

Environmental Protection Operations Directorate
Prairie & Northern Region
5019 52nd Street, 4th Floor
P.O. Box 2310
Yellowknife, NT X1A 2P7

ECCC File: 6100 000 115 / 002
NWB File: 2AM-BRP1831



July 30, 2026

via email at: richard.dwyer@nwb-oen.ca

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

Dear Richard Dwyer:

RE: 2AM-BRP1831 – B2Gold Corp. – Back River Gold Mine Project – Modification Request

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) regarding the above-mentioned Modification Request.

ECCC provides expert information and knowledge to project assessments on subjects within the department's mandate, including climate change, air quality, water quality, biodiversity, environmental preparedness and emergencies. This work includes reviewing proponent characterization of environmental effects and proposed mitigation measures. We provide advice to decision-makers regarding a proponent's characterization of environmental effects, the efficacy of their proposed mitigation activities, and may suggest additional mitigation measures. Any comments received from ECCC in this context do not relieve the proponent of its obligations to respect all applicable federal legislation.

The following comments are provided:

1. Waste Management and Monitoring

Reference:

Memo: Water Licence No: 2AM-BRP1831 (Amendment No.1) – Modification and Management Plan Updates

- Section 2.0 – Description of Proposed Modifications
- Figure A-01: Goose Mine Area – Potential Development Area and Layout



Comment:

The modification proposes changes to the configuration and locations of the existing planned waste rock storage areas (WRSA) and includes the addition of a new waste rock storage area (Umwelt Overflow WRSA), two temporary waste rock stockpiles and the addition of three overburden stockpiles. The memo states that, “WRSA seepage and runoff will continue to be collected in perimeter berms and directed to collection and pumped to Primary Pond or the active Tailings Facility.” The memo states that all monitoring will remain consistent with the currently approved Water Management. Figure A-01 provides an updated site layout that includes the proposed modifications but does not clearly depict all associated water management infrastructure for the proposed waste rock and overburden storage areas, nor does it indicate flow directions.

Given the expansion of waste rock and overburden storage piles on the site, additional water management infrastructure may be required to collect and manage seepage and runoff associated with these areas.

Recommendation:

ECCC recommends the Proponent provide:

1. a description of any new water management infrastructure (e.g. ponds, sumps, collection ditches, diversions) associated with the proposed changes to waste rock storage areas and overburden storage areas.
2. a figure depicting the proposed water management infrastructure and flow direction for runoff and seepage from the associated waste rock storage areas and overburden stockpiles.
3. A list of any new monitoring stations, or modifications to existing monitoring stations, required as a result of the modification or justify why existing monitoring is sufficient.

2. Scaling of Groundwater Predictions

References:

Water Management Plan Version 6

- Section 5.1.3 – Permafrost and Groundwater

2025 Water and Load Balance Report

- Appendix C – Updated predictions of groundwater inflows

Comment:

The Water Management Plan states that, “for the purpose of the update of the water management plan presented herein, the predictions of groundwater inflows included in WSP Golder (2022) were scaled to reflect the updated mine schedule and depth of operating.” The approach of “scaling” the previous modelled inflows to arrive at updated values is mentioned throughout the Water Management Plan, however, no details have been provided on the methodology that was used to “scale” the groundwater quality and quantity predictions. Appendix C to the Water and Load Balance provides new values for flow rates and predicted total dissolved solids concentrations as a result of the scaling, but it does not provide sufficient information on how these revised values were derived.

For example, the proposed Llama underground change extends approximately 280 m deeper than previously planned, resulting in changes to flow rates and total dissolved solids (TDS) concentrations. However, no specifics on how these numbers were arrived at are provided, other than to state that they were scaled based on Umwelt Underground. Similarly, Umwelt underground is proposed to go slightly deeper, but TDS concentrations are lower than those presented in the original mine plan. The rationale for this decrease is not explained.

Recommendation:

ECCC recommends the Proponent provide a detailed description of the methodology, assumptions, and calculations used to scale the groundwater quantity and quality from WSP Golder (2022). Specifically, for each underground mine development area, describe the specific changes and assumptions that were applied that resulted in the updated groundwater flow rates and predicted water quality concentrations.

3. Waste Rock Storage Area – Runoff Volumes and Quality

Reference:

Water Management Plan Version 6

- Section 5.2.3 – Waste Rock Management
- Table 5.2-6 – Waste Rock Storage Area Summary Information
- Table 6.4-1 – Goose Property Pond Capacity and Pumping Rate Summary

Comment:

The proposed quantity of waste rock stored in WRSA's is not expected to change substantially as a result of the modification, however, proposed changes to the WRSA configurations result in notable increases in the overall footprint of several storage areas. The most substantial change is to the Llama WRSA which increases from approximately 14.7 ha to 59 ha, representing a fourfold increase in surface area. An increase in surface area would be expected to increase runoff volumes and associated contaminant loads, and may also increase infiltration, resulting in greater seepage generation. In addition, a larger storage area could increase flow-path lengths and contact time between water and waste rock, potentially affecting seepage and runoff quality. As a result, changes to runoff and seepage volumes, water quality, and associated water management infrastructure requirements may be expected. Similarly, increases in surface area are also proposed for Umwelt WRSA (from 19.6 ha to 38 ha). No discussion is provided in the Project Modification Memo to outline how increases in the size of the WRSA's may impact water management volumes and quality.

Table 6.4-1 provides summaries of the Goose Property pond capacities, however, when compared with the previous version of the Water Management Plan it does not appear to include any updates to the required capacity of the Llama WRSA Pond to account for the increased WRSA footprint. The table indicates that the exiting pond will be operating at 77% capacity (same as previously); however, because no changes to the required or available capacity were included it is unclear whether the water balance and water management assessments have incorporated the potential increase in runoff and seepage volumes, as well as potential changes in runoff and seepage quality resulting from the larger WRSA.

Recommendation:

ECCC recommends that the Proponent describe how the increased surface area of the waste rock storage areas may affect the runoff and seepage quality and quantity and how this was incorporated into the water balance, water quality predictions, and water management design. This should include discussion on existing water management structure capacity and whether it is sufficient for increased flows.

4. Overburden Storage Areas

References:

Memo: Water Licence No: 2AM-BRP1831 (Amendment No.1) – Modification and Management Plan Updates

- Table 4 – Overburden Stockpile analysis

Water Management Plan Version 6

- Section 5.2.2 – Overburden Management

2026 Water and Load Balance Report

Comment:

The modification includes the addition of three overburden stockpiles that were not included in the previous mine plan. The Project Modification Memo states that the overburden stockpiles are near the WRSA and open pits, and that the overburden will be geochemically stable and therefore is not anticipated to result in adverse effects to the receiving environment. The memo further states that no additional monitoring is required as a result of these additions.

It is unclear how the Proponent intends to collect, monitor, and manage and surface water runoff and seepage originating from the overburden stockpiles to prevent uncontrolled discharge to the receiving environment. While the overburden may be geochemically stable, water that encounters the stockpiles may still contain elevated concentrations of suspended solids and other contaminants and may mobilize through erosion and runoff processes. The updated Water Management Plan lacks details on any water management related to the overburden stockpiles and the Water and Load Balance notably does not appear to incorporate the addition of the overburden stockpiles.

While the overburden stockpiles may not represent a significant source of contaminants relative to waste rock storage areas, they are new features on the landscape and will contribute to the overall site water balance. Exclusion of the overburden stockpiles from the site water balance may result in an underestimation of water storage capacity. Like any other stockpile or storage facility, overburden stockpiles can intercept precipitation, accumulate snow, and generate runoff which must be managed. If these stockpiles are not incorporated into the site water balance, calculations of water inputs, outputs, and storage changes may be incomplete, leading to inaccuracies in water management planning. As a result, the mine may underestimate the volume of water requiring collection or treatment and fail to fully characterize potential environmental risks associated with stockpile runoff or seepage, reducing confidence in the overall hydrologic assessment of the site. Without accounting for these features in the water and load balance, it is difficult to determine whether the current water management system has sufficient capacity to manage all contact water generated under the modified mine configuration.

In addition, the rationale that geochemical stability eliminates the need for monitoring is unclear. Geochemical stability may reduce the likelihood of metal leaching or acid generation, however, it does not necessarily negate the potential for runoff-related effects, including sediment transport, erosion, or the mobilization of naturally occurring constituents. Monitoring may still be required to verify assumptions regarding runoff quality and to confirm that the stockpiles perform as predicted under operational conditions.

Recommendation:

ECCC recommends that the Proponent:

1. Describe how runoff and seepage from the overburden stockpiles will be collected, monitored, and managed, including whether existing water management infrastructure will be utilized or whether additional infrastructure is required.
2. Update the Water Management Plan to include all relevant details for the overburden stockpiles, including location, footprint area, drainage pathways, runoff collection measures, monitoring requirements, and integration with the overall site water management system.
3. Explain why the overburden stockpiles were excluded from the Water and Load Balance
4. Provide an assessment of the contribution of the overburden stockpiles to the overall site water balance, including expected runoff volumes, potential seepage generation, and any associated constituent loading

5. Changes to Inflow Rates and Treatment Volumes

Reference:

Water Management Plan Version 6

- Table 7.4-1 – Water Treatment Goose Mine

Comment:

Based on the information provided in Table 7.4-1 the modification will result in increased water flows to water management structures and subsequently increased volumes of water requiring treatment. A comparison of Versions 5 and 6 of the Water Management Plan indicates increased flow rates and higher estimated treated volume for both the Saline Water Pond and the Umwelt and Llama Tailings Facilities. This increase in water volumes requiring management and treatment has not been acknowledged or discussed in the Project Modification Memo. No details are provided on the factors contributing to these increases, how the additional volumes will be managed by existing facilities, or what the implications may be to overall water management and treatment system performance.

Higher treatment volumes often result in greater consumption of treatment chemicals and increased production of treatment byproducts and residuals, including sludge, brine, concentrated streams, and other waste materials. These residuals require appropriate handling, storage, and disposal to minimize environmental impacts. Increased treatment and discharge volumes may result in increased contaminant loadings to the receiving environment, even where treated water quality remains unchanged. While effluent concentrations may continue to meet established objectives, larger discharge volumes can increase the total mass loading of

parameters released from the site. The Project Modification Memo should not only outline the changes to the infrastructure on site, but the cascading impacts on overall water management and water quantity and quality. Exclusion of this information results in difficulty interpreting how and if the changes to water quality have been properly assessed.

Recommendation:

ECCC recommends the Proponent:

1. provide a consolidated summary of the implications of the proposed mine plan modifications on water quantity and quality, including changes to flow rates, runoff and seepage volumes, water storage requirements, treatment volumes, and contaminant loadings. The summary should clearly identify the contribution of each modification and demonstrate how these changes have been incorporated into the water balance, water quality predictions, and water management planning.
2. Describe any anticipated changes in treatment chemical requirements and treatment residual generation (e.g., sludge, brine, concentrated waste streams) and explain how these materials will be managed.

6. Catchments

Reference:

2026 Water and Load Balance Report

- Section 3.2.3 – Catchment Delineation
- Table 3-4 – Goose Property Catchment Areas and Associated Infrastructure Areas
- Drawing 3-1 – Goose Mine Catchments, End of Operations

Comment:

The water and load balance report states that mine infrastructure and upstream catchments were delineated based on the modification to the mine plan and mine facilities layout. One of the most obvious changes from the previous mine configuration is the change in location and footprint of the Llama WRSA as well as the addition of three overburden stockpiles.

Table 3-4 lists the catchment areas associated with the Llama WRSA as LWD1 and LWD2, however, this appears to correspond to the previous Llama WRSA location rather than the revised location shown in the updated mine layout, which appears to be in Catchment LD2. It is unclear whether the catchment areas listed for the Llama WRSA have been updated to reflect the changes or whether they remain based on the previous mine configuration.

Accurate catchment delineation is fundamental to the water and load balance, as it forms the basis for estimating runoff volumes, flow routing, water storage requirements, treatment demands, and contaminant loadings. If the revised WRSA footprint and location have not been appropriately incorporated into the catchment delineation, the resulting water quantity and water quality predictions may not accurately reflect the proposed mine configuration.

In addition, the overburden stockpiles, while depicted on Drawing 3-1, have not been incorporated into the Water and Load Balance Catchment Delineation. See also above comment on Overburden Stockpiles. Given that the overburden stockpiles represent new

surface disturbances that will intercept precipitation and generate runoff, their omission from the catchment delineation may result in an incomplete characterization of site drainage areas and associated water management requirements.

Recommendation:

ECCC recommends the Proponent

1. Review and confirm the accuracy of the catchment updates presented in the 2026 Water and Load Balance. Provide updated catchments, as required, and discuss implications to the Water and Load Balance conclusions.
2. Characterize the catchments associated with the Overburden Stockpiles and update the Water and Load Balance accordingly.

7. Tailings Management

References:

Memo: Water Licence No: 2AM-BRP1831 (Amendment No.1) – Modification and Management Plan Updates
Water Management Plan Version 6
2026 Water and Load Balance Report

Comment:

The Water Management Plan and the Water and Load Balance Report both include some information on the changes to tailings management as a result of the modification. However, an updated Tailings Management Plan was not provided, despite the modification resulting in increased tailings deposition volumes and the storage of tailings in additional pits compared to the previously approved mine plan.

In addition, the Project Modification Memo provides limited discussion of these changes and does not present a consolidated summary of how the overall tailings management strategy has been revised. Without a clear summary of the proposed changes, it is difficult to determine the extent to which tailings deposition locations, storage volumes, sequencing, water management requirements, and associated environmental effects predictions differ from the previously approved mine plan. A concise summary of the changes to overall tailings management would assist reviewers in understanding the scope and implications of the proposed modification.

Recommendation:

ECCC recommends the Proponent provide a consolidated summary of all proposed changes to tailings management and an updated Tailings Management Plan.

8. Dust Management

Reference:

Attachment A Waste Rock Management Plan
- Section 6.3 Dust management

Comment:

Section 6.3 states that reduced speed limits will be considered as the principal way of controlling dust when temperatures are below freezing. There is no mention of this dust mitigation measure for warmer conditions.

Recommendation:

ECCC recommends the Proponent confirm inclusion of reduced speed limits as a dust mitigation measure for all periods.

If you need more information, please contact Erik Allen at erik.allen@ec.gc.ca.

Sincerely,

Anna Graham
Environmental Assessment Officer

cc: Eva Walker, Head, Environmental Assessment North (NT and NU)