version 9) for the 2020 season when an updated version (Version 10) was completed prior to initiating operations in 2020.

Sabina Response:

All references in the 2020 Annual WMMP Report are to the WMMP Plan Version 10, updated in 2019, and Version 10 of the WMMP Plan is what was used for the 2020 season.

In Section 2.1 of the 2020 Annual WMMP Report, Version 9 is referred to when outlining how the WMMP Plan is constantly updated. Section 2.1 of the 2020 Annual WMMP Report states the following:

“Version 9 of the WMMP Plan was updated in 2018 and was delivered to the NIRB in May 2019 as part of Sabina’s annual NIRB Report. During 2019, the WMMP Plan was updated to Version 10 to include a commitment made by Sabina in response to comments and suggestions made by the Kitikmeot Inuit Association regarding contact telephone numbers in case of fuel spills. No updates have been made to the plan during 2020.”

Another reference to Version 9 of the WMMP Plan made in the 2020 Annual WMMP Report is in Section 8. The reference to the Version 9 WMMP Plan is to indicate for the reader that the original table for species of conservation concern was from the Version 9 WMMP Plan and was consistent with the species of conservation concern table in the FEIS.

GN-#11: Rapid Operational Shutdowns

References:

- Back River Project Annual Report [March 2021] (Sabina)
- 2020 Pre-Construction Wildlife Mitigation and Monitoring Plan (WMMP) Report [March 2021] (ERM)
- Back River Project Wildlife Mitigation and Monitoring Program Plan (Version 10) [October 2019] (Sabina)

Summary:

The concept of rapid operational shutdowns have been developed and implemented as a strategy to reduce the impacts of the Project to wildlife in close proximity to Project activities. These reductions in site activity are triggered by observations of wildlife, as are changes in site alert status allowing for returns to normal operations. Increased observation and monitoring of wildlife are necessary during these periods of change in the scale of operation.

Based on the Proponent's description of events from July 30 to Aug. 2, when large numbers of caribou moved through the site, it appears the level of observation was not adequate to anticipate caribou movements leading to rapid changes in site activity of short time spans.

Detailed Review Comment

Over the span of 4 days, from July 30 to Aug. 2, the project was shut down twice, with scheduled air cargo deliveries cancelled on July 30, and all site-based aircraft grounded on Aug. 2. These steps are expected during Level 4 responses, and it is encouraging to see these measures implemented as the Proponent has committed.

Within those 4 days, the site alert level was 1, 2, 1, 4, 1, 3, 4, 1, with 1 being normal operations, and 4 being a general shutdown. The drastic swings from 1-4, then 4-1, 1-3, then 4-1, suggest that the monitoring capacity or effort was somewhat inadequate to understand where caribou were in relation to the site and to track herd movements.

The description of events as provided suggest that information about caribou numbers, direction of travel, and proximity to the site was coming from different, possibly uncoordinated sources.

Increased monitoring when caribou are detected in proximity to the site would allow for smoother transitions between site alert levels and support a more consistent and orderly response, benefitting site staff as well as caribou.

Recommendation/Request:

The GN makes the following recommendations:

- The Proponent should provide additional detail about rapid operational shutdowns in annual reports, including observations and triggers leading up to the shutdown, and observations and triggers justifying a change in response level to allow for a return to operations.
 - This information, together with the Proponent's experience in implementing rapid operational shutdowns, should be used as a learning opportunity to improve management and implementation of these mitigation strategies.
 -

Sabina Response:

The 2020 WMMP Report includes the details of the daily observations that led to changes in site alert level. Sabina conducts scans of the area surrounding the Goose Site and collects incidental observations which inform management decisions. The rapid changes in site alert level reflects the types of observations being recorded at site, not the efficacy of monitoring. With caribou in large groups during the summer months, a large number can be observed on one day, and those animals have moved on the following day.

Sabina can include additional data on the steps leading to site shutdowns in future WMMP Reports to address this comment.

2.4 RESPONSE TO TRANSPORT CANADA

TC-1: Marine Safety and Security - General

References:

N/A

Summary

N/A

Detailed Review Comment

Transport Canada completed a review of the submitted Oil Pollution Emergency Plan (OPEP) and Oil Pollution Prevention Plan (OPPP) from July 2020. The Project's Oil Handling Facility is in compliance with regulatory requirements as per part 8 of the Canada Shipping Act, 2001 (CSA 2001). Should there be significant modifications to the Oil Handling Facility, the Operator will need to revise and update these plans if necessary. No physical inspection of the site was carried out in 2020.

Recommendation/Request:

N/A

Sabina Response:

N/A

TC-2: Marine Safety and Security - Oil Pollution Emergency Plan (OPEP) / Oil Pollution Prevention Plan (OPPP):**References:**

N/A

Summary:**Detailed Review Comment**

Under section 12 of the Environmental Response Regulations passed pursuant to CSA 2001, there is a requirement to complete annual reviews and if necessary update the Project's Oil Pollution Emergency Plan (OPEP) and Oil Pollution Prevention Plan (OPPP). If plans are updated, they must be submitted to Transport Canada no later than one year after the update. As required under the CSA 2001, the facility will need to notify Transport Canada of proposed changes to the OHF's operations relating to the loading or unloading of oil to or from vessels (180 days in advance of the change). The facility is also required to submit a revised OPEP/OPPP 90 days before a change in operation.

(**Excerpts from the CSA 2001 and Environmental Response Regulations follow this email.) Summary:

Recommendation/Request:

Transport Canada recommends to NIRB that an up-to-date OPEP/OPPP continue to be included in future annual reports for the Back River Gold Project. Sabina is required to submit the OPEP/OPPP to Transport Canada as detailed above. Inclusion of the updated and Transport Canada reviewed OPEP/OPPP in annual reports is an indicator of the compliance status of the Proponent. Transport Canada recommends these be included in future annual reports for the Project and is aware that OPEP/OPPP's are part of annual reports for other NIRB projects.

Sabina Response:

N/A

TC-3: Marine Safety and Security - Spill Contingency Plan – Observations:

References:

N/A

Summary:

Detailed Review Comment

Transport Canada has reviewed Sabina’s spill contingency plan for the Project and provides the following comments:

a. Section 8.2.1 should reflect the following:

Transport Canada is the lead federal regulatory agency responsible for the national oil spill preparedness and response regime. As per the Canada Shipping Act, 2001 (CSA, 2001), ships are required to have a Shipboard Oil Pollution Emergency Plans (SOPEP) and oil handling facilities are required to have an Oil Pollution Prevention Plan (OPPP) and an Oil Pollution Emergency Plan

(OPEP). Liability and the compensation regime for ship-source oil pollution in Canada is based on the polluter pay principle. The responsibility to pay for the clean-up related to a fuel spill belongs to the polluter. The Canadian Coast Guard is the lead agency responsible for ensuring an appropriate response to ship-source and mystery pollution incidents in Canadian waters, including in the Arctic. Should the polluter be unable, unwilling or unknown, the Canadian Coast Guard through its environmental response and incident management regimes, will assume command of the situation and manage effectively and efficiently to ensure an appropriate response to the incident.

b. Section 8.2.2 should reflect the following:

It should be noted that Transport Canada reviews the OPEP and OPPP for compliance with the regulatory requirements.

c. Section 9 : Spill reporting should reflect the following:

The master of a vessel in waters under Canadian jurisdiction must report any discharge or anticipated discharge from the vessel to a marine safety inspector or a marine communications and traffic services officer, (NORDREG in case of the Arctic). Reporting procedures should adhere to part 3 of the Vessel Pollution and Dangerous Chemicals Regulations (<https://laws-lois.justice.gc.ca/PDF/SOR-2012-69.pdf>). Oil handling facility operators are required to report in writing to Transport Canada. The report can be submitted to the TC.ERP NR-IERP.N.TC@tc.gc.ca.

Recommendation/Request:

N/A

Sabina Response:

N/A

TC-4: Navigation Protection -**References:**

N/A

Summary:

N/A

Detailed Review Comment

As Sabina noted in its 2020 Annual Report for the Project, Transport Canada's Navigation Protection Program has issued authorizations for various works associated with the Project:

- 2012-600767-002 - Navigation Protection Act – MLA Discharge Pipeline Authorization
- 2012-600767-003 - Navigation Protection Act – MLA Intake Pipeline Authorization
- 2012-600767-006 - Navigation Protection Act – MLA Lightering Barge Authorization
- 2012-600767-004 - Navigation Protection Act – Umwelt Lake Dewatering Authorization
- 2012-600767-005 - Navigation Protection Act – Llama Lake Dewatering Authorization

No compliance issues with these authorizations were noted in 2020. No site visits of these works were conducted during this time.

Recommendation/Request:

N/A

Sabina Response:

N/A

TC-5: Transportation of Dangerous Goods - General

References:

N/A

Summary:

N/A

Detailed Review Comment

Transportation of Dangerous Goods (TDG) inspection was not conducted for the Project in 2020.

II. Hazardous waste/materials information:

Transport Canada contacted a representative of Sabina regarding shipments of hazardous wastes for the Back River Project in 2020. Sabina reported that no hazardous wastes were shipped out from the site during 2020.

Transport Canada requested that Sabina include copies of all hazardous waste manifests in future annual reports for the Project. This request is consistent with the information provided by Agnico Eagle Mines Limited's 2020 annual reports for its Meliadine and Meadowbank/Whale Tail Pit projects.

Recommendation/Request:

Recommendation: Transport Canada recommends to NIRB that all hazardous waste manifests be included in future annual reports for the Project. This information is relevant to Transport Canada's reviews of future annual reports.

Sabina Response:

N/A

2.5 RESPONSE TO FISHERIES AND OCEANS CANADA

DFO-1: Effects Monitoring

References:

N/A

Summary:

Detailed Review Comment

DFO is generally agreeable with Sabina's reporting and has no comments or concerns to provide at this time related to effects monitoring. DFO notes that the project is still under construction at this time, therefore numerous Terms and Conditions and their associated monitoring have yet to be triggered/initiated. DFO looks forward to reviewing the results of these monitoring programs when they become available.

Recommendation/Request:

N/A

Sabina Response:

N/A

DFO-2: Compliance Monitoring

References:

N/A

Summary:

Detailed Review Comment

No compliance monitoring or site visits/inspections were conducted by DFO in 2020. Furthermore, no amendments were made to the proponent's *Fisheries Act* Authorization (FAA) issued by DFO in 2019.

However, in 2020, the proponent submitted their design and monitoring plan for the Rascal Stream Diversion 90 days prior to construction as required under their FAA. DFO reviewed and approved the plan, as no significant concerns were noted. Construction of the diversion was initiated September 2020 with the installation of rock weirs Rascal Stream West to reduce flow velocities once the diversion channel is completed. Starting in 2021, monitoring reports for the diversion will be required under the FAA.

All in all, the proponent is in compliance with their FAA and is required to submit monitoring reports by March 31 of each year. DFO will continue to work with the proponent to ensure compliance with the FAA, and that the conditions perform as intended to maintain and conserve fish and fish habitat.

Recommendation/Request:

N/A

Sabina Response:

N/A

2.6 RESPONSE TO ENVIRONMENT AND CLIMATE CHANGE CANADA

ECCC-1: No Comments

References:

N/A

Summary:

Detailed Review Comment

This email is to confirm that ECCC has reviewed the 2020 Annual Monitoring Report for Sabina Gold & Silver Corp's Back River Project and we do not have any comments.

Recommendation/Request:

N/A

Sabina Response:

N/A