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| GN AR # 01 – DUST GENERATION AND SUPPRESSION | |
|---|---|
| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Dust Generation and Suppression |
| Terms and Conditions | NIRB Project Certificate No. 007 Term and Condition # 03 |
| References | <ul style="list-style-type: none"> • GN (2021). Comments on Sabina Back River Project, submitted to NIRB • Sabina (2021). Back River Project Responses to 2020 Annual Report Comments July 6, 2021 • Sabina (2022). Sabina Back River Project 2021 Annual Report, Mar. 31, 2022 • NIRB (2017). NIRB Project Certificate No. 007 |
| CONCERNS | |
| <p>The 2021 Annual Report (2021 AR) mentions that the Air Quality Monitoring and Management Plan (AQMMP, 2019) contains a Fugitive Dust Reduction Plan. Dust suppression is also mentioned within the 2021 AR in the context of managing the environmental impact of the Tailings Storage Facility. Neither document addresses the GN's past comments about the development of basic thresholds for the initiation and timing of dust suppression activities, consistent with Project Certificate TC 3(b).</p> <p>Sabina's response to GN's past comments indicated that dust suppressants will be used to reduce dust generation, and stated that simple visual assessments for initiating dust suppression would be investigated and any changes to Project plans would be included in the 2021 AR. No update appears to have been provided in the 2021 AR, and the topic of basic thresholds for the initiation of dust suppression activities has not been addressed.</p> <p>The GN recognizes that the Project is in the pre-construction phase, and as such, it is expected that vehicle traffic at the site, rather than a tailings pile, will be the primary source of dust, as has been the case at other mines (e.g., Baffinland Mary River Project).</p> | |
| SUGGESTIONS AND RECOMMENDATIONS | |
| <p>The GN reiterates its past concern that clear guidance is needed for site staff to inform the timing, application, and use of dust suppressants. Sabina should develop simple visual assessment guidelines/measurements for determining when dust suppression should be initiated, and re-applied. This step is increasingly important as site activity expands and the Project Development Area (PDA) is further developed.</p> | |
| ADDITIONAL COMMENTS | |

N/A

GN AR # 02 – SPILLS / UNAUTHORIZED DISCHARGES

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|-----------------------------|---|
| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Spills / Unauthorized Discharges |
| Terms and Conditions | N/A |
| References | <ul style="list-style-type: none">• Amstrup, S.C., Gardner, C., Myers, K.C., and Oehme, F.W. (1989) Ethylene glycol (antifreeze) poisoning in a free-ranging polar bear. <i>Veterinary and Human Toxicology</i>, 31(4):317-319.• LaKind, J.S., McKenna, E.A., Hubner, R.P., Tardiff, R.G. (1999). A review of the comparative mammalian toxicity of ethylene glycol and propylene glycol. <i>Critical Reviews in Toxicology</i> 29, 331–365.• Sabina (2017). Sabina Back River Project Spill Contingency Plan (Oct. 2017)• Sabina (2022) Sabina Back River Project 2021 Annual Report. Mar. 2022.• Sabina (2020) Sabina Back River Project 2019 Annual Report. Mar. 2020. |

CONCERNS

The 2021 Annual Report (2021 AR) cited 61 minor spills at the site in 2021. The GN acknowledges the Proponent's statement in the 2021 AR that none of these 61 spills at the Project in 2021 met or exceeded the reporting requirement, and thus there were no reported spills in 2021.

In the past, Sabina has reported small spills, including a spill of 5 L of ethylene glycol in March of 2019 (Sabina 2020). This reporting offers valuable information about the types of contaminants entering the environment, as well as Sabina's efforts to prevent, contain, and clean up such incidents.

The GN encourages the reporting of all spills and emphasizes that all spills on site should be cleaned up as described in the Spill Contingency Plan for the Project (Sabina 2017). This is particularly important for substances that are harmful to wildlife in small quantities, such as ethylene glycol.

SUGGESTIONS AND RECOMMENDATIONS

The GN encourages the reporting of all spills, and emphasizes the importance of cleaning up all spills, as the spilled materials may be hazardous or lethal to wildlife, even in small quantities.

| ADDITIONAL COMMENTS |
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| N/A |

| GN AR # 03 – FUEL TRANSPORTATION & STORAGE | |
|---|---|
| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Transportation and Storage of Fuel |
| Terms and Conditions | NIRB Project Certificate No. 007 Term and Condition # 94 |
| References | <ul style="list-style-type: none"> Sabina (2022). Sabina Back River Project 2021 Annual Report, Mar. 2022. |
| CONCERNS | |
| <p>Term and Condition (TC) # 94 requires that</p> <p>“[t]he Proponent shall ensure fuel trucks meet industry design standards and receive regularly scheduled maintenance of fuel lines, nozzles and dust caps.”</p> <p>Sabina has again indicated that it has partially complied with TC 94 but does not offer details for why full compliance was not achieved.</p> | |
| SUGGESTIONS AND RECOMMENDATIONS | |
| <p>The GN suggests that the Proponent provide additional information about its efforts to comply with TC 94, particularly why its efforts were self-evaluated as only partially compliant.</p> <p>The GN also requests, as it has relative to previous annual reports for the Project, that the volumes and types of fuel transported to and within the site be provided within the Annual Report. Details provided in the 2021 AR are general: limited to describing weekly bulk fuel delivery by a variety of aircraft and that diesel fuel was delivered by sealift.</p> <p>Information about the transport and storage of fuel is a valuable part of the description of Project activities for the year and supports Project monitoring and evaluation undertaken by stakeholders and</p> | |

regulators. The inclusion of this information would allow for a more complete review of the Annual Report.

ADDITIONAL COMMENTS

N/A

| GN AR # 04 – CARIBOU MANAGEMENT SYSTEM | |
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| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Inconsistent use of Caribou Management System Mitigation |
| Terms and Conditions | NIRB Project Certificate No. 007 Terms and Conditions # 39, 40, and 41 |
| References | <ul style="list-style-type: none"> • Sabina (2019). Sabina Back River Project Wildlife Mitigation and Monitoring Program Plan (Version 10). Oct. 2019 • Sabina (2022) Sabina Back River Project 2021 Annual Report. Mar. 2022. |
| CONCERNS | |
| <p>Sabina's Wildlife Mitigation and Monitoring Program (WMMP) Plan (Version 10, 2019) states that</p> <p>“Trained wildlife monitors will conduct active monitoring for caribou on the Project site during all seasons. The purpose of active caribou monitoring is to trigger site alerts and a staged reduction in Project activities, including management of helicopters, blasting and heavy mobile equipment.”</p> <p>Within 5 km of the Project site,</p> <p>“[T]he Project site will be managed through four levels of response to caribou presence” ranging from normal operations (Level 1) to staged reduction in Project activities (Level 4).</p> <p>The 2021 AR describes 3 instances from July 28-29 where caribou numbers (150-200 animals) caused the Caribou Management System (CMS) to be implemented, peaking at Level 3. The GN is encouraged that the system is in use, and the additional detail provided in Table 4.1-1, as well as the compliance reporting under TC 39, address the GN's comment on this topic relative to the previous AR (2020).</p> <p>However, the 2021 AR also indicates that approximately 800 caribou were observed in September near the Echo Creek bridge, approximately 1 km from Goose Camp. September is reported as a time of high activity at the camp, with both peak personnel (85 – Table 5.7-1) and peak blasting activity (24 days/mo. – Table 5.4-2). The 2021 AR s.5.4.2.1 states that</p> <p>“Blasting at the Plant Site Pad occurred in 2021. Blasting was not conducted at any other sites in 2021.”</p> <p>This blasting site (Plant Site Pad) is approximately 1 km from the Echo Creek bridge, where caribou were observed.</p> <p>It is unclear why such high numbers of caribou so close to the camp and blasting site did not initiate the CMS and accompanying mitigation measures. Both the numbers of caribou (800) and the proximity</p> | |

to areas of activity (~1 km) should have initiated a mitigation response, as was described in the compliance report for TC 39.

SUGGESTIONS AND RECOMMENDATIONS

The GN recommends that Sabina provide an explanation of why no mitigation response was initiated in this instance, and how implementation and reporting of the CMS may be improved to address a similar instance in the future.

Dates of blasting activity are not provided in the AR, so it is not possible to confirm that blasts did or did not occur on the same day(s) that caribou were passing through the area. The inclusion of this information would allow for a more complete review of the Annual Report.

ADDITIONAL COMMENTS

N/A

| GN AR # 05 – BLASTING ACTIVITY | |
|---|---|
| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Inconsistency in Reporting on Blasting Activities |
| Terms and Conditions | NIRB Project Certificate No. 007 Term and Condition # 41 |
| References | <ul style="list-style-type: none"> • Sabina (2019). Sabina Back River Project Wildlife Mitigation and Monitoring Program Plan (Version 10). Oct. 2019 • Golder (2021). Sabina Back River Blasting Plan for Plant Site and Portal Decline (Appendix B of 2021 AR) Apr. 2021. • Sabina (2022) Sabina Back River Project 2021 Annual Report. Mar. 2022. |
| CONCERNS | |
| <p>There appears to be some inconsistency in how blasting activities are described and reported within the 2021 AR.</p> <p>S.1.2 of the AR, 2021 Project Activities, describes 2021 Goose Site Earthworks as including: “...drilling and blasting at the portal box cut and development of the bulk-sample underground workings;” and “...drilling, blasting and pad construction at the new permanent fuel tank pad”.</p> <p>However, s.5.4.2.1 of the AR states that, “Blasting at the Plant Site Pad occurred in 2021. Blasting was not conducted at any other sites in 2021.”</p> <p>Descriptions of these sites and maps of these cited Project areas are not sufficiently clear to assess where blasting occurred, and if the blasting described in the 2021 AR is the same described in the Blasting Plan for Plant Site and Portal Decline attached as Appendix B.</p> | |
| SUGGESTIONS AND RECOMMENDATIONS | |
| <p>The GN recommends clarifying where blasting activities have taken place and use consistent language when describing sites. The maps indicating blasting areas (pp. 191-192) are detailed and useful, but do not label sites where blasting is reported to have occurred. Likewise, the map provided on pg. 362 (Fig. 3.2-1: Infrastructure Development at the Back River Project as of 2021) does not make a distinction between earthworks and blasting activity, and does not label sites described elsewhere in the 2021 AR.</p> | |

This information is valuable for linking observed wildlife locations, particularly caribou, to blasting activity, and any mitigation applied to reduce disturbance to animals within the Project area.

| GN AR # 06 – SOP FOR WASTE MANAGEMENT | |
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| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Standard Operating Procedure for Waste Management |
| Terms and Conditions | NIRB Project Certificate No. 007 Term and Condition # 37 (Waste Management as part of the WMMP) |
| References | <ul style="list-style-type: none"> ERM (2022). Waste Management Standard Operating Procedure [Enviro-08]. Included as Appendix 5D in Sabina 2021 Annual Report Sabina (2021). Back River Project Responses to 2020 Annual Report Comments. Jul. 2021. Sabina (2022) Sabina Back River Project 2021 Annual Report. Mar. 2022. |
| CONCERNS | |
| <p>The GN recognizes and appreciates the update to the Waste Management Standard Operating Procedure (SOP) provided in the 2021 AR. Given the history and number of carnivore observations and interactions at the Project site, effective management of camp waste and wildlife attractants is important for the safety of site staff and wildlife.</p> | |
| SUGGESTIONS AND RECOMMENDATIONS | |
| <p>Additional guidance on appropriate steps for site staff when confronted with a carnivore at the site may be needed, as has been requested by the KIA in its comments on the 2020 Annual Report and committed to by Sabina. A separate SOP for carnivore interactions does not appear to be included in the 2021 AR.</p> | |
| ADDITIONAL COMMENTS | |
| N/A | |

| GN AR # XX – WILDLIFE SAFETY SITE AUDIT REPORT | |
|--|--|
| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Wildlife Safety Site Audit Report |
| Terms and Conditions | NIRB Project Certificate No. 007 Term and Condition # 37 (Waste Management as part of the WMMP) |
| References | <ul style="list-style-type: none"> • ERM (2022). Back River Project Wildlife Safety Site Audit Report. Aug. 2021. Included as Appendix 5C in Sabina 2021 Annual Report. • ERM (2022). Waste Management Standard Operating Procedure [Enviro-08]. Included as Appendix 5D in Sabina 2021 Annual Report • Government of Alberta (2022). Bears and industrial workers. Online. https://www.alberta.ca/bears-and-industrial-workers.aspx • Sabina (2019) Back River Project Wildlife Mitigation and Monitoring Program Plan. Oct. 2019. • Sabina (2021). Back River Project Responses to 2020 Annual Report Comments. Jul. 2021. • Sabina (2022) Sabina Back River Project 2021 Annual Report. Mar. 2022. |
| CONCERNS | |
| <p>The GN appreciates the inclusion of the Wildlife Safety Site Audit Report in the 2021 AR and broadly agrees with its findings and recommendations, particularly that the site is generally clean and in good order.</p> <p>As the GN has commented in the past, skirting around buildings is common practice and described as a design mitigation in the WMMP plan as well as within the Waste Management SOP, but the goal is to exclude wildlife. The GN notes Sabina's response to the GN's past comments and agrees there are multiple ways to achieve this goal. Gravel fill and hard-faced skirting are examples currently employed at the site; heavy gauge metal mesh or fencing (wind permeable) is another option. The site audit identified several instances where skirting should be repaired and noted that wildlife have been sheltering under site buildings as a result.</p> <p>Site photos 3.1-5 of the report identify bulk storage and fuel tanks and barrels. It is not clear from the photos what is being stored (buckets on pallets), or if the fuel barrels are empty. Petroleum-based lubricants and grease can be a wildlife attractant, and any fuel should be stored within secondary containment.</p> | |
| SUGGESTIONS AND RECOMMENDATIONS | |

The GN has the following recommendations based on the Wildlife Safety Audit Report included in the 2021 Annual Report:

- Follow recommendations of the Report to remove wildlife attractants (e.g., clean BBQ).
- Repair damaged skirting and implement some form of wildlife exclusion for structures that do not yet have it (exclusion method to be determined by Sabina).
- Clarify what materials are stored in the bulk storage pictured in the Report.
- Place non-fuel petroleum products (e.g., lubricants and greases) in secure storage to prevent wildlife access.
- Confirm that all fuel storage is within secondary containment.

ADDITIONAL COMMENTS

N/A

| GN AR # 07 – HELICOPTER FLIGHTS AND WINTER ICE ROAD | |
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| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Helicopter Flights and Tracking |
| Terms and Conditions | NIRB Project Certificate No. 007 Terms and Conditions # 60 and 61 |
| References | <ul style="list-style-type: none"> • Sabina (2020). Back River Project Fixed-wing and Helicopter Operations SOP [Enviro-03]. Included as Appendix 5A in 2021 Back River Annual Report. • Sabina (2021). Back River Project Responses to 2020 Annual Report Comments. Jul. 2021. • Sabina (2022). Sabina Back River Project 2021 Annual Report. Mar. 2022. • Sabina (2022). Back River Project 2021 Pre-Construction Wildlife Mitigation and Monitoring Program Report. Mar. 2022. |
| CONCERNS | |
| <p>The GN remains concerned about the frequency of helicopter flights below the recommended altitude of 610 m AGL (above ground level), the reporting format for helicopter flights, and Sabina's response to the GN's past comments.</p> <p>Regarding GN's past comments and Sabina's response, the GN fully recognizes the role helicopters fill in remote operations and has never suggested a general prohibition on flights below 610 m. The GN does recommend that flights are generally conducted at or above 610 m AGL, with exceptions for external loads, weather, and pilot discretion to maintain safe operations. The goal is to reduce disturbance and negative impacts to wildlife while enabling safe and successful flight operations.</p> <p>The reporting of helicopter flights below 610 m, as presented in the Pre-Construction WMMP Report (Fig. 5.1-1), remains difficult to assess. Total operations are not reported, though it appears that flights below 610 m peaked at approximately 800 operations within the Goose Property Area. There is a clear pattern of low altitude flights radiating out from the Goose Property, particularly to the George Exploration Camp, but the colour stratification could indicate as many as 300 flights or as few as 30. The GN has previously recommended creating categories or bins to help illustrate flight frequency or include a table to describe the same.</p> <p>The timing of these flights is not clearly reported, but has distinct value, as wildlife species are more sensitive to disturbance (e.g., low altitude helicopter flights) at certain times of the year.</p> <p>Additionally, Figure 5.1-1 (pg. 372), showing helicopter flights below 610 m from May to October 2021, depicts the "Winter Ice Road (As Built)", but Section 1.2 - 2021 Project Activities (pg. 352) states, "No Winter Ice Road (WIR) was constructed between the MLA and the Goose Site during 2021".</p> | |

Clarification is needed to understand if the map and the text are in conflict, or if the map is using a past version of the WIR as a geographic reference.

SUGGESTIONS AND RECOMMENDATIONS

The GN's recommendation for the general application of flights at or above 610 m AGL reduces impacts to wildlife and does not require pilots to visually locate animals on the ground or constantly refer to flight navigation systems or maps to avoid specific wildlife features at specific times, as described in the Helicopter Operations SOP (S.3.2 and Fig. 2). Simplifying the guidance simplifies compliance. Flights below 610 m (e.g., external loads, weather (low ceilings), etc.) should still follow the guidance in Sabina's SOP while maintaining vertical and horizontal separation from wildlife and wildlife features as described in the SOP.

The GN recognizes that low altitude flights are necessary to support site operations, particularly when hauling external loads. In an effort to understand the scale and intensity of low altitude operations, and concomitant impacts to wildlife, the GN again requests that Sabina provide clearer information on the frequency and timing of flight operations below 610 m.

If the WIR is to be used as a reference on a map when no WIR was constructed in the reporting year, please make this clear either in the text, the map, or both.

ADDITIONAL COMMENTS

N/A

| GN AR # 08 – VEGETATION MONITORING | |
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| Department | Department of Environment |
| Organization | Government of Nunavut |
| Subject/Topic | Vegetation Monitoring |
| Terms and Conditions | NIRB Project Certificate No. 007 Terms and Conditions # 32, 34, and 35 |
| References | <ul style="list-style-type: none"> • Sabina (2021). Back River Project Responses to 2020 Annual Report Comments. Jul. 2021. • Sabina (2022). Sabina Back River Project 2021 Annual Report. Mar. 2022. • Sabina (2020). Back River Project Vegetation Monitoring Program [Golder 2022]. Included as Appendix D in 2021 Back River Annual Report. |
| CONCERNS | |
| <p>The GN has previously commented that Winter Ice Road (WIR) plot locations should be monitored in all years, even when no ice road has been constructed. WIR plot data collected for years where the WIR is not constructed would allow for year over year comparisons of impacts and would allow for an assessment of recovery rates for damaged areas within the different disturbance classifications described within the Sabina 2019 Vegetation Monitoring Program (Golder 2020). These data could also be used to support Sabina’s conclusions for progressive remediation.</p> <p>Additionally, the maps in the vegetation monitoring report, Figures 1 & 2, (pp. 290-291), showing 2021 Vegetation Monitoring Locations depict the “Winter Ice Road As Built”, but Section 1.2 of the Annual Report - 2021 Project Activities (pg. 352) states, “No Winter Ice Road (WIR) was constructed between the MLA and the Goose Site during 2021”. Clarification is needed to understand if the map and the text are in conflict, or if the map is using a past version of the WIR as a geographic reference.</p> | |
| SUGGESTIONS AND RECOMMENDATIONS | |
| <p>The GN again recommends that the basic photographic monitoring of the WIR should be included for all years, including those years where no WIR is constructed. This additional data creates a continuous data set, supports year-to-year comparison, and allows for assessment of regrowth and recovery of damaged vegetation along the WIR.</p> <p>If the WIR is to be used as a reference on a map when no WIR was constructed in the reporting year, please make this clear either in the text, the map, or both.</p> | |

ADDITIONAL COMMENTS

The GN notes that there have been general improvements in the reporting and format of the Vegetation Monitoring Program, as well with the reporting of vegetation losses per TC 32. The GN appreciates the additional clarity and detail.