



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
2AM-BRP1831
Our file - Notre référence
GCDOCS# 138906694

July 14, 2025

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

**Re: Crown-Indigenous Relations and Northern Affairs Canada's Review of the
Licence 2024 Annual Report for the Back River Project, Type A Water Licence
No. 2AM-BRP1831**

Dear Richard,

Thank you for the April 16, 2025 invitation to review the referenced licence 2024 annual report, submitted by B2Gold Back River Corp. (B2Gold Nunavut), for Type A Water Licence No. 2AM-BRP1831.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. Please find CIRNAC comments and recommendations in the attached Technical Memorandum.

The applicant shall provide confirmation from the Nunavut Water Board that all outstanding water license fees have been paid in full prior to approval of this application.

If there are any questions or concerns, please contact me at (867) 975-3877 or Joyce.Demers@rcaanc-cirnac.gc.ca or Andrew Keim at (867) 975-4550 or Andrew.Keim@rcaanc-cirnac.gc.ca.

Sincerely,

Joyce Demers, B.Sc.,
A/Manager of Water Resources

Canada 



Technical Review Memorandum

Date: July 14, 2025

To: Richard Dwyer – Manager of Licensing, Nunavut Water Board

From: Joyce Demers – A/Manager of Water Resources, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada's Review of the Licence 2024 Annual Report for the Back River Project, Type A Water Licence No. 2AM-BRP1831

Region: ☒ Kitikmeot ☐ Kivalliq ☐ Qikiqtani

A. BACKGROUND

B2Gold Back River Corp. (B2Gold Nunavut) operates one active project, the Back River Gold Project (Back River or the Project), located within the Kitikmeot Region of southwestern Nunavut. It is situated approximately 400 km southwest of Cambridge Bay, 95 km southeast of the southern end of Bathurst Inlet (Kingaun or Qingaut), and 520 km northeast of Yellowknife, Northwest Territories.

The Project is located predominantly within the Queen Maud Gulf Watershed and has been issued two Water Licences (2AM-BRP1831 and 2BE-GOO2028) by the NWB. The Water Licences allows B2Gold Nunavut to alter, divert, or otherwise use water or deposit waste in support of the Project.

In April 2025, B2Gold Nunavut submitted their 2024 Annual Report to the NWB, as required per Part B, Item 2 of the Type A Water Licence. The NWB advised the B2Gold Nunavut, intervening parties, and the public that the NWB has begun the review period for the 2024 Annual Report. The submissions to the NWB will be placed on the NWB's public registry.

The Project is comprised of two primary areas: 1) Marine Laydown Area (MLA) situated along the western shore of southern Bathurst Inlet, and 2) Goose Lake Area south of the MLA where the gold deposits are located. These areas are connected seasonally by an approximately 160 km-long winter ice road (WIR). The majority of annual resupply is brought in by water to the MLA and necessary materials are transferred via winter ice road to the Goose Lake property.

Project development works, which began in 2018 and continued through 2023, have included the construction of pad areas, all-weather access roads, and an airstrip at the MLA; as well as the construction of a tent camp, bulk fuel tank and containment area, and barge off-loading area for the receipt, storage, and transfer of materials necessary to support construction activities via sealift and WIR. Development at the Goose Property through 2023 included the construction of pads, all-weather roads, and bulk fuel storage; an upgrade to



the Rascal Stream crossing to accommodate haul traffic; earthworks to extend the Goose airstrip to 5,000 feet; Phase 1 of the accommodations complex (sleeping quarters and kitchen), which added 310 beds to the existing 160 beds of the exploration camp; commissioning of the Goose Property sewage treatment plant (STP), concrete batch plant, and fully automated rebar cutting and bending machines; ongoing construction of the plant site, mill, truck shop, and Vault Underground decline; continued pre-stripping of Echo Pit; and initiating construction of the primary pond (B2Gold Nunavut 2024).

In 2024, B2Gold Nunavut completed the following activities in support of future Project construction and operation:

- Ongoing construction of the plant site, mill, and truck shop at the Goose Property.
- The concrete batch plant and a fully automated rebar cutting and bending machines poured 90% of the concrete needed for the Goose Site Process Plant.
- The majority of Goose Site Process Plant structures were cladded to allow heated indoor work through the winter, mechanical and structural are well advanced, and the ball mill installation was completed ahead of schedule.
- Phase 2 of the accommodations complex at the Goose Property was completed in May 2024, expanding the camp to approximately 600 beds.
- Continued construction of the primary pond at the Goose Property nearing completion.
- Echo Pit pre-stripping was completed and mining commenced.
- Umwelt Pit pre-stripping commenced.
- Continuing advancement of the Vault Underground decline.
- Approximately 1,560 return supply transport trips were made on the WIR in 2023/2024.
- The fuel tank containment area at the MLA was enlarged to facilitate additional storage, and initial construction for similar storage at Goose commenced.
- The MLA was reorganized to maximize space for the 2024 sealift unload.
- All major equipment and materials required for construction have been delivered to the MLA and are awaiting transportation down the WIR to Goose.
- Environmental monitoring and baseline programs including atmospheric, archaeology, water quality, fisheries, wildlife, geochemical/geotechnical, and vegetation programs.

CIRNAC provides the following comments and recommendations pertaining to the 2024 Annual Report package. A summary of the subjects of recommendations can be found in Table 1. Documents reviewed as part of this submission can be found in Table 2 of Section B. Detailed technical review comments can be found in Section C.



Table 1: Summary of Recommendations

Recommendation Number	Subject
R1	Stream Water Quality – Increasing Site Water Quality Exceedances
R2	Surface Water Quantity - Water Management Plan
R3	Infrastructure & Engineering – Dams/Dikes Seepage Monitoring and Reporting
R4	Infrastructure & Engineering – Echo and Umwelt Pit Slope Cladding
R5	Landfill & Waste Management – General
R6	Landfill & Waste Management – Incinerator Testing
R7	Landfill & Waste Management – Waste and Waste Chemical Storage
R8	Acid Rock Drainage & Metal Leaching – Waste rock disposal volumes
R9	Acid Rock Drainage & Metal Leaching – Echo Pit Water Management and Monitoring
R10	Acid Rock Drainage & Metal Leaching – Construction Waste Rock Volumes
R11	Acid Rock Drainage & Metal Leaching – SFE Testing
R12	Hazardous Materials Management – Waste Tracking System
R13	Hazardous Materials Management – Residual Waste Impacts
R14	Hazardous Materials Management – Timeline for Construction of Hazardous Waste Storage Facility
R15	Geochemical Properties of Overburden Materials

B. DOCUMENTS REVIEWED AND REFERENCED

The following table (Table 2) provides a list of the documents reviewed under the submission and reference during the review.

Table 2: Documents Reviewed and Referenced

Document Title	Author, File No., Rev., Date
Back River Project - 2024 Annual Report for Water Licence 2AM-BRP1831.	RainCoast Environmental Services Ltd. for B2Gold Back River Corp. March, 2025.
Appendix A Winter Ice Road Water Use.	B2Gold Back River Corp., April 2025, Version 1.
Appendix B Waste Disposal.	B2Gold Back River Corp., April 2025, Version 1.
Appendix C: Monitoring Program Activity Overview by Station.	B2Gold Back River Corp., April 2025, Version 1.
Appendix D: Water Quality Analytical Results.	B2Gold Back River Corp., April 2025, Version 1.



Document Title	Author, File No., Rev., Date
Appendix E: B2Gold Back River Project - 2024 Surface Water Quality Report.	WSP Canada Inc. CA0035158.8381-180-R-Rev0-11000, March 14, 2025.
Appendix F: Geochemical Monitoring Results. Memorandum	B2Gold Back River Corp., March 1, 2025, Version 1.
Appendix G: Landfill and Waste Management Plan.	B2Gold Back River Corp., March 31, 2025, Version 4.0.
Appendix H: Community Engagement Record.	B2Gold Back River Corp., April 2025, Version 1.
Appendix I: Reportable Spills Record.	B2Gold Back River Corp., April 2025, Version 1.
Water Licence No. 2AM-BRP 1831 (Amendment No. 1)	Nunavut Water Board. Issued October 15, 2021
Back River Project – Water Management Plan.	B2Gold Back River Corp., May, 2024.
Back River Project – Water Management Plan Addendum No.1.	B2Gold Back River Corp., April, 2022, Version 4.0.
Back River Project – Water Management Plan Version 5 Addendum 01-IMLE.	B2Gold Back River Corp. May 2024.
File: 2AM-BRP1831 / B12. Letter from the NWB to B2Gold Re Type A Water Licence No: 2AM-BRP1831; Water Management Plan for the Back River Project.	Nunavut Water Board. August 14, 2024.
Crown-Indigenous Relations and Northern Affairs Canada's Review of Responses to the 2023 Annual Report for the Back River Project, Type A Water Licence No. 2AM-BRP1831. GCDOCS#129026929	CIRNAC, September 19, 2024.
B2Gold Nunavut 2023 Annual Report for 2AM-BRP1831 – Responses to Comments.	B2Gold (Kristina Benoit), August 2, 2024.
Crown Indigenous Relations and Northern Affairs Canada Water Licence Inspection Report.	CIRNAC (James Bolt), March 24, 2024.
B2Gold Nunavut Response to CIRNAC Inspection Reports (2024-KIT-JKM02 -2AM BRP) – Water Licence 2AM-BRP1831.	Chris LeGoffe, Superintendent, Environment to Jonathan Mesher, Water Resource Officer – Nunavut Region (CIRNAC), September 18, 2024.
Back River Project – Vegetation Monitoring Plan.	B2Gold Back River Corp. December 2024, Version 3.0.
Goose & MLA Project Sites – 2024 Annual Geotechnical Inspection, Back River Project, Nunavut, Canada B2Gold Corp.	SRK Consulting (Canada) Inc. CAPR003105, April 2025
Back River Project – Goose Lake Tote Storage Facility Design and Construction Summary Memo.	December 31, 2024, Version 1.0.
Back River Project Waste Rock Management Plan.	November 2020
Back River Project 2024 Annual Report to the Nunavut Impact Review Board (NIRB)	
CIRNAC Comments on the 2023 Annual Report to the NIRB	CIRNAC



C. RESULTS OF REVIEW

1. Stream Water Quality – Increasing Site Water Quality Exceedances

Reference:

- 240404 2AM-BRP1831 2024 Annual Report: Appendix E 2024 Baseline Surface Water Quality Report – Section 3.3 Stream Water Quality

Comment:

As stated in this section of the Report “Water quality guideline exceedances at Goose Lake inflows were also observed in the past; however, concentrations of most parameters that exceeded guidelines in 2024 were higher than in the past, and some parameters such as total copper and total arsenic exceeded guidelines or SSWQOs for (the) first time in 2024. Goose Lake inflow from Echo Lake (BRP-19) and the inflow from Llama watershed (BRP-18) had higher concentrations in 2024 than other inflows (Appendix D, Table D-6) and also compared to previous years (Appendix E). Water samples collected at BRP-19 had the highest concentrations of total dissolved solids, ammonia, nitrite and nitrate, turbidity, cyanide, magnesium, potassium, sodium, sulphate and most metals (total and dissolved aluminum, antimony, arsenic, chromium, cobalt, copper, lead, lithium, manganese, molybdenum, nickel, selenium, silicon, sulphur, uranium vanadium, and zirconium) in 2024 compared to previous years or other Goose Lake inflow(s).

Higher than background concentrations of most of these parameters were also noted at BRP 18 (i.e., total dissolved solids, nitrate, chloride, calcium, magnesium, sodium, total and dissolved barium, cadmium, cobalt, lead, lithium, manganese, nickel, selenium, silicon, strontium, and zinc). This inflow had highest concentrations in September 2023 and concentrations continued to be high in 2024 but were overall slightly lower than those measured at BRP-19”.

BRP-18 is located adjacent to the Goose Camp, the Plant Site and the Ore Storage Pad, while BRP-19 is located at the junction of the Main Access Road and Echo Pit Road. This increasing trend so early in the project development phase is of concern and warrants immediate investigation.

Recommendation:

(R-01) CIRNAC recommends that B2Gold Nunavut investigate to determine possible source(s) of stream contamination at these two sites (e.g., upgradient run/off, dust, etc.) and implement further mitigation measures as may be required to address this developing concern.



2. Surface Water Quantity – Water Management Plan

Reference:

- 240528 2AM-BRP1831 Water Management Plan Version 5-IMLE
- 2024 Annual Report for Water Licence 2AM-BRP1831; Table 2.20-1 Plans Submitted to NWB in 2024 or as an Appendix to this Report
- File name: 240528 2AM-BRP1831 Water Management Plan Version 5 Addendum 01-IMLE
- Addendum 1 to Water Management Plan Version 4; April 2022. Addendum not dated, summarizing all changes provided in red text in Version 5 Water Management Plan, May 2024.
- File name: 240528 2AM-BRP1831 Water Management Plan Version 5-IMLE
- Back River Project Water Management Plan, May 2024

Comment:

The 2024 annual report for Water Licence 2AM-BRP1831 states that the Water Management Plan (WMP) dated May 2024 was approved by the Nunavut Water Board.

An undated addendum document provides details of the changes to the previous WMP, Version 4, dated April 2022, which are highlighted with red font in the updated WMP, Version 5, dated May 2024.

The updated WMP dated May 2024 includes a revision log:

Revision Log

Version	Date	Section	Page	Revision
0	November 2015	All	All	Supporting Document for Final Environmental Impact Statement; submitted to Nunavut Impact Review Board (NIRB).
1	October 2017	All	All	Supporting Document for Type A Water Licence Application; submitted to Nunavut Water Board (NWB).
2	June 2020	All	All	Updated to reflect the 2020 Modification Package changes, and as a Supporting Document; submitted to the Nunavut Planning Commission (NPC) and NIRB.
3	October 2020	All	All	Submitted as a Supporting Document for the Type A Water Licence Amendment Application to the NWB.
4	April 2022	All	All	Supporting Document for Type A Water Licence Amendment Application; submitted to Nunavut Water Board (NWB)
5	May 2024	Addenda 1	Addenda 1	Version 4 updated to include clarifying language supporting management of specific runoff and snowmelt water at freshet associated with Open Pits and interim water management strategy.

However, the report title (Water Management Plan, WMP) does not include a version identifier. The referenced Version 5 “Addenda 1” section that would include revision details is not included in the May 2024 WMP despite being explicitly referenced in the revision log.

The May 2024 WMP does not include any figures to show the locations or characteristics of water management features being described in the WMP. The WMP Appendix A reference to figures having been “Submitted to the NWB on April 29, 2022” is inadequate.



The May 2024 WMP Appendices include empty placeholders for Appendix B, Saline Water Management Plan, and Appendix C, Water and Load Balance Report. Appendix cover page sentences indicate that Appendix B was “Submitted to the NWB on April 29, 2022” and that Appendix C was “Submitted to the NWB under separate cover August 30, 2022”. These statements are inadequate to properly reference or retrieve these documents which are relevant to the current WMP.

The undated addendum to Version 4 April 2022 WMP states that Table 5.2-3 is updated in Version 5 to include construction of an emergency dump pond, but this change could not be located in the May 2024 WMP.

Construction of the emergency dump pond (Sabina 2021) is added to WMP Version 5 Section 6, together with discussion of “the Emergency Discharge Pond”, all in red font to identify modified text. It is unclear if these refer to a single facility with different names or if the emergency dump pond is separate and distinct from the emergency discharge pond. These facilities were not identified in the prior WMP and no figures are provided with the May 2024 WMP to show facility locations. Without figures, it is not possible to identify any conflicts or interactions with other proposed water management facilities. Further, the WMP does not provide a design basis for these emergency facilities or description of how they are to be used and/or managed.

Recommendation:

(R-02) CIRNAC recommends that B2Gold Nunavut re-issue the May 2024 WMP with minor modifications identified below, to provide necessary information for its implementation as a regulatory document and to establish a revised template to be used in subsequent revisions.

1. Expand the document title to include the revision number., i.e., Water Management Plan, Version 5.0, May 2024.
2. Appendix A, Figures, needs to include all figures listed in the WMP Table of Contents for Appendix A, Figures, The cover page at the front of Appendix A should be revised to identify the document(s) in which the figures were originally provided to the NWB, and confirm whether they are applicable to the current WMP.
3. The report needs to include figure(s) showing the location and extent of the proposed Emergency Dump and Emergency Pond. Presumably these would be added to Appendix A, Figures. The titles of the added figures need to also be identified in the list of figures in the WMP table of contents.
4. The cover pages at the start of the Appendix B, placeholder for the Saline Water Management Plan, and Appendix C placeholder for the Water and Load Balance Report should provide the full references to (1) the reports that were originally provided to the NWB, and (2) previous WMPs that included copies of the reports.



Statements should be included to confirm whether the previous reports are applicable to the current WMP. If digital copies are available from the project registry, links should be provided.

5. Additional information about the proposed Emergency Dump and Emergency Pond needs to be included in the WMP. The 2024 WMP includes a new reference to a previous relevant report: Sabina 2021, SBR6SDE-00-C-RPT-0002-R0 Emergency Discharge Pond Design Report, submitted to the Nunavut Water Board. June 2021. A full copy of this report should be provided as an additional appendix to the 2024 WMP.
6. Appendices should be added to provide copies of: (1) the “Addenda 1” identified in the WMP revision log and (2) the NWB August 14, 2024 approval (240814 2AM-BRP1831 Updated Water Management Plan) of the May 2024 WMP.
 - (1) “Addenda 1” is expected to be the stand-alone document received with file name “240528 2AM-BRP1831 Water Management Plan Version 5 Addendum 01-IMLE Addendum 1 to Water Management Plan Version 4; April 2022”, which describes changes from WMP Version 4 to Version 5.
 - (2) The WMP approval document includes a summary of B2Gold Nunavut commitments and responses to intervenor comments regarding the WMP. The approval is without conditions but closes with: “The NWB encourages the Licensee to address the intervenors’ recommendations in the next revision of the approved plan.

3. Infrastructure & Engineering – Dams/Dikes Seepage Monitoring and Reporting

Reference:

- Water Licence Schedule B (Construction), 1. h.

Comment:

The Water Licence requires reporting of “*monthly and annual quantities of seepage from dikes and dams in cubic metres*”. The 2024 Annual Report references this in the 2024 Annual Geotechnical Inspection Report.

Seepage from dams/dikes are not reported in the 2024 Annual Geotechnical Inspection Report, as referenced in the 2024 Annual Report. It is understood that the Primary Pond Dam and other water management infrastructure are under construction and are in a transitional phase, and thus seepage monitoring may not be relevant at this time.



Recommendation:

(R-03) CIRNAC recommends that if seepage monitoring is not relevant at this time, then a justification should be provided in the 2024 Annual Geotechnical Inspection report to address the requirements of the Water Licence.

Reporting on seepage should also be included in the Annual Geotechnical Inspection reports going forward for when seepage monitoring and reporting is required by the Water Licence.

4. Infrastructure & Engineering – Echo and Umwelt Pit Slope Cladding

Reference:

- Water Licence Schedule B (Construction), 1.c

Comment:

The Water Licence identifies that the 2024 Annual Report includes “*a discussion on any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk*”. As noted in the 2024 Annual Geotechnical Inspection Report, the overburden pit slope cladding for the Echo and Umwelt Pits does not have sufficient thermal protection rockfill cladding. The cladding is intended to prevent thermal degradation, erosion, and settlement of the pit’s overburden slopes.

Recommendation:

(R-04) CIRNAC recommends that the overburden pit slopes of Echo Pit be adequately cladded in advance of tailings deposition into the pit, which is anticipated to occur in 2025.

In addition, it is recommended that the overburden pit slopes of Umwelt Pit be adequately cladded once the pit slopes have reached their design extents.

5. Landfill & Waste Management – General

Reference:

- Section 9 of the 2024 Annual Report for Water Licence 2AM-BRP1831
- Goose & MLA Project Sites – 2024 Annual Geotechnical Inspection

Comment:

Section 9 of the Annual Report references Tables B-1 and B-2 for quantities and types of waste backhauled to KBL Environmental.



Waste incinerated, open burned and waste oil use as heating oil quantified in Tables B-3 and B-4 - Data for MLA property is only recorded for one month.

Non-hazardous waste is disposed at the Waste Rock Storage (WRSA Landfill – quantities were not tracked in 2024 but estimated based on 20 m³/day. The concern is that without a proper understanding of the amount of waste being generated it is impossible to determine if existing infrastructure will be capable of holding the waste. If an estimation is allowed to continue then it could create significant risks of landfilling beyond approved limits. This could in turn lead to contaminants not contained, limit aggradation of permafrost, resulting in the potential for leaching of waste constituents during seasonal thaw.

Temporary landfill/storage for waste is reported to be continued at the Goose Quarry (2024 Geotechnical report sec. 5.2.1. The report indicates that scattered litter occurs at this site. The concern is that this litter may end up in nearby waterbodies.

The 2024 Geotechnical report identified the landfill at the Echo WRSA Waste Rock fill is located outside the final design footprint and is near the outside edge of the rock fill. The Back River Mine Landfill & Waste Management Plan V.4.0 is included in the annual report as Appendix G and includes a concept cell design (Figure 3). The landfill is intended to be incorporated into the Waste Rock fill with the design and operation intended for aggradation of permafrost. If the location of solid waste fill is in close proximity to outside slopes of the WRSA as stated in the 2024 Geotechnical report, it may affect slope stability and reduce aggradation of permafrost into the waste fill. Thawing of permafrost in the solid waste fill can potentially result in migration of contaminants and impact surface water.

B2Gold Nunavut submitted a response to the July 12, 2024, inspection report. For the Back River Project, B2Gold Nunavut identified the old Airstrip Quarry as the temporary landfill location in advance of the WRSA construction. The Echo WRSA was constructed and in use as of June 2024. B2Gold Nunavut committed to providing a formalized plan in Q1, 2025 for disposing of the inert non-hazardous waste in the temporary disposal area.

A typical engineered drawing for landfills within WRSA's was attached to the response letter (Appendix A) that was included in the Type A Water Licence Application. This drawing illustrates the waste fill located centrally in the WRSA. The drawing appears to be conceptual.

Recommendation:

(R-05) CIRNAC recommends that:

- a. The annual report identify the temporary landfill/storage of waste at the Goose Quarry and identify proposed actions to limit or prevent scattering of litter.
- b. That waste disposal quantities be tracked and not estimated.



- c. Conduct annual surveys of the landfill disposal sites to confirm fill quantities, delineate the landfill footprint and location, and to confirm landfill operation are contained within the approved design boundaries.
- d. That landfill cell designs include drawings that specifies lateral and vertical dimensions and be submitted to the Water Board for review before its construction as required by the Water Licence.
- e. That surveys be conducted to confirm the lateral and vertical location of landfilled waste at the Echo Waste Rock Fill and the waste fill complies with the approved plan.
- f. That B2Gold Nunavut submit engineering plans for landfill cells that include specific cell design lateral and vertical fill dimensions. The design should include a design report that addresses slope stability and aggradation of permafrost.

Should it be determined by surveys, that landfill operations have occurred outside the approved cell design footprint, the landfill waste fill should be relocated and placed within the approved cell design footprint.

6. Landfill & Waste Management – Incinerator Testing

Reference:

- Section 10 of the 2024 Annual Report for Water Licence 2AM-BRP1831

Comment:

B2Gold Nunavut notes that incinerator testing was not completed in 2024. The Nunavut Department of Environment Guideline for the Burning and Incineration of Solid Waste (2010, Revised January 2012) provides best management practices. Table 2 lists waste that can be burned or incinerated, and those that may be incinerated if equipment has sufficient air pollution controls. Table 3 identifies basic parameters to be measured and recorded. Furthermore, the guideline recommends a one-time or continuous emission monitoring, depending on the type and quantity of waste incinerated, including oxygen and carbon monoxide in undiluted gases. Annual or periodic stack sampling for hydrogen chloride, dioxins and furans may be required where feedstocks include organic materials that contain chlorine, such as chlorinated solvents and plastics, PVC, or marine driftwood.

B2Gold Nunavut does not provide rationale for omitting stack sampling in 2024. B2Gold Nunavut had indicated in response to the 2023 annual report recommendations that a new incinerator is scheduled to be commissioned in 2025.



Recommendation:

(R-06) CIRNAC recommends that B2Gold Nunavut provide their rationale for omitting stack sampling of incinerators in 2024.

It is recommended that B2Gold Nunavut submit plans and details for installation of the proposed new incinerator. This should include a proposed schedule and commissioning plan for the incinerator. The schedule for stack sampling and ash sampling should be provided for 2025.

7. Landfill & Waste Management – Waste & Waste Chemical Storage

Reference:

- 2024 Water Licence Inspection Report – March 18, 2025

Comment:

The March 18, 2025 Water Licence Inspection Report identified several non-compliance issues and included the required corrective action to be completed by June 1, 2025.

Within the Inspection report, it was identified there are several instances of improperly stored wastes and chemicals, and secondary containment was inadequate or not in place for specific chemical storage locations. The report also identified kitchen waste that was not adequately contained and attracted wildlife.

B2Gold Nunavut completed a Goose Lake Tote Storage Facility and Design & Construction Summary Memo (December 31, 2024). It includes detailed design drawings and construction specifications. This appears to meet the Water Licence requirements.

Recommendation:

(R-07) CIRNAC recommends that the Action items identified resulting from the CIRNAC 2025 inspection be completed within the timeline given by CIRNAC and a follow-up confirmation be provided. It is recommended that B2Gold Nunavut provide an update on the status of corrective actions taken.

It is recommended that B2Gold Nunavut also provide a written description of actions that will be implemented to prevent future non-compliance of waste and chemical storage issues.

It is further recommended that B2Gold Nunavut provide a final construction report for the Tote Storage Area once completed.



8. Acid Rock Drainage & Metal Leaching – Waste Rock Disposal Volumes

Reference:

- 2024 Annual Report for Water Licence 2AM-BRP1831, Appendix B (Table B-7)

Comment:

Table B-7 Waste Rock Disposal indicates that the total volume of material in the Echo Pit WRSA at the end of 2024 is 1,523,334 m³. It is not clear from the table if this volume is exclusively PAG waste rock or if it contains NPAG or other materials. A volume of waste in the NAG Stockpile, as monthly values, is presented in this table in the adjacent column.

Appendix F, Item 2.6b indicates that “*As of December 31, 2024, there has been 1,498,305 m³ of waste placed in the only WRSA onsite*”. The WRSA is not explicitly mentioned here but is understood to be the Echo Pit WRSA. This section subsequently describes that waste rock is segregated into NPAG and PAG based on the geochemical criteria.

The WRMP indicates that “Waste Rock will be placed in accordance with its ARD classification, with PAG waste rock placed in the central part of the WRSA, and NPAG waste rock placed along the outer margins.

Recommendation:

(R-08) CIRNAC recommends that B2Gold Nunavut clarify the volume of PAG and NPAG waste that has been placed in the Echo Pit WRSA. It is recommended that the location of the PAG and NPAG material be described or shown visually on a figure.

9. Acid Rock Drainage & Metal Leaching – Echo Pit Water Management and Monitoring

Reference:

- 2024 Annual Report for Water Licence 2AM-BRP1831, Appendix C (Table C-1, Item BRP-22)

Comment:

Item BRP-22 is for the Echo WRSA Pond. Under the “Monitoring Activity” column indicates that this is “N/A -facility construction which has not been initiated, N/A mine phase”. The Echo Pit WRSA received waste rock throughout 2024, and therefore the Echo WRSA Pond should be constructed and operational for water management and water monitoring, as per the Waste Rock Management Plan and Water Management Plan. The Echo WRSA Pond is described as an “Event Pond”, used for short term water storage, in the Water Management Plan.



Recommendation:

(R-09) CIRNAC recommends that B2Gold Nunavut describe the water management and monitoring from the Echo Pit WRSA. Specifically, it is recommended that B2Gold Nunavut address the question of whether the Echo WRSA Pond has been constructed to capture water originating from the Echo Pit WRSA. If the Pond is active, it is recommended that this line item in Table C-1 be updated. If the Pond is not constructed, it is recommended that B2Gold Nunavut provide information on managing leachate from the Echo Pit WRSA.

10. Acid Rock Drainage & Metal Leaching – Construction Waste Rock Volumes

Reference:

- 2024 Annual Report for Water Licence 2AM-BRP1831, Appendix F, Item 2.6b and 2.6c

Comment:

Appendix F describes the Geochemical Monitoring Results, which address the requirements of Part B, Item 2 and Schedule B of the License. Item 2.6b of Appendix F addresses the following requirement: *“As-built volumes of waste rock used in construction and placed in waste rock storage areas (WRSA) with estimated balance of acid generation to neutralization capacity in a given sample, as well as metal toxicity”* The text in this section does not provide the requested *“As-built volumes of waste rock used in construction...”*. The text for Item 2.6c does confirm that *“All material placed for road construction was NPAG, as determined through laboratory analysis, and has been approved for placement and tagged through the production tracking system”* and that *“The surveyors then confirm the volumes placed for construction to verify the amount removed ex-pit”*, which indicates that the volume of material used for construction is known but is not reported.

Recommendation:

(R-10) CIRNAC recommends that B2Gold Nunavut provide the details of the volumes of waste rock used in construction to satisfy the requirements of Part B, Item 2 and Schedule B of the Water Licence.

11. Acid Rock Drainage & Metal Leaching – SFE Testing

Reference:

- 2024 Annual Report for Water Licence 2AM-BRP1831, Appendix F Item 2.6a
- Back River Project Waste Rock Management Plan (WRMP), November 2020



Comment:

The WRMP specifies that *“Short-term leach testing following the shake flask extraction (SFE) method will be conducted on [a] subset [of the samples] to confirm the metal leaching potential of NPAG material, this testing is not required for PAG samples, as PAG waste rock will not be used in construction”*.

The WRMP indicates that *“NPAG samples analyzed for SFE will be compared to 10x CCME guidelines for aquatic life to confirm metal leaching potential. Material with a high metal leaching potential will also not be used for WRSA cover material”*.

The WRMP also provides contingency Waste Rock Management Contingency Strategies (Table 8-1) for a scenario of *“Neutral metal leaching from the NPAG material may be greater than expected”*.

As per Water Licence 2AM-BRP1831 Part D, Item 5, only waste rock to be confirmed to be NPAG and non-metal leaching may be used as construction material.

The annual report does not indicate that SFE testing was completed on any samples. Item 2.6a of Appendix F presents classification criteria for PAG and NPAG and indicates that the baseline geochemical assessment identified that PAG samples were determined to have metal leaching potential due to the potential for acidic pH but does not make mention of potential for metal leaching from NPAG samples.

Recommendation:

(R-11) CIRNAC recommends that B2Gold Nunavut confirm if any SFE testing has been completed during 2024, and to provide a summary of the results or justification for the testing not having been completed.

12. Hazardous Materials Management – Waste Tracking System

Reference:

- 240404 2AM-BRP1831 2024 Annual Report: Appendix I 2024 Reportable Spill Record and Appendix B 2024 Waste Disposal

Comment:

Table J-1 reportable spill record captures information relating to reportable spills (i.e., date, product spilled, spill description, location, etc.). The Mitigation and Corrective Actions section does not quantify the waste materials disposed (e.g., *...contaminated soil was placed into a lined mega bag for eventual offsite disposal*”).



Table B-1 describes and quantifies waste removed but does not readily reconcile with the wastes described in the reportable spill record (i.e., contaminated soil disposal is described by date and weight).

Recommendation:

(R-12) CIRNAC recommends that B2Gold Nunavut implement a tracking system to confirm hazardous materials arising from reportable spills are suitably documented and disposed of.

13. Hazardous Materials Management – Residual Waste Impacts

Reference:

- 250507 2AM-BRP183 2024 Annual Geotechnical Inspection Report section 5.3.2 Former Temporary Fuel Containment

Comment:

The geotechnical inspection report identified concerns that the former fuel storage may have negatively impacted the local soils (i.e., “*SRK understands that this area is in the process of being decommissioned. It is suggested that a more formal remediation plan, or increased monitoring plan to better monitor the disturbance, be developed for this area once the tanks and remaining insta-berm structure are removed*”).)

Recommendation:

(R-13) CIRNAC recommends that B2Gold Nunavut prepare an investigation plan to evaluate potential residual waste impacts following decommissioning, and if applicable prepare a remediation plan to restore this area.

14. Hazardous Materials Management – Timeline for Construction of Hazardous Waste Storage Facility

Reference:

- RE: Crown-Indigenous Relations and Northern Affairs Canada’s Review of Responses to the 2023 Annual Report for the Back River Project, Type A Water Licence No. 2AM-BRP1831 dated September 19, 2024; comment R-12
- Back River Project, Goose Lake Tote Storage Facility Design & Construction, Summary Memo dated 31 December, 2024

Comment:

CIRNAC inspections in March and September of 2023 identified concerns with B2Gold Nunavut’s storage and containment of Hazardous Wastes. B2Gold Nunavut committed to



producing and submitting an Engineering Design Report for Hazardous Waste Management Facilities in Q4, 2024.

The Summary Memo provides the required design information.

Recommendation:

(R-14) No further action recommended.

15. Geochemical Properties of Overburden Materials

Reference:

- Back River Project 2024 Annual Report to the Nunavut Impact Review Board (NIRB), Section 4.5.5, Page 4-49 to 4-50
- CIRNAC Comments on the 2023 Annual Report to the NIRB (CIRNAC #6)

Comment:

In response to the 2023 Annual Report to the NIRB, CIRNAC recommended that B2Gold Nunavut provide the quantities of any material stripped, stockpiled, or used elsewhere on site, along with any supporting geochemical analysis. B2Gold Nunavut did not provide this information in response to CIRNAC's comment.

The 2024 Annual Report to the NIRB indicates that pre-stripping from the Echo Pit has been completed and mining has commenced, and that pre-stripping of the Umwelt Pit has commenced.

In the 2024 Annual Report to the NIRB, B2Gold Nunavut has indicated that aggregate production from the designated quarries has been limited, as "...the pit development is providing sufficient material for construction use". B2Gold Nunavut further indicates that an Acid-Base Accounting (ABA) program has been initiated in 2024, which allows for the delineation of non-acid generating (NAG) and potentially-acid generating (PAG) materials.

The geochemical information on overburden materials used for construction have not been provided, nor have the quantities, analysis, and storage location of any PAG material. Without this information, it is unclear to CIRNAC if the materials used for construction are acceptable and will not impact receiving terrestrial and aquatic environments.

CIRNAC is of the view that a comprehensive analysis of overburden materials is required to support a thorough understanding of the ARD/ML potential of materials used to support the development of the project, which is consistent with Part D, Item 5 of 2AM-BRP1831:



"The Licensee shall use Waste rock and fill material for Construction only from approved sources that have been demonstrated, by appropriate geochemical analyses, to not produce Acid Rock Drainage and to be Non-Metal Leaching, and free of contaminants".

Recommendation:

(R-15) CIRNAC recommends that B2Gold Nunavut:

1. Provide the quantities, locations, and relevant analysis of material stripped as part of the mine development.
2. Provide the geochemical analysis (ABA) of all overburden materials used for construction.
3. Provide the locations for storage of any PAG overburden material.