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Bathurst Inlet
Kingaok

Bay Chimo
Umingmaktok

Cambridge Bay
Ikaluktutiak

Gjoa Haven
Okhoktok

Taloyoak

Kugaaruk

Richard Dwyer

Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, Nunavut
X0B 1J0

June 17th, 2024

Re: Review of B2Gold Nunavut 2023 Annual report for Back River Project.

Dear Richard Dwyer, the KIA has reviewed B2Gold Nunavut's 2023 Annual Report for the Back River project to the NWB.

1) Compliance Monitoring:

The KIA's Framework Agreement (FA) and Inuit Impact and Benefits Agreement (IIBA) with B2Gold Nunavut. the cover terms and conditions of NIRB Project Certificate 007 and the NWB Type A water license.

The Framework Agreement is a confidential agreement between KIA and B2Gold Nunavut that supersedes and replaces all previous contractual arrangements between both parties. Section 3.1 of the FA covers Terms and conditions of land use license and reporting.

Appendix A of Section 3.1 of the Framework Agreement specifies the details of annual reporting by B2Gold Nunavut to the KIA, which is summarized as follows:

B2Gold Nunavut is to provide an annual report to KIA providing details of its operations under any land use License, Advanced Exploration Lease and/or Commercial Lease covering the location and operations area of lands affected, and the nature of facilities and equipment at these sites. In addition, Sabina is to provide details of progressive reclamation or closure activities undertaken during the year and details of all permits, licenses, and authorizations from other regulatory bodies or agencies that are required for operations.

This annual report is to provide information on:

- Ground disturbances including land use activities for camps, infrastructure, equipment, winter roads and trails.
- Fuel and Chemical storage including Chemicals of Potential Concern inventory (COPC), fuel and chemical usage, and spill records.

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- Drilling programs, methods, locations, spills of fluids or muds and the amount of water discharge.
- Water use and effects on water.
- Wildlife interaction, data logs, and summaries.
- Waste disposal, waste management practices, inventory of waste on site, and inventory of hazardous materials or non-combustible waste removed from site.
- Closure and reclamation progress associated with waste management, drilling, and ground disturbance along with associated costs.
- General information on annual inspection activities by staff and other agencies and their results, community consultations, future exploration work plans, submissions to NIRB, NWB, or NPC or other regulators related to mining activity, archaeological sites and burial grounds, and any incidents of storage or possession of alcohol and drugs on site.

B2Gold Nunavut has provided the KIA with the **Back River Project 2023 Annual Report for KIA Framework Agreement** in accordance with Appendix A to Schedule 3.1 of the Framework Agreement. This report is separate from the **Back River 2023 Annual Report to the NWB**.

Compliance Status

2) Effects of Monitoring:

a) **Whether the conclusions reached by B2Gold Nunavut in the Back River 2023 Annual Report to the NWB are Valid.**

KIA's consultants in the areas of fisheries, aquatic sciences, wildlife and geotechnical engineering reviewed the Back River 2023 Annual Report to the NWB and the following documents:

- 2023 Annual Report for Water Licence 2AM-BRP1831,
- Appendix C Monitoring Activity Overview by Station,
- Appendix E Goose & MLA Project Site – 2023 Annual Geotechnical Inspection,
- Back River Project Spill Contingency Plan.

In 2023, B2Gold Nunavut completed several construction activities at the site that focused on building the mine site. These being ongoing construction of the plant site, mill, and truck shop. Completion of the accommodations complex with sleeping quarters and kitchen. Commissioning of mine camp sewage treatment plant, initiating operation of batch plant and automated rebar cutting and bending machines, initiating the construction of the primary pond, Echo Pit pre-stripping and earthworks to extend the Goose airstrip to 5,000 ft.

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Overall, our consultants find B2Gold Nunavut's conclusions in the 2023 Annual Report to the NWB are valid. B2Gold Nunavut has presented adequate information to demonstrate that the Back River Project has complied with the conditions of its Type A water license.

b) **Any areas of significance requiring further supporting information or changes to the monitoring program, which may be required.**

Back River Project 2023 Annual Report to NWB

KIA-NWB-01

Review Comment Number	KIA-NWB-01
Subject/Topic	2023 Geochemical Testing – Sources of Applied Criteria and Results
References	B2Gold Nunavut Back River Project 2023 Annual Report for Water Licence 2AM-BRP1831, Section 2.6
Summary	• In 2023, environmental monitoring was carried out for geochemical programs at the Back River Project site. • A total of 57 samples of waste rock were collected and submitted for acid- base accounting (ABA) and shake flask extraction (SFE) testing. • Results presented in Section 2.6 of the Annual Report indicated most of the samples were classified as non-potentially acid generating (NPAG), according to criteria established for the project and shown in Section 2.6c. • These criteria appear to be project-specific and the source(s) or supporting • information associated with establishing these criteria was not provided. • The SFE test results were summarized in the report text, which identified exceedances of aluminum in 26 (of 57) samples; however, results were not provided in-text or appended to complete a review of this summary.
Detailed Review Comment	• In 2023, 57 samples of potential construction material were collected. • The ARD potential of these materials was assessed using measured total sulphur and total carbon percentages, as proxies for a materials' acid potential (AP) and neutralization potential (NP), respectively. Use of these parameters assumed:

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	○ All sulphur species are "present as pyrite and can generate acid" ○ All carbon species are "present as calcite and can neutralize acid". • The document indicates the determination of NP was considered • "conservative as it discounts the contribution from silicate minerals"; • however, no supporting data nor references were provided. ○ Other carbonate mineral species (i.e., other than calcite) may be present and the presence of iron or manganese bearing carbonates do not provide net neutralization. ○ It was noted in the Final Environmental Impact Statement (FEIS) for the project that iron carbonates tend to be the dominant forms in samples with higher carbonate NP contents (SRK Consulting (Canada) Inc., November 2015). ○ The Project's Waste Rock Management Plan (Sabina, April 2022) indicated that total inorganic carbon is to be used to calculate a sample's NP (see Section 7.1.4 of that document) • The ratio of a sample's calculated NP and AP is the neutralization potential ratio (NPR), which is used to determine if a sample is classified as NPAG or potentially acid generating (PAG). The criteria provided for the Back River Project is broken into four project-specific classifications that involves both • a sample's NPR as well as its total sulphur percentage, • Results from SFE testing were compared to 10x Canadian Council of Ministers of the Environment (CCME) guidelines for the protection of freshwater aquatic life. The document states that total aluminum exceeded the 10x CCME guideline in 26 (of 57) samples and no other exceedances were noted. The document also states that the SFE results are "not suggestive of a high metal leaching potential". However, results were not provided for review, nor were the reference for the criteria with which to define a "high" metal leaching potential.
Recommendation/ Request	• Comparison criteria and the source of these criteria used to assess the ARD and/or ML potential of a material should be presented as part of annual reporting. Statements of the conservatism of analytical approaches should provide adequate supporting descriptions or references. • Confirm whether total carbon and not total inorganic carbon should be used to assess a sample's NP. • Results from all geochemical testing are requested to be provided as part of annual reporting.

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Importance	Moderate

KIA-NWB-02

Review Comment Number	KIA-NWB-02
Subject/Topic	2023 Geochemical Testing – Sample Details
References	B2Gold Nunavut Back River Project 2023 Annual Report for Water Licence 2AM-BRP1831, Section 2.6
Summary	• A total of 57 samples of waste rock were collected and submitted for ABA and SFE testing in 2023, which were tabulated and provided in Section 2.6 (Table 2.6-1) of the Annual Report. • Details associated with the timing and location of the 57 samples collected were not provided in the report to provide an understanding of the representativeness of these data to the waste rock produced in 2023. • Monthly records of NPAG versus PAG classified waste rock volumes produced and used in 2023 were not provided, which would provide an assessment of the Project's waste rock monitoring program.
Detailed Review Comment	• In 2023, a total of 284,173 bank cubic metres (BCM) of waste rock was generated and used for construction and 57 samples of potential construction material were collected at the Project site. • The details provided in the Annual Report suggest a sample frequency of one sample per 5,000 BCM was achieved in 2023, which aligns with the minimum sampling guidance provided in the Waste Rock Management Plan (Sabina, April 2022) (i.e., minimum of 8 samples per 100,000 tonnes). • The Waste Rock Management Plan also indicates that quantities of NPAG and PAG waste rock will be recorded on a monthly basis, as per Water Licence 2AM BRP1831 Part 1 Item 9b. These details were not provided in the Annual Report. • The Waste Rock Management Plan states that samples are to be collected from blast holes drilled in the rock quarries prior to waste rock excavation, and details associated with sample depth, location and blast hole number are to be recorded. Such sample details were not provided in the Annual Report.
Recommendation/ Request	• Additional details associated with the 57 samples collected in 2023 are requested, which should align with the Project's Waste Rock Management Plan. • Monthly records of the amount of NPAG to PAG material

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	produced and its use are requested to be provided, to align with the Project's Water Licence. If these records have been provided, but are located in a separate document, this reference should be cited in the Annual Report.
Importance	Moderate

KIA-NWB-03

Review Comment Number	KIA-NWB-03
Subject/Topic	Monitoring Program – General Information
References	2.13 The Results and Interpretation of the monitoring program in accordance with Part I and Schedule I Text: A high-level monitoring summary outlining activity related to each monitoring station indicated in Part I and Schedule I of the Licence is provided in Appendix C. Monitoring details are provided below for monitoring stations that were active in 2023.
Summary	No figure with monitoring stations is included.
Detailed Review Comment	See above.
Recommendation/ Request	Add Figure with monitoring stations in Appendix C for better understanding.
Importance	Low

KIA-NWB-04

Review Comment Number	KIA-NWB-04
Subject/Topic	Monitoring Program - Greywater (BRP-42 MLA)
References	2.13 The Results and Interpretation of the monitoring program in accordance with Part I and Schedule I Text: BRP-42 MLA Greywater Approximately 3,896 m3 of greywater was discharged to the tundra from the MLA camp at a monthly rate approximately equivalent to the quantity of desalinated water produced at the MLA (Table 2.13-1). No flow or water was available for sampling downstream of the discharge point (i.e. at BRP-42). No site seepage or runoff with the potential to enter a freshwater waterbody was observed at the MLA site. Appendix C – Table C-1 2023 Monitoring Activity Overview by Station
Summary	No water sample was collected for the greywater discharge from the MLA camp.
Detailed Review	Appendix C – Table C-1 2023 Monitoring Activity Overview by Station

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Comment	includes the frequency of monitoring prior to discharge or transfer of water. The Annual Report indicates that 3,896 m3 of greywater was discharged to the tundra from the MLA camp, but no sample collection was taken.
Recommendation/ Request	B2Gold should clarify the reason for not collecting the water sample when greywater was discharged to the MLA. Water quality sampling should occur during future greywater discharges in accordance with monitoring requirements. A discussion of the potential effects should also be included in the Annual Report.
Importance	Moderate

KIA-NWB-05

Review Comment Number	KIA-NWB-05
Subject/Topic	Goose & MLA Project Sites – 2023 Annual Geotechnical Inspection (Overburden Stockpile)
References	Paragraph 5.2.3 – Overburden Stockpile (Page 13) The ponding water was observed in areas at the toe of the stockpiles. This is likely in part from the release of water from the overburden soil due with the high ice and water content as the outside layers of the stockpile thaw in the warmer months. It would be suggested collect water samples from the ponded water around this area to better characterize (in terms of water quality, e.g. TSS, salinity, ammonia etc.). Based on the water sampling result and observations around the time of next freshet, additional water management or sediment management (such as a small filtering berm or silt fencing) at the toe of this stockpile may be considered. *– SRK was informed that site has an overburden stockpile monitoring program and corresponding that is in place and should address this comment. This overburden monitoring program was not reviewed as part of the 2023 AGI.*
Summary	Ponded water was observed at the toe of the overburden stockpile during the 2023 SRK Geotechnical Inspection.
Detailed Review Comment	Sampling of the ponded water from the toe of the overburden stockpile should be characterized. In case of elevated concentrations of one or more variables (e.g., TSS, ammonia, metals, salinity), a collection channel should be created around the stockpile to prevent the mixing of runoff water with contact water, especially during spring thaw and summer months when the surficial layer above the permafrost is active.
Recommendation/ Request	The water quality and final discharge location of the contact water from the overburden stockpile should be included in the annual report.

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Importance	Moderate

KIA-NWB-06

Review Comment Number	KIA-NWB-06
Subject/Topic	Goose & MLA Project Sites – 2023 Annual Geotechnical Inspection (Goose Tank)
References	Paragraph 5.2.4 – Goose Tank Farm (Page 23) The base of the containment area had some water over the base in areas during the inspection. This likely was due to some of the recent rainfall on site around the time of the inspection. Active pumping was not noted at the time of the inspection. *Site staff indicated that each spring water from both sides of the containment area are managed / pumped. Around the time of the 2024 freshet, additional pumping and water management would be expected to be required. It is SRK's understanding that this is on sites radar and plans have already been made for this ongoing operational and maintenance support.*
Summary	Ponded water was observed in the containment area during the 2023 SRK Geotechnical Inspection.
Detailed Review Comment	Sampling of the water within the containment area is required before discharging, and the water quality results should be included in the report, as well as the water quantity and final discharge location.
Recommendation/ Request	The water quality and quantity, as well as final discharge location, should be included in the annual report.
Importance	Moderate

KIA-NWB-07

Review Comment Number	KIA-NWB-07
Subject/Topic	Ground Thermal Monitoring Plan
References	Appendix D - Back River Project: Site-wide Ground Thermal Monitoring Plan Table 2: Recent Ground Temperature Sites Installed Between 2023 and 2024

Primary Pond Dam	SRK-24-PP-DH01	2024	7271328	429660	Inactive	Temporary	8
	SRK-24-PP-DH02	2024	7271366	429613	Inactive	Temporary	9
	SRK-24-PP-DH03	2024	7271323	429658	Inactive	Temporary	8
	SRK-24-PP-DH04	2024	7271319	429664	Inactive	Temporary	5

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Summary	The digital ground temperature cables (GTCs) at Primary Pond Dam have been installed to maximum depths ranging from 5 to 9 mbgs.
Detailed Review Comment	Paragraph 2.4 of the Appendix D indicates that the seasonally thawed active layer ranges from approximately 1 to 4 meters below ground surface (mbgs). Based on the above, Palmer recommends installing the future GTCs up to at least 15 mbgs to capture future potential impacts of the primary pond on the vertical temperature profile.
Recommendation/ Request	Install GTCs up to at least 15 mbgs.
Importance	Moderate

KIA-NWB-08

Review Comment Number	KIA-NWB-08
Subject/Topic	Llama and Umwelt Lake Dewatering Plan
References	*CHAPTER 2.0 DEWATERING VOLUMES (Page 2)* *If water treatment is undertaken (Stage 2), it is anticipated that TSS in the Llama and Umwelt will continue to increase over time to a point where treatment is no longer practical or sufficiently effective. At that time, Stage 3 of pumping would be initiated.*
Summary	Trigger levels/criteria to switch from Stege 2 to Stage 3 should be identified and clearly communicated.
Detailed Review Comment	Please produce a flow diagram to clearly identify the criteria to switch from Stage 2 to Stage 3 or cite the document containing this information. Trigger levels/criteria should be based both on water quality (TSS maximum concentration) and water quantity (maximum flow rate that can be treated to lower TSS below Licence discharge criteria).
Recommendation/ Request	Provide a flow diagram that identify quality and quantity trigger levels to switch from Stage 2 to Stage 3.
Importance	Low

KIA-NWB-09

Review Comment Number	KIA-NWB-09
Subject/Topic	Llama and Umwelt Lake Dewatering Plan
References	*CHAPTER 2.0 DEWATERING VOLUMES (Page 2)*

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	Stage 3 of dewatering may be initiated, with the storage of non-compliant water in either Llama or Umwelt Lakes or in the Primary Water Pond or another water management structure.
Summary	Clarify how water will be managed during Stage 3.
Detailed Review Comment	The dewatering plan mentions that non-compliant water will be discharged either to Llama or Umwelt Lake or in the Primary Water Pond or another water management structure. It is unclear how the discharge will be directed to Llama or Umwelt Lakes if the purpose of the dewatering activities is to dewater Llama Lake and Umwelt Lake. The client should also clarify the rationale for discharging and the approximate volumes available at each location. Flow diagrams of Stage 3 might be useful to provide clarification about the water management during Stage 3. Trigger water quantity and quality levels should also be in place to define the final discharge location during Stage 3.
Recommendation/ Request	Update Stage 3 description and define more accurately discharge locations.
Importance	Low

KIA-NWB-10

Review Comment Number	KIA-NWB-10
Subject/Topic	Llama and Umwelt Lake Dewatering Plan
References	Figure 3
Summary	Update Figure 3 to extend the dewatering pipeline to Goose Lake.
Detailed Review Comment	The dewatering pipeline from Umwelt Lake is directed to the nearby surface watercourse, which is connected to Goose Lake. The dewatering pipeline should be extended to Goose Lake as per Water Licence 2AM-BRP1831.
Recommendation/ Request	Update Figure 3 to include the extension of the dewatering pipeline to Goose Lake.
Importance	Low

KIA-NWB-11

Review Comment Number	KIA-NWB-11

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Subject/Topic	Consolidation of reporting
References	Section 1, 2-AM-BRP1831 Annual Report
Summary	Annual reporting for Type A and Type B water licenses should be consolidated.
Detailed Review Comment	The Annual Report indicates that use of exploration waste and water management facilities in 2023 are reported in the Annual Report for Water Licence 2BE-G002028.
Recommendation/ Request	KIA recommends that activities permitted under the Type B water licence be included in Type A licence reporting once construction begins (including dewatering of the Lama and Echo Pit lakes).
Importance	High

KIA-NWB-12

Review Comment Number	KIA-NWB-12
Subject/Topic	Monitoring programs
References	Appendix C Monitoring Activity Overview by Station
Summary	Results of all water monitoring programs should be reported in the Annual Report.
Detailed Review Comment	Table C-1 shows that several types of water monitoring occurred in 2023. It is not clear where in the Annual Report the results of monitoring at BRP-43 (for discharge of 10 m3) and BRP-G-01 to BRP-G (for flow during culvert construction) are reported.
Recommendation/ Request	We recommend that the details of regulated monitoring at the MLA Fuel Tank Farm (for discharge of water at BRP-43) and for general site runoff during culvert construction (at BRP-G-01 to BRP-G) be included in the Annual Report.
Importance	High

KIA-NWB-13

Review Comment Number	KIA-NWB-13
Subject/Topic	Use of hydrogen peroxide
References	Back River Project Spill Contingency Plan, Section 9.3.4 Chemicals
Summary	Full details on the use of hydrogen peroxide should be provided.
Detailed Review	Section 9.3.4 states that “Hydrogen peroxide – is used in the Process

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Comment	Plant (for what)" (p. 45). No explanation of "for what" is provided.
Recommendation/ Request	More detail on what hydrogen peroxide is used for should be provided.
Importance	Moderate

KIA-NWB-14

Review Comment Number	KIA-NWB-14
Subject/Topic	Spill reporting in Annual Report
References	• Back River Project: 2023 Annual Report for Water Licence 2AM- BRP1831. April 2024, Appendix G • Type A Water Licence: 1 AM-BRP1831 (Amendment No. 1)
Summary	B2Gold wrote a spill contingency plan as part of their overall Emergency Response Program for the Project. This plan was written to meet requirements of a Type A Water Licence as well as Canada's Environmental Emergency Regulations. Zoetica™, on behalf of the KIA, audited the report alongside the water license and identified some deficiencies. The Type A water licence requires spills be logged and reported in the annual report. All required information was not supplied with regards to follow-up plans and linking spill logs to adaptive management.
Detailed Review Comment	The Type A water licence requires that B2Gold keep a log of all reportable spills and outlines specific requirements for parameters (a list and description of all unauthorized discharges, including volumes, identification numbers, and follow-up actions to be reported within the annual report). The term 'follow-up' is typically used in EIAs to do one or more of the following, depending on context: • verify predictions of environmental effects identified in the environmental assessment; • determine the effectiveness of mitigation measures so that measures can be modified, or new measures can be implemented if required; • support the implementation of adaptive management measures to address previously unanticipated adverse environmental effects; • provide information on environmental effects and mitigation that can be used to improve and/or support future

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	environmental assessments (including cumulative environmental effects assessments); and/or • support environmental management systems used to manage the environmental effects of projects. Appendix G of the Annual Report provides a spill log with information on spill date, product spilled, quantity, spill description, site, approximate location, spill number and mitigation (how the spill was cleaned up). However, in the log table provided in Appendix G, B2Gold reduces the term 'follow-up' to immediate mitigation/cleaning of the spill. The table lacks information on follow-up actions and how the information was used to inform adaptive management or to improve mitigation. Fixing this logging system to feed into adaptive management and to meet the criteria set out in the Type A water licence is critical for the identification of root causes and fixing root problems/improving spill mitigations and responses (e.g., via Non-conformance and Corrective Action reporting). In general, the spirit of QA/QC in the water licence and the requirements of the spill log data collection emphasize follow-up plans that enable adaptive management. This core element is being missed and it appears that Back River is recording spill issues that are cleaned up and then repeated. In one case, 150 L of gear oil was spilled due to a valve being left open. Follow-up actions that go beyond the cleanup of the spill would include an investigation of root causes (lack of adequate training, lack of checks and verification protocols by a second or third personnel to capture human errors, etc.) and revisiting operating procedures or on-site plans with corrective actions, and potential procedural updates for prevention in the future. Other instances involving equipment failure resulted in large incidents, including 3140 L of raw sewage being spilled. The mitigation to clean spills up is again listed, but there is no discussion of follow-up activities to determine and correct procedures, materials, or to properly manage personnel that contributed to the spill, and to implement corrective actions and adaptive management. There are also multiple instances of only high-level locations being indicated as the spill location and "other" being used to describe the product type where a large spill occurred. As such, this log does not appear to currently meet the requirements of the Type A Water Licence and improvements should be made to logged information and reporting on how spills are investigated. This logged information should be used in a functioning adaptive management system that learns from mistakes and implements additional safeguards where needed so that the same mistakes are not repeated.
Recommendation/ Request	• Please include all information required for spill logs, including follow-up actions to improve spill plans and prevent

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	recurrences in the future by implementing corrective actions following investigations. Outline how the information was fed into adaptive management. • If spill log information is not being used to develop follow up plans and to feed into adaptive management, please modify the information collection protocol and log form with updates to meet these requirements next year. • Please modify the plan to include a procedure for repeated training and frequent QA/QC of the spill log to ensure people are reporting the exact locations and products spilled. The QA/QC should be done on a timeframe that would enable someone to revisit a spill site to take a GPS coordinate if one was not taken, or to determine the product spilled if "other" is listed.
Importance	Moderate

KIA-NWB-15

Review Comment Number	KIA-NWB-15
Subject/Topic	Language for communicating about spill incidents.
References	• B2Gold Spill Contingency Plan Version 4, February 2024 • Type A Water Licence : 1 AM-BRP1831 (Amendment No. 1)
Summary	The Type A water license requires that signs are printed in English, Inuktitut, Inuinnaqtun, and French.
Detailed Review Comment	Four languages are required on signs communicating locations of water storage and waste disposal facilities. It would seem prudent for communications to the public about spills to be released in the same languages, where relevant.
Recommendation/ Request	• Please note the languages to be included for communicating spills to the public within the spill contingency plan.
Importance	Moderate

KIA-NWB-16

Review Comment Number	KIA-NWB-16
Subject/Topic	Bulk Fuel Storage Facilities and Fuel Transfer Area at the Marine Laydown Area (MLA) – applicable legislation

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References	• B2Gold Spill Contingency Plan Version 4, February 2024 • Type A Water Licence: 1 AM-BRP1831 (Amendment No. 1)
Summary	B2Gold wrote a spill contingency plan as part of their overall Emergency Response Program for the Project. This plan was written to meet requirements of a Type A Water Licence as well as Canada's Environmental Emergency Regulations. Zoetica™, on behalf of the KIA, audited the report alongside the water license.
Detailed Review Comment	While additional legislation related to spill contingency planning is noted within the Type A water licence, it would be helpful to pull those pieces of legislation forward for readers that do not have the Type A water licence in hand when reading the plan. Namely, it would be helpful to note legislation and standards such as the Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003; CCMA PN1326 (most recent version); Relevant standards of the Canadian Standards Act (CSA); and the National Fire Code, 2015 (or more recent).
Recommendation/ Request	• Please note the additional relevant legislation and best practices that will be followed as part of minimizing spill risk within the spill contingency plan, even if those pieces of legislation are noted within the Water Licence.
Importance	Moderate

KIA-NWB-17

Review Comment Number	KIA-NWB-17
Subject/Topic	Concordance with Type A Water Licence
References	• Section 2.0, B2Gold Spill Contingency Plan Version 4, February 2024 • Type A Water Licence: 2AM-BRP1831, Amendment 1 (August 31, 2021)
Summary	B2Gold wrote a spill contingency plan as part of their overall Emergency Response Program for the Project. This plan was written to meet requirements of a Type A Water Licence and Canada's Environmental Emergency Regulations. Zoetica™, on behalf of the KIA, audited the report alongside the water license, and identified some deficiencies.
Detailed Review Comment	The Back River Type A Water Licence, Section 16 (under General Conditions)

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	states that: "The Licensee shall review the plans referred to in this license, as required by changes in operation and/or technology and modify the Plan accordingly. Revisions to the Plans are to be submitted in the form of an Addendum to be included with the Annual Report required by Part B, Item 2, complete with a revisions list detailing where significant content changes are made." The Revisions log does not accomplish this requirement as there was no revisions list supplied with the required details of content that changed (which differs from a versioning table).
Recommendation/ Request	• Please supply a detailed revisions list detailing where significant content changes were made.
Importance	Low-Moderate

KIA-NWB-18

Review Comment Number	KIA-NWB-18
Subject/Topic	Conformity with Canada's Environmental Emergency Regulations
References	• Section 2.0, B2Gold Spill Contingency Plan Version 4, February 2024 • Canada's Environmental Emergency Regulations (Link)
Summary	B2Gold wrote a spill contingency plan as part of their overall Emergency Response Program for the Project. This plan was written to meet requirements of a Type A Water Licence as well as Canada's Environmental Emergency Regulations. Zoetica™, on behalf of the KIA, audited the report alongside Canada's Environmental Emergency Regulations (CEER) and identified some deficiencies.
Detailed Review Comment	Deficiencies against CEER include the following: • CEER, Schedule 2, Information to be Submitted in the Notice Regarding Substances Located at a Facility, 1(d) includes: the range, among the following ranges: (i) 0 to 4, (ii) 5 to 19, (iii) 20 to 49, (iv) 50 to 99, (v) 100 to 299, (vi) 300 to 499 or (vii) 500 or more. If this information is housed elsewhere, it should also be included within the SCP as per the CEER. o The facility description within the SCP does not state the range of the maximum number of people that work at the site. • CEER, Environmental Emergency Plan section on preparation, required contents, Section 2(k) notes that facilities using or storing regulated substances are required to communicate with members of the public who may be affected

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	by an environmental emergency. This includes communicating before an incident (to create awareness of the potential effects to human health and the environment), providing notification of an emergency, as well as giving updates during and after an environmental emergency. o The current plan does not provide explicit clarity on how the public will be notified (e.g., through what communication channels and materials, and in what languages (see Type A WL), will the public be notified?) o Roles remain unclear regarding communication with the public (e.g., do both the public information officer and communications officer communicate with the public? Is there seniority between these roles? How does the Joint Information Centre (JIC) differ from these communication roles? There is little information on the JIC). • The CEER, Environmental Emergency Plan, Preparation, Required Contents, Simulation exercise, Section 7 (1), mentions the need for: (a) annual simulation exercises in respect to one substance from each of the hazard categories referred to in column 5 of Parts 1 and 2 of Schedule 1, using an environmental emergency identified under paragraph 4(2)(d) as the emergency being simulated, and (b) every five years, a full-scale simulation exercise in respect of any one substance, using an environmental emergency referred to in paragraph 4(2)(e) or (f) as the emergency being simulated. o The current SCP for Back River makes minimal reference to a functional spill response exercise in Section 6.5. o Simulation exercises provided in the plan do not include details about how often they will be done or list methods for conducting them. • The CEER regulation on Record Keeping, Section 21(1) and (2) states that any records prepared in accordance with sections 8 and 10 must be kept at the facility referred to in subsection 4(1) for not less than seven years beginning on the day on which they are prepared. o Section 10.3 of the SCP for Back River does not list how long records will be maintained. The plan should specify they will be kept at the facility for a minimum of 7 years, as per the CEER. o Additionally, there is no mention of how documents relating to simulation exercises performed and other materials relevant to the SCP would be recorded and retained, for how long, and where. • The CEER regulations, Record Keeping, 21(2) 3 (1-g) list information that should be kept for each substance located

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	at the facility. The information should include: (a) its name, (b) CAS registry number, (c) its UN number, if applicable, (d) the maximum expected quantity of the substance, (e) if a quantity of the substance is not contained in a container system, a statement to that effect, (f) if all quantities of the substance are contained in a container system, the maximum capacity of the largest container system in which the substance is contained, and (g) the day on which the situation described in paragraphs 3(s)(a) and (b) of the Regulation occurred, as applicable. o Please ensure that the plan indicates that all this information will be recorded for substances located at the facility.
Recommendation/ Request	The KIA requests B2Gold make the changes to the SCP to bring it into compliance with the CEER, which include: • Adding the range of the maximum number of people that work at the site to the SCP as per categories in the CEER. • Provide clarity within the SCP on how the public will be notified (e.g., through what communication channels and materials will the public be notified, and in what languages). • Clarify roles regarding communication with the public within the plan, including seniority, differences in communication roles with the public between the public information officer and communications officer, and more information about the Joint Information Centre (JIC) and how it differs from these communication roles. • Include more information within the SCP, Section 6.5, on functional spill response exercises. • Provide information on simulation exercises within the SCP, including how often they will be done and methods for conducting them. • Provide required information on record-keeping, including: o Section 10.3 of the SCP for Back River should specify that records will be kept for a minimum of 7 years, as per the CEER. Ensure that records that will be kept for this length of time will include all information noted in the CEER regulations, Record Keeping, 21(2) 3 (1-g). o Information on how documents relating to simulation exercises performed and other materials relevant to the SCP would be recorded and retained, for how long, and where they should be included. o Please include information on when the annual review would occur for documentation and simulation exercises.

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Importance	High

KIA-NWB-18

Review Comment Number	KIA-NWB-18
Subject/Topic	Improvements to SCP – information collected on spilled products
References	• Section 2.0, B2Gold Spill Contingency Plan Version 4, February 2024
Summary	There are some improvements that can be made to information to be collected and reported compared to what is specified in the SCP.
Detailed Review Comment	Section 9.1.5 of the SCP for Back River (titled 'Report the Spill') states to: *"Provide basic information such as the date and time of the spill, type and amount of product discharged, photographic records, location and approximate size of the spill, actions already taken to stop and contain the spill, meteorological conditions and any perceived threat to human health or the environment"*. The plan would be improved by including the concentration of the substance released, as quantity is only part of the story of toxicity.
Recommendation/ Request	The KIA requests that B2Gold include the concentration of the product spilled (where relevant) in Section 9.1.5.
Importance	High

KIA-NWB-18

Review Comment Number	KIA-NWB-18
Subject/Topic	Improvements to SCP
References	• Section 2.0, B2Gold Spill Contingency Plan Version 4, February 2024
Summary	There are some improvements that can be made to information to be collected as specified in the SCP.
Detailed Review Comment	When reading the SCP, the following questions arose: • Is reporting the perceived threat to human health or the environment the same as describing the potentially harmful effects of the emergency? This should be clarified in the report, and if there are differences, the two should be differentiated. • Overall, who is the primary individual responsible for the whole

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	site/mine with regard to spills? • No emails or fax numbers are listed for Key Site Emergency Contacts. Also, no location or phone number is listed for the Canadian Wildlife Service (CWS). • Would be useful to emphasize that the individuals who are serving in the roles listed in 5.1 – 5.18 are named in Tables A-1 and A-2. It would help the reader if this was added either to each role description or to section 5.
Recommendation/ Request	The KIA requests answers to these questions and additions to the SCP as appropriate.
Importance	Low-Moderate

KIA-NWB-19

Review Comment Number	KIA-NWB-19
Subject/Topic	Annual report does not include the location of additional water sources not identified in the 2023 Winter Ice Road Technical Memo.
References	• Back River Project, 2023 Annual Report for Water Licence 2AM-BRP1831, Section 2.2, page 6, April 2024.
Summary	The annual report noted that some new water sources were identified and used for Winter Ice Road construction. However, the locations of these water sources are not provided.
Detailed Review Comment	Section 2.2, page 6 of the report includes the following information: *"During the 2022/2023 WIR season, some water sources not identified in the 2023 Winter Ice Road Technical Memorandum for the Back River Project which was submitted to NWB prior to the 2022/2023 WIR construction. For these water sources, available water capacity has been retroactively calculated to ensure these withdrawals would not have had a negative impact on the water sources. To calculate available water capacities, the surface area of the water source (as determined by available GIS data) was multiplied by 10 cm. This calculation is considered protective of the lake habitat and has been previously used to determine water withdrawal capacity in both Nunavut and the Northwest Territories"*. As these water sources were not previously documented, additional documentation around this water use should be supplied.
Recommendation/ Request	The KIA requests the following information be supplied: • Please provide the locations of all newly identified water

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	sources used in WIR construction, their locations relative to the WIR, and the relative volumes taken from each. • Please state the communication steps used by B2Gold to notify the NWB and the KIA about these additional water sources and proposed or post-hoc use of them.
Importance	High

KIA-NWB-20

Review Comment Number	KIA-NWB-20
Subject/Topic	Reference to what is included in Appendix G
References	• Back River Project, 2023 Annual Report for Water Licence 2AM-BRP1831, Section 2.11, Spills, Page 12, April 2024.
Summary	As noted in KIA-AR-01, the spill log does not appear to include follow-up actions; rather it includes what was done to clean up spills.
Detailed Review Comment	The title of Section 2.11, which references the reader to the spill log in appendix G, is "A LIST AND DESCRIPTION OF ALL UNAUTHORIZED DISCHARGES INCLUDING VOLUMES, SPILL REPORT LINE IDENTIFICATION NUMBER AND SUMMARIES OF FOLLOW-UP ACTION TAKEN". As previously noted in KIA-NWB-14, only the immediate response taken to clean up the spill is noted in appendix G, and the full meaning of follow-up actions is not included/reported on.
Recommendation/ Request	The KIA requests the following information be supplied: • Please include follow-up actions in spill log in Appendix G to match the title of Section 2.11 of the Annual report.
Importance	High

KIA-NWB-21

Review Comment Number	KIA-NWB-21
Subject/Topic	Vague comments that could be improved
References	• Back River Project, 2023 Annual Report for Water Licence 2AM-BRP1831, Section 2.6e, Spills, Page 12, April 2024.
Summary	Some of the technical reporting is vague and does not provide any

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	actual reported information.
Detailed Review Comment	Section 2.6e, titled "Any geochemical outcomes or observations that could imply or lead to environmental impact" contains only the statement that: "Geochemical outcomes and observations were within those outlined during Project assessment and permitting as being anticipated". This could be better stated by noting what measurements and observations are being spoken of at this point in the project cycle, and the EA predictions they are being compared to.
Recommendation/ Request	The KIA requests that annual reports avoid broad statements saying that measurements were within range of predictions without reporting on what those results are and what values they are being compared to.
Importance	Moderate

KIA-NWB-22

Review Comment Number	KIA-NWB-22
Subject/Topic	In two cases, "other" is noted as the produced spilled within the spill log
References	• Back River Project, 2023 Annual Report for Water Licence 2AM-BRP1831, Appendix G
Summary	Appendix G within the Back River Reportable Spills for 2023 shows two entries for "Other" on Mar 13, 2024.
Detailed Review Comment	Two entries for "other" are found in the spill log, which appear to have occurred in two separate instances on the same day – Mar 13, 2024. The quantities noted are substantial (300 kg and 250 kg, respectively), and the spill description simply includes the word "breakage". Under mitigation, it simply states "material cleaned up with equipment and hand tools; placed in lined megabags and disposed of off-site". This sort of reporting of spills provides the KIA with very little detail about anything and does not constitute proper spill reporting. Please include the product spilled and more of a description of what happened. Again, results of a follow-up are missing, and there are only notes on how something was cleaned up (immediate mitigation). If a product that has been spilled by B2Gold cannot be identified in a spill log, this is an issue that needs to be resolved.
Recommendation/ Request	The KIA requests that annual reports always include the product within the spill log. If the product is unknown to the person documenting the spill, there is a problem with the procedure – someone should come to

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	the scene and identify it. As well, SDS data sheets need to be kept onsite, and everyone needs to know how to use them.
Importance	High

KIA-NWB-23

Review Comment Number	KIA-NWB-23
Subject/Topic	High-level, inexact locations provided in spill log
References	• Back River Project, 2023 Annual Report for Water Licence 2AM-BRP1831, Appendix G • KIA-AR-1, KIA-AR-4
Summary	Appendix G within the Back River Reportable Spills for 2023 shows 7 locations where spills occurred that are very high-level and could not be found by an independent third party wishing to test the site for full remediation. If a GPS is not available, spill sites should be revisited with a GPS to record the location precisely, to within 5 m.
Detailed Review Comment	As per KIA-NWB-14, and KIA-NWB-22, there are some issues with the current spill log procedure and information being collected. As previously noted, modifications need to be made to the spill log procedure to ensure that it is always capturing: 1) the precise location of spills rather than vague/high- level descriptions like “Umwelt Lake”, and 2) the follow-up actions taken (above and beyond immediate clean up actions). In addition, a review of the spill log reveals 7 entries with vague location descriptions, which would not enable testing to determine if a site has undergone proper remediation. This signals a need to also update the requirements for logging spill location. The KIA requests a GPS location with a precision close to +/- 5 m, or +/- 10 m if that is not possible.
Recommendation/ Request	The KIA requests that annual reports always include the exact location within the spill log and that procedures be modified to explicitly require this. If the location is unknown to the person documenting the spill (i.e., they do not have a GPS on them), they should radio to someone who can bring a GPS to site to record the location.
Importance	High

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Review Back River Project - 2023 Geotechnical Annual Report

REVIEW COMMENTS

General

SRK completed the geotechnical site inspection from August 29-31, 2023, hence most observations recorded in the 2023 AGI Report are based on the conditions encountered at that time. Additional information was provided to SRK by B2Gold Nunavut, such as drone imagery, following the in-person inspection, which were used by SRK to complement some of their initial observations.

KIA's geotechnical engineering consultant, BGC Engineering Inc. reviewed the 2023 AGI Report and its 4 appendices. In the 2023 AGI Report, SRK provided observations related to the Goose Property and the MLA Site, which were broken up into 17 locations on the Goose Property and 9 for the MLA Site, respectively. A total of 38 observations with suggestions / recommendations were reported for the Goose Property and 20 for the MLA Site, of which 9 were identified by SRK as critical or time sensitive.

KIA's consultant understands that the Back River project is in transition into a pre-operation stage, and therefore many pads, roads, ponds, and water conveyance (culvert) structures were at an interim state and / or were not completed at the time of the 2023 AGI. However, even during that transition, protection of sensitive permafrost and proper drainage is critical, as outlined by SRK in their document. Our consultant agrees with the findings presented by SRK that highlight locations where:

- thermal protection is considered insufficient; for example, as a result of thin pads or road fills;
- drainage is insufficient, resulting in enhanced permafrost degradation through ponding or thermal erosion; and
- geomembrane liner was found to be not well-anchored or insufficiently covered.

The recommended actions, which include adding fill, allowing for space between the edge of the fill and a load on a pad, anchoring of the liners, managing surface drainage and continuation of visual and drone image monitoring are reasonable.

Critical or Time Sensitive Observations

SRK identified the following items as critical or time-sensitive:

- Site Wide: Complete the first draft of the site Thermal Monitoring Plan.
- MLA – Tank Farm: Increase MLA tank #2 pedestal width.

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- MLA – General: Develop a remediation plan for the historic temporary fuel storage area.
- Primary Pond: Mitigate the thermal degradation within the dam footprint.
- Echo – Pit: Revisit the overburden pit slope cladding thickness.
- Goose Neck – Culverts: Some of the culvert inlets and/or outlet are covered with material that should be removed to avoid flow impediments.
- Goose – General: Complete additional surveys and checks on the constructed road widths and thicknesses.
- Goose – General: The temporary drilling water 'pond' should be removed before freshet 2024.
- Goose and MLA – Airstrips: Monitor and consider longer term water management measures for the impediment of flow at the airstrips.

SRK further reports that these observations have been acknowledged by B2Gold Nunavut and either had been fully addressed at the time that the 2023 AGI Report was being completed (April 2024), were at a stage of being addressed, or were planned to be addressed.

2023 AGI Recommendations

At the time that the 2023 AGI Report was issued (April 2024), the following recommendations had been addressed: 2023-AGI-G-12, 2023-AGI-G-18 (relevant for final pond construction), 2023-AGI-G-24, 2023-AGI-G-25, 2023-AGI-G-35, 2023-AGI-G-38, and 2023-AGI-M-19. The status of the remaining observations is unknown.

KIA's consultant, BGC agrees with the observations prepared by SRK and emphasizes the importance for B2Gold Nunavut to follow those. The 2023 AGI Report highlights the key challenges B2Gold Nunavut encounters on site, which had been identified during previous AGIs, and provides several recommendations that our consultant agrees with. Specifically, it is recommended that B2Gold Nunavut:

- adequately manages surface drainage and water course crossings (culverts and bridges);
- follows design recommendations with regards to fill thicknesses, and implements them as soon as practical; and
- focuses on the site wide thermal and permafrost monitoring plan.

Requests

KIA assumes that B2Gold Nunavut continues to implement and address recommendations listed in the 2023 AGI Report following its finalization in April 2024. Therefore, KIA requests an update on how B2Gold Nunavut is addressing the 58 observations listed in the 2023 AGI report.

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Thank you.

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Cc Wynter Kuliktana, Director, KIA, Department of Lands and Environment