

**MEMO**

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**From** Chris LeGoffe, Superintendent, Environment, B2Gold Nunavut

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**To** Richard Dwyer, Manager of Licensing, Nunavut Water Board

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**Ref.** 2AM-BRP1831

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**Date** January 5, 2026

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**Subject** 2AM-BRP1831 Amendment No. 1 Design Report Umwelt Saline Water Pond Dam – Responses to Review Comments

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Dear Mr. Dwyer,

Thank you for the opportunity to respond to comments received on the Back River Mine's *Design Report Umwelt Saline Water Pond Dam (SWP) Notice of Construction Submission* for B2Gold Nunavut's Type A Water License 2AM-BRP1831 (Amendment No. 1). Comments were received from the Kitikmeot Inuit Association (KIA), and Crown Indigenous Relations and Northern Affairs Canada (CIRNAC). There were no comments received from Department of Fisheries and Oceans Canada (DFO) or Environment Climate Change Canada (ECCC).

B2Gold Back River Corp. (B2Gold Nunavut) thanks all parties for their review of our submission and provides responses below.

Sincerely,

Dan Gagnon

Dan Gagnon (Jan 6, 2026 06:41:11 MST)

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**Dan Gagnon, P. Geo**  
General Manager  
B2Gold Nunavut

Cc: Bill Lytle, Chief Operating Officer, B2Gold  
Dan Moore, Vice President, Operations, B2Gold  
Jamie Richards, Operations Manager, B2Gold Nunavut  
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## 1. KIA-01

<b>Review Comment Number</b>	KIA-01
<b>Subject/Topic</b>	Geotechnical Properties of Materials
<b>References</b>	Attachment 4
<b>Comment</b>	No details are provided on how the geotechnical parameters used in the stability analysis were derived and how the site investigation completed in 2025 and the thermal modelling results (e.g., modelled ground temperatures) informed the selection of these parameters, particularly the presence of high ice contents as observed within the foundation soils.
<b>Recommendation/Request</b>	<p>KIA recommends B2Gold:</p> <p>Provide justification of the material properties used in the stability analysis considering findings from the site investigation program completed in 2025.</p>
<b>B2Gold Nunavut Response</b>	<p>B2Gold Nunavut appreciates KIA's thorough review and comment regarding the geotechnical properties of materials.</p> <p>Material strength properties used in the slope stability analysis were based on:</p> <ul style="list-style-type: none"> <li>– Site-wide geotechnical design properties (SRK 2019),</li> <li>– Goose Property – 2018 Overburden Investigation (SRK 2018),</li> <li>– Geotechnical laboratory testing result of the fill material performed in 2025 (refer to the attached protocols)</li> <li>– Percolation test results (SRK 2025b),</li> <li>– Ongoing site monitoring (as documented each year in the Annual Geotechnical Inspection Reports); and</li> <li>– SRK's (design engineers) engineering judgment and past experience.</li> </ul> <p>Geotechnical design parameters used for the stability runs are summarized in Table 1.</p>

Table 1: Summary of Geotechnical Model Parameters

Geotechnical Unit	Unit Weight, g (kN/m <sup>3</sup> )	Cohesion, c (kPa)	Friction Angle, j (°)	Strength Type
Silty Sand Foundation (Unfrozen)	19	0	32	Mohr-Coulomb
Silty Sand Foundation (Frozen)	19	40	32	Mohr-Coulomb
HDPE Liner	10	0	28	Mohr-Coulomb
Bedrock	18			Infinite Strength
Bedding Material	18	0	36	Mohr-Coulomb
Transition Material	18	0	36	Mohr-Coulomb
ROQ (Thawed, Unconsolidated)	20	0	38	Mohr-Coulomb

The HDPE-geotextile interface was found to be the most critical plane in the upstream stability analyses. Based on published data (Stark *et al.*, 1996, Bacas *et al.*, 2015, and

	<p>Howell and Kirsten, 2016) a peak friction angle of 28 degrees was assigned to the interface between a 1.5-mm-thick textured HDPE and a nonwoven geotextile made of needle-punched monofilaments with a mass per unit area of at least <math>500 \text{ g/m}^2</math>.</p> <p>Since Umwelt SWP Dam (Phase 1) will be lined with HDPE, the base case scenarios were assessed with a liner system assigned an angle shear of resistance of 28 degrees. Additional sensitivity analyses were also performed assuming reduced angle shear of resistance down to 14 degrees. Further the design slopes have been reduced to be 4H:1V on the upstream and 2.5H:1V on the downstream in the rockfill material. Also, an upstream blanked of finer grained material has been included to push the thermal boundary further away from the upstream key trench which would further reduce the upstream slopes (to the range of 6H:1V in many areas). This upstream fill material would also have a secondary benefit to further buttress the upstream slopes. In general, the SWP dam slopes are quite shallow slopes for a relatively small (low height) dam structure (i.e. most areas dam structure less than 10m above the existing ground). Generally, the critical dam design components are more governed by thermal considerations, as the primary driving factors, and governed less by the stability requirements (which are mitigated by the deeper key trench and generally shallower rockfill slopes – both of which are included based on thermal considerations).</p> <p>Permafrost physical properties have been characterized across the project area using diamond drilling with brine and shallow split spoon sampling, or through air rotary drilling with frequent cutting sample collection (with samples then tested for moisture content and salinity to get inferred properties of ice content). These drilling methods have allowed for visual description of frozen soil to characterize ground ice type and content. Percolation drilling and testing completed in April 2025 within the planned footprint of the Umwelt SWP Dam (Phase 1) confirmed that ground ice in the overburden soils is both spatially and stratigraphically variable across the site, ranging from ice-poor to ice-rich conditions. The greatest extent of ice-rich overburden was found at the east end of the SWP dam, which has been considered in the current design.</p> <p>Table 2 summarises the material thermal properties applied to the model. The material thermal properties were estimated in accordance with Cote and Konrad (2005) and have used initial monitoring from other areas of site (such as the Primary Pond dam) to help ensure that they were reasonable for adoption in the SWP thermal models. The fully saturated materials were applied to upstream regions that are below the input water level. The properties for bedrock were taken from previous work completed for the Umwelt Pit and Underground area (SRK 2025c). The thermal properties for Sand with Silt were based on average moisture content and porewater salinity determined from geotechnical investigations of the dam foundation (SRK 2025a).</p>
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Table 2: Material Thermal Properties

Material	Volumetric Water Content (m <sup>3</sup> / m <sup>3</sup> )	Thermal Conductivity, (kJ/day/m/°C)		Volumetric Heat Capacity, (kJ/m <sup>3</sup> /°C)	
		Frozen	Unfrozen	Frozen	Unfrozen
ROQ Rock <sup>1</sup>	0.09	147	144	1,961	2,136
ROQ Saturated Rock <sup>1</sup>	0.30	261	177	1,982	2,593
Transition Rock <sup>1</sup>	0.10	138	134	1,917	2,048
Transition Saturated Rock <sup>1</sup>	0.32	254	170	1,914	2,547
Sand with Silt <sup>1</sup>	0.21	147	144	1,706	2,136
Saturated Sand with Silt <sup>1</sup>	0.24	166	149	1,948	2,444
Bedrock	0.05	216	212	2,225	2,330

## Notes:

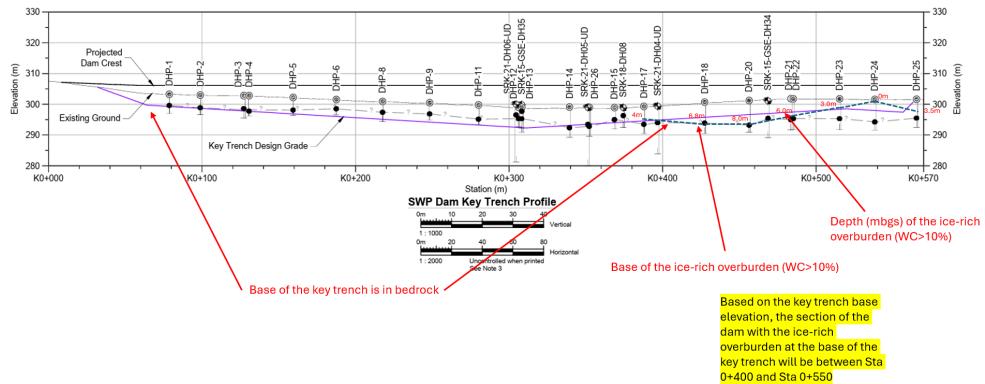
1. Estimated unfrozen water content curve applied based on primary material type (Gravel, Sand, Silt, or Clay)
2. Latent heat of fusion for ice 334 kJ/kg

## List of references:

1. SRK Consulting (Canada) Inc. (2018). Goose Property - 2018 Overburden Geotechnical Investigation Program. DRAFT Report prepared for Sabina Gold & Silver Corp. Project No. 1CS020.016.
2. SRK Consulting (Canada) Inc. 2019. Back River Property Geotechnical Design Parameters – Revision 0 – “For Comment”. Report prepared for Sabina Gold & Silver Corp. Project # 1CS020.017. July 2019.
3. SRK Consulting (Canada) Inc. (2025a). Umwelt Saline Water Pond Dam - Design Overview and Notice of Construction. Prepared for B2Gold Corp. Project No. CAPR003105. November 2025
4. SRK Consulting (Canada) Inc. (2025b). Back River Umwelt SWP Dam Phase 1. Percolation Testing – Factual Memorandum. Prepared for B2Gold Corp. Project No. CAPR003105. September 2025.
5. SRK Consulting (Canada) Inc. (2025c) Back River Project: Umwelt Open Pit and Underground Thermal Modeling. Prepared for B2Gold Corp. Project No. CAPR003061. April 2025.
6. Côté J., and Konrad JM. 2005. A generalized thermal conductivity model for soils and construction materials. Canadian Geotechnical Journal. 42(2): 443-458.
7. Howell G.C., and Kirsten A.H. 2016. Inference Shear: Towards understanding the significance in Geotechnical Structures. First South African Geotechnical Conference. 2016

8. Stark T., Williamson Th., and Eid H. 1996. HDPE Geomembrane/Geotextile Interface Shear Strength. *Journal of Geotechnical Engineering*, Vol. 122, No3.

Below provides a marked-up screenshot to show additional comments, specific to the SWP Phase 1 dam, that were considered in the current key trench designs.



Examples of the lab protocols and some lab results for bedding and transition materials are attached for additional information and confirmation on the selected values (Appendix 1).

## 2. KIA-02

<b>Review Comment Number</b>	KIA-02
<b>Subject/Topic</b>	Thermal Modelling
<b>References</b>	Section 3.3 – Notice of Construction
<b>Comment</b>	<p>No results of the thermal modelling were included in the memorandum, and it seems that only two, 2015 SRK documents related to thermal modelling of the Run-of-Quarry pad designs are cited. In addition, it is worth noting that coupled (i.e., seepage and thermal) modelling, where advective heat transfer is included, is industry standard and multiple commercially available programs exist that have those capabilities built in.</p> <p>In the absence of updated results from the thermal model, it is not possible to evaluate the thermal performance of the Saline Water Pond Dam, in particular if a talik starts to develop under the impoundment which could impact seepage but also result in large settlements considering the presence of ice-rich permafrost and the salinity of the saline waters, which could influence the freezing point depression of the fluid in the foundation.</p>
<b>Recommendation/Request</b>	<p>KIA recommends that B2Gold:</p> <p>Update of the geothermal analysis, including coupled seepage, to confirm that the thermal design criteria are met, including that the liner is perennially tied into the frozen ground and not impacted by the growth of a talik, and that it sustains potential thaw strains in the foundation.</p>

<b>B2Gold Nunavut Response</b>	<p>Thermal modelling results have been updated and are provided in the attached thermal memo. Please refer to SRK Consulting (Canada) Inc. (2025) Back River Project: Umwelt Saline Water Pond Dam – Ground Thermal Modeling. Prepared for B2Gold Corp. Project No. CAPR003105. December 2025.</p> <p>Please note that B2Gold has also committed to the installation of passive thermosyphons (contracts and procurements well advanced) for installation in the SWP Phase 1 key trench. So, a thermosyphon system is included as part of the SWP designs. These thermosyphons help to further improve the thermal performance of the SWP and extend the design life of this structure.</p> <p>As part of the SWP construction, a detailed monitoring system (including thermal and deformation monitoring) will be installed. This will allow of ongoing tracking of the thermal performance of this structure which would ultimately be reported on and included as part of the annual reporting package / submissions.</p> <p>Overall, the thermal performance of the SWP has been considered in detail and is a primary design consideration and driver for the design geometry and arrangements presented in the permitting and subsequent Issued For Construction drawing packages.</p> <p>The pdf version of the thermal memo has been included to this response (Appendix 2).</p>
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### 3. KIA-03

<b>Review Comment Number</b>	KIA-03
<b>Subject/Topic</b>	Creep Deformation
<b>References</b>	Section 3.9 – Notice of Construction
<b>Comment</b>	<p>In Section 3.9 (page 10), the SRK memorandum highlights that creep deformation may occur in the foundation and therefore it should be monitored. Considering that the dam classification may increase to Very High with future stages of construction (Phases 2 and 3) (cf. Table 1, p. 5) a creep assessment should have been completed to demonstrate the foundation of the dam on ice-rich permafrost, which is susceptible to creep under steady load, does not creep at rates that exceed tolerable limits, or that mitigation measures can be implemented to maintain the structural integrity of the dam and geomembrane liner. In addition, the design basis (Table 1, p. 5) indicates a maximum allowable deformation is 0.3m per year, but it is unclear if the geomembrane can tolerate such deformation rates over the design life.</p>
<b>Recommendation/Request</b>	<p>KIA recommends that B2Gold:</p> <p>To evaluate the creep of the foundation, considering findings from the site investigation program completed in 2025, and assess whether the tensile strains acting on the geomembrane liner are tolerable.</p>
<b>B2Gold Nunavut Response</b>	<p>Generally, under Arctic and cold continuous permafrost conditions, the magnitude and rate of creep deformation in ice-rich permafrost soils are low (slow), and creep-related movements develop gradually over long periods. In the case of the SWP creep is therefore not considered a credible mechanism for rapid loss of shear strength or sudden instability for the initial SWP construction, and while contained volumes behind the dam are below</p>

	<p>one million cubic meters (i.e. Phase 1). Creep, however, is an important mechanism that needs to be monitored to ensure that this does not develop into an issue over the longer operational design life of the structure. Creep has been considered in the design and has, in part, resulted in the shallower design slopes seen in the SWP Phase 1 designs (i.e., shallow upstream slope of 4H:1V to 6H:1V).</p> <p>To further mitigate creep risk, the key trench has been excavated to bedrock wherever practical (specifically between Sta 0+036 and Sta 0+400). Overall, the western portion of the SWP has a foundation that will be primarily in bedrock and less susceptible to creep (specifically undrained creep) deformations.</p> <p>For the SWP Dam (Phase 1), percolation testing results and the updated subsurface model indicate that the eastern end of the embankment will be founded locally on ice-rich overburden, which may be susceptible to some long-term creep deformation. This would be accelerated if warming of the foundation were to occur (e.g., due to localized seepage through the damaged HDPE liner or through long-term climate change). The SWP is planned to be breached as part of the long-term closure, making it less susceptible to longer-term climate change. See climate change considerations in the latest thermal memo (SRK 2025, see additional details in response to IR KIA #2).</p> <p>The key trench section specifically between approx. Sta 0+400 and Sta 0+550, is where some ice-rich overburden will still be present. The SWP dam will be instrumented with a set of ground temperature cables, surficial and deep settlement monitoring points, and inclinometers to monitor the ground conditions. To further mitigate potential creep movement, to improve long-term performance, and to allow for additional mitigation measures to be available if unfavorable conditions develop, four sections of passive thermosyphons will be installed at the base of the SWP key trench to help maintain frozen ground conditions. It is not planned at this time, but this passive system has the ability to be retrofitted to an active system in the future if performance monitoring indicates that is required. Further, the SWP dam arrangement is set up so that additional downstream buttressing fill could be placed to further reduce the downstream slopes in the future. Again, this is not expected to be required, however an extensive monitoring system has been designed and planned to be installed as part of the SWP dam construction to monitor and confirm this expectation.</p> <p>The latest version of the Issued for Construction (Revision 00) drawings for the SWP have been included to provide additional details on the thermosyphon and monitoring system. As noted on these drawings, beyond the thermal monitoring instrumentation, additional performance monitoring includes surficial, deep, fixed survey monuments and six inclinometers to monitor deformations of the embankment, crest, and downstream toe. Data from this instrumentation, during the initial years of operation, will be used to confirm actual foundation creep rates and to calibrate a creep model that would be updated before the SWP Phase 2 construction (i.e., before any potential increase in dam classification would result).</p> <p>The initial creep triggers for the SWP (Phase 1) will be set following the completion of the initial construction. However, initial indication would be that creep monitoring trigger levels would initially be in the range of, deformation allowance (total strain due to creep), of less than 2%.</p> <p>Finally, it should be noted that the arrangement of the SWP had been designed to allow for deformation of the foundation and fill material over the design life. This is done in part</p>
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	<p>by having a longer horizontal joint (almost like a pivot point) on the upstream between the key trench (below ground) liner and the above ground liner. This allows for some increased differential deformation allowances between the dam fill material and the foundation itself. The reliance solely on the HDPE liner element is further mitigated in the current designs by the non-woven geotextile above and below the HDPE liner element. Further, the incorporation of a pseudo 'beach', created by placing lower permeable material on the upstream slope to further stretch out seepage pathway and to move thermal boundary conditions further away from the top of the SWP key trench, has been included in the designs.</p> <p>A summary of the SWP monitoring results (including comments on creep) will be included as part of the annual reporting submissions (i.e., as part of the site Annual Geotechnical Inspection report).</p>
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#### 4. KIA-04

<b>Review Comment Number</b>	KIA-04
<b>Subject/Topic</b>	Thermosyphons
<b>References</b>	Drawing SWP-1-200
<b>Comment</b>	Drawing SWP-1-200 shows the location of a thermosyphon pad. While thermosyphons are also mentioned in the specifications (Section 10 of Attachment 5), no additional details nor designs are presented in the SRK document, and it is unclear if thermosyphons will be used for the construction of the Umwelt Saline Water Pond Dam.
<b>Recommendation/Request</b>	KIA recommends that B2Gold:  To clarify if the thermosyphons are used in the dam or not.
<b>B2Gold Nunavut Response</b>	Four sections of the thermosyphons are planned to be installed at the base of the key trench. Each section will consist of four evaporators 2" SA-106 Gr B CS Sch 40 3" NPS, four inclined lateral pipes and four risers Sch80-A106B CS installed outside the dam footprint.  The latest set of Issued for Construction (Revision 00) drawings has been attached to these IR responses.  For the proposed thermosyphon layout and profile, refer to SWP-1-211, and for the typical sections and details, refer to SWP-1-309, SWP-1-370 to SWP-1-373.  The Issued for Construction (IFC) document has been included to this response (Appendix 3).

## 5. CIRNAC-R-01

<b>Review Comment Number</b>	CIRNAC-R-01
<b>Subject/Topic</b>	Sedimentation and Erosion Controls
<b>References</b>	Section 6.2.14 of the Technical Construction Specifications
<b>Comment</b>	Section 6.2.14 in the Technical Construction Specifications describes measures for sediment and runoff control, but the information provided is presented at a high-level and lacks site-specific measures that will be used to minimize sedimentation and erosion during construction. The provision of technical specifications for sedimentation and erosion controls during construction is necessary to support a fulsome understanding of potential impacts and satisfy the requirements of Part D, Item 3(e) of 2AM-BRP1831
<b>Recommendation/Request</b>	<p>CIRNAC recommends that B2Gold:</p> <p>(R-01) CIRNAC recommends that the Licensee provide technical specifications for sedimentation and erosion controls to comply with the reporting requirements outlined in Part D, Item 3(e) of 2AM-BRP1831.</p>
<b>B2Gold Nunavut Response</b>	<p>B2Gold Nunavut thanks CIRNAC for their detailed review and recommendation.</p> <p>The main Saline Water Pond (SWP) – Phase 1 key trench excavation will be done in the winter and will also allow for any 'dirty' snow around the areas immediate of the excavations to be removed and relocated upstream of the dam (i.e. ultimately contained and managed within the Saline Water Pond). The main foundation excavation work for the Saline Water Pond is specifically planned to be done in the winter and generally when ambient air temperatures are at or below -10°C. This is done to avoid the introduction of heat into the foundation, while also allowing for simpler and more readily completed sediment and erosion control measure to be implemented. As the SWP (or at least the key trench and couple meters above the natural ground for thermal cover) is planned to be in place before spring melt and temperatures raise on site, this allows the site construction crews to place any sediment laden snow or ice upstream of the dam structure to melt and be later managed within the SWP containment. Further this allows construction crews to cover up any areas of disturbance with the dam rockfill shell to mitigate any potential tundra disturbance upstream, within or around the SWP dam footprint. Additional details on the construction sequencing / components and considerations are shown in the Revision 00 Issued for Construction drawings and in the provided earthworks technical specifications. Beyond this, other general sediment and erosion control measures that may be implemented (if / as required), include.</p> <p><u>Mitigation by Erosion and Sediment Control</u></p> <ul style="list-style-type: none"> <li>Generally excavations and early works (where potential for tundra disturbance is higher) will be completed in the winter months for the SWP when water is frozen and apparent as snow or ice. This allows to easier transport of any sediment laden snow or ice upstream of the SWP dam so that when this material melts it will be able to be readily managed within the SWP containment (within the pond).</li> <li>The area of landscape disturbance will be minimized, and restoration will occur as soon as possible in order to minimize erosion potential.</li> </ul>

	<ul style="list-style-type: none"><li>• Silt fences will be used in areas of cuts and excavations, downslope from exposed or erodible areas to prevent sedimentation of waterbodies.</li><li>• Effective erosion and sediment control measures will be installed before starting work to prevent sediment from entering the waterbody. This is done through the alignment of the SWP and rockfill materials and focusing to keep tundra disturbances within the dam footprint.</li><li>• Site isolation measures (e.g., silt boom or silt curtain) will be used to contain suspended sediment where in-water work is required. At this time this is expected to be required for the saline water pond construction as Umwelt Lake has been dewatered to allow for construction to occur outside of any water bodies (at the former ESE outlet of Umwelt Lake).</li><li>• Regular inspection and maintenance of erosion and sediment control measures and structures will be conducted during the course of construction. During the main SWP construction this will include full time site construction supervision (quality assurance done by the design engineers teams and supported by B2Gold construction crews).</li></ul> <p><u>Mitigation by Shoreline/bank re-vegetation and stabilization</u></p> <ul style="list-style-type: none"><li>• Clearing of riparian vegetation will be kept to a minimum to avoid disturbance to the riparian vegetation and prevent soil compaction. Generally, for the SWP disturbances will be aimed to be kept to within the SWP footprint only (as these areas will ultimately be covered with fill material and become part of the ultimate dam design).</li><li>• If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, appropriately sized, clean rock will be installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.</li><li>• Exposed landscape surfaces will be protected, where possible, by the installation of covering material like riprap, aggregate, or rolled erosion control products (for example nonwoven geotextile, coconut matting etc.).</li><li>• Decommissioning of the roads will involve restoring natural drainages and stabilizing any slopes where there is potential for erosion; stabilization measures may require pulling back of side-cast fills on locally steep slopes or buttressing and/or re-contouring of steepened slopes using non acid generating material.</li></ul> <p><u>Mitigation by Operation of Machinery</u></p> <ul style="list-style-type: none"><li>• All heavy machinery used during construction will stay above the high-water mark to the greatest extent possible.</li><li>• Temporary crossings may be utilized if necessary to limit fording of watercourses.</li><li>• All machinery will arrive on site in a clean condition and maintained free of fluid leaks, invasive species and noxious weeds.</li><li>• All fueling will be done away from watercourses and water bodies, and a spill protocol will be in place.</li></ul> <p>Umwelt Lake has been fished out and there are not any additional fish-bearing crossings required specifically for the Saline Water Pond Phase 1 construction. Downstream of the Saline water Pond (before / at the entrance to Goose Lake) turbidity levels will be</p>
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	monitored weekly during spring conditions or periods of high flow for the first year of operation of crossing structures.
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## 6. CIRNAC-R-02

<b>Review Comment Number</b>	CIRNAC-R-02										
<b>Subject/Topic</b>	Geochemical Properties of Materials										
<b>References</b>	Section 6 of the Notice of construction										
<b>Comment</b>	<p>The Licensee described that the geochemical analysis of waste rock and fill will be done to demonstrate that their acid rock drainage and metal leaching (ARD/ML) characteristics are acceptable for use in the SWP dam construction. However, Part D, Item 3(c) notes that the Design Report shall include the geochemical analysis of waste rock and fill, demonstrating the ARD/ML characteristics. This information was not provided in the Design Report.</p> <p>CIRNAC observes that there appears to be some uncertainty on the criteria used by the Licensee to classify non-potentially acid-generating (NPAG) and potentially acid-generating (PAG) materials. The Design Report does not include total sulfur (total S) as a criteria for PAG materials, which is described in the Waste Rock Management Plan. Furthermore, it is unclear how the Licensee intends to manage materials that have neutralization potential to acid generation potential (NP/AP) values equal to 3.</p> <table border="1"> <thead> <tr> <th>Material</th> <th>Design Report</th> <th>Waste Rock Management Plan</th> </tr> </thead> <tbody> <tr> <td>NPAG</td> <td>NP/AP &gt; 3 or total S &lt; 0.15%</td> <td>NP/AP &gt; 3 or total S &lt; 0.15%</td> </tr> <tr> <td>PAG</td> <td>NP/AP &lt; 3</td> <td>NP/AP &lt; 3 and total S &gt; 0.15%</td> </tr> </tbody> </table> <p>A consistent and transparent application of criteria for PAG materials supports an improved understanding of material management and potential environmental impacts associated with construction.</p>		Material	Design Report	Waste Rock Management Plan	NPAG	NP/AP > 3 or total S < 0.15%	NP/AP > 3 or total S < 0.15%	PAG	NP/AP < 3	NP/AP < 3 and total S > 0.15%
Material	Design Report	Waste Rock Management Plan									
NPAG	NP/AP > 3 or total S < 0.15%	NP/AP > 3 or total S < 0.15%									
PAG	NP/AP < 3	NP/AP < 3 and total S > 0.15%									
<b>Recommendation/Request</b>	<p>CIRNAC recommends that B2Gold:</p> <p>(R-02) CIRNAC recommends that the Licensee provide the results of its geochemical analysis of construction materials, to comply with Part D, Item 3(c), and clarify the criteria that is applied to the management of PAG materials</p>										
<b>B2Gold Nunavut Response</b>	<p>B2Gold Nunavut thanks CIRNAC for their thorough review and query regarding the geochemical properties of materials slated to be used in constructing the saline water pond. To satisfy the requirements of Part D, Item 3(c), and to address potential uncertainties raised regarding material classification, B2Gold Nunavut is providing the following clarification and supporting data.</p> <p>B2Gold Nunavut acknowledge the discrepancy between the design report and the Waste Rock Management Plan. To ensure a consistent and transparent application of criteria, B2Gold will adopt the more conservative triggers across both documents such for example is the classification of material where NP/AP is equal to 3 (NP/AP=3), B2Gold will opt for a more precautionary approach. While NP/AP greater than or equal to 3 is generally considered non-acid generating, site-specific field observations suggest that when the ratio is greater than or equal to 3, total sulfur content is the more reliable indicator of</p>										

	<p>performance. Therefore, NP/AP =3 will be treated as PAG if total sulfur exceeds 0.15%. For this activity, and until the WRMP is updated and approved by the NWB, the NPAG and PAG material classification will rely on the 'design report' indicators as shown in the table below:</p> <table border="1"><thead><tr><th>Material</th><th>Design Report</th><th>Waste Rock Management Plan</th></tr></thead><tbody><tr><td>NPAG</td><td>NP/AP <math>\geq</math> 3 and total S <math>\leq</math> 0.15%</td><td>NP/AP &gt; 3 or total S &lt; 0.15%</td></tr><tr><td>PAG</td><td>NP/AP &lt; 3 or total S &gt; 0.15%</td><td>NP/AP &lt; 3 and total S &gt; 0.15%</td></tr></tbody></table> <p>Additionally, B2Gold are actively completing geochemical testing of rock at our on-site Assay Chemical laboratory. This is supplemented with additional external testing through off-site McElhanney and AGAT laboratory analyses. Attached are some of the examples of previous past protocol and testing results for the bulk rockfill construction materials on site.</p> <p>Furthermore, geochemical testing of fill construction material will continue to be completed on-site, and a summary of this testing will be presented in the annual reporting package.</p> <p>As per site-closure plans and the Waste Rock Management Plan, PAG waste rock, in general, will be covered with a thermal layer (minimum 5 meters thick) of NPAG material for long-term closure. This is more applicable for structures like waste rock storage facilities and less applicable for the dam structures on-site (where construction material will be focused on using NPAG material). In the case of the Saline Water Pond, however, for long-term closure, after water quality is within the site water quality objective limits, the SWP is planned to be dewatered and the dam structure breached. The SWP would be breached for long-term closure to re-establish the natural flow pathways from Umwelt Lake to Goose Lake. For long-term closure, the fill material within the main flow pathways between Umwelt and Goose Lakes would therefore be removed (relocated).</p> <p>The results of the geochemical analysis of construction materials, as well as the standard operating procedure (SOP) for Acid-Base Accounting has been included to this response as Appendix 4.</p>	Material	Design Report	Waste Rock Management Plan	NPAG	NP/AP $\geq$ 3 and total S $\leq$ 0.15%	NP/AP > 3 or total S < 0.15%	PAG	NP/AP < 3 or total S > 0.15%	NP/AP < 3 and total S > 0.15%
Material	Design Report	Waste Rock Management Plan								
NPAG	NP/AP $\geq$ 3 and total S $\leq$ 0.15%	NP/AP > 3 or total S < 0.15%								
PAG	NP/AP < 3 or total S > 0.15%	NP/AP < 3 and total S > 0.15%								

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Final Audit Report

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