

To: Impact Assessment Agency of Canada

Date: 2026-03-31

From: BW Gold Ltd.

Subject: BW Gold Decision Statement Condition 2.11.3

This memorandum has been prepared to summarize the activities undertaken between January 1, 2025 and December 31, 2025 to fulfill condition 2.11.3 as set out in the Decision Statement (“DS”).

“how the Proponent considered any views and information that the Proponent received during or as a result of the consultation, including a rationale for how the views have, or have not, been integrated;”

To demonstrate this, the following information is presented in this memo:

1. Engagement on Follow-up Programs
2. Additional Engagement Opportunities
3. Engagement Reflected in 2025 Annual Reports
4. Engagement through the Accidents and Malfunctions Plan

1. Engagement on Follow-up Programs

Condition 2.3 sets out the general framework for consultation with relevant authorities. As reflected in Section 1.3.2 of the *Blackwater Gold Mine Annual DS Follow-Up Report: January 1 – December 31 2025* the following documents were provided to various reviewers (Table 1) for comment:

- Aquatic Effects Monitoring Program (AEMP)
- Air Quality and Fugitive Dust Management Plan (AQFDMP)
- Accidents and Malfunctions Administration and Communication Plan (AMCP)

With those follow-up programs that were updated, change logs were provided to show where updates were made, including in responses to comments received on previous versions and additional engagement sources. Appendix 2-A provides those change logs, which include descriptions of how the views presented were integrated into the documents as well as a rationale for how views have not been integrated.

Table 1 reflects that comments periods provided for these documents, and where comments from reviewers were provided.

Table 1 2025 FDS Consultation Summary

Management Plan	Review Period	Plan Sent?									Comments Received?														
		Indigenous Groups	DFO	ECCC	FLNRORD	Northen Health	Health Canada	ENV	IAAC	MCM	LDN/UFN	NFNs	Nazko	STN	TN	MNBC	NTBB	DFO	ECCC	FLNRORD	Northen Health	Health Canada	ENV	IAAC	MCM
Aquatic Effects Monitoring Plan V3 - FDS conditions 3.14 and 3.15	December 6, 2024 – January 6 2025	X	X		X			X	X	X		X Jan 13-25											X Jan 13-25		
Aquatic Effects Monitoring Plan V3.1 - FDS conditions 3.14 and 3.15	March 28 ¹							X															X		
Aquatic Effects Monitoring Plan V4 - FDS conditions 3.14 and 3.15	April 30 – June 6	X	X		X			X	X	X															
Air Quality and Fugitive Dust Management Plan	April 30 – July 4	X				X	X	X	X	X												X June 19-25	X June 25-25		
Accidents and Malfunctions Administration and Communication Plan	November 15. 2025 – January 9, 2026	X	X		X	X		X	X	X ²		X Jan 9-26									X Dec 30-25				

¹ Submitted based on comments from regulators.
² While Condition 36 of the Environmental Assessment Certificate (EAC) states that the AMCP must be developed in consultation with EMPR (now Ministry of Mines and Critical Minerals [MCM]) BW Gold has been advised that MCM does not wish to be consulted on this plan.

AEMP

On December 6, 2024 the AEMP Version 3 (V3) was submitted to those parties reflected in Table 1, which had been updated based on engagement with the Ministry of Environment and Climate Change (ENV) and First Nations (see the AEMP V3 cover letter and change log Appendix 2-A).

On March 28, 2025 the AEMP Version 3.1 (V3.1) was submitted based on comments received from ENV, BC Ministry of Water, Land and Resource Stewardship (WLRS), and the Nechako First Nations (NFNs) following the review of the V3. (see the AEMP V3.1 cover letter and change log Appendix 2-A).

On April 30, 2025 the AEMP Version 4 (V4) was submitted based on comments received from the Ministry of Environment and Climate Change Strategy (now Ministry of Environment and Parks), BC Ministry of Water, Land and Resource Stewardship, and recommendations made in the 2024 Interpretive Report. (see the AEMP V4 cover letter and change log Appendix 2-A).

On May 29, 2025, V4 was approved by ENV with conditions that are reflected in the approval letter (see V4 approval letter Appendix 2-A).

AQFDMP

On April 30, 2025 the AQFDMP J.1 was submitted to those parties reflected in Table 1. The plan was updated as a requirement of PE-110650 and provided for review per condition 2.3.2 of the Federal Decision Statement. The change log is presented in Appendix 2-A.

Health Canada (HC) provided comments on June 19, 2025, with BW Gold submitting responses on September 5, 2025. ENV provided comments on June 25, 2025. These comments will be incorporated into the next version of the AQFDMP, scheduled for submission on April 30, 2026.

AMCP

On November 15, 2025 the AMCP E.1 was submitted to those parties reflected in Table 1. The AMCP has been updated to support clarity and alignment with the Mine Emergency Response Plan (MERP). The cover letter and change log is presented in Appendix 2-A. Northern Health Authority (NHA) provided comments on December 30, 2025 and the Nechako First Nations (NFNs) provided comments on January 9, 2026. BW Gold submitted responses on February 20, 2026.

2. Additional Engagement Opportunities

In addition to the provision of comments on documents, engagement with Indigenous groups continued at regular meetings established under Participation Agreements (PAs) and provincial permits. Where follow-up programs overlap with the scope of those meetings, comments provided during discussion are considered as part of implementation and future updates to those follow-up programs.

In 2025, in accordance with Condition 3.1.3.1 of Blackwater Gold's *Fisheries Act Authorization* (FAA), BW Gold submitted monthly monitoring reports for each month during which authorized construction-related works, undertakings, or activities were conducted. These reports include information related to Federal Decision Statement (FDS) conditions 3.8 and 3.9, and are distributed to Fisheries and Oceans Canada (DFO), as well as Indigenous groups. Discussion occurred as applicable at regular meetings established under PAs, as applicable.

The Independent Environmental Monitor (IEM) is a requirement of the Federal DS and the Environmental Assessment Certificate (EAC). In 2025, the IEM completed 11 inspections to review compliance against conditions of the FDS and the EAC. Representatives from Aboriginal groups regularly attended these inspections. Reports summarizing inspection findings are provided to Indigenous groups, as well as the

Environmental Assessment Office (EAO) and Impact Assessment Agency of Canada (IAAC). Discussion occurred at regular meetings established under PAs and provincial permit, as applicable.

In accordance with FDS Condition 8.4, carrion management methods will be established in consultation with relevant authorities, and Aboriginal groups and Indigenous nations. During a meeting with Indigenous nations in June 2025, a cultural request was made to leave a tobacco offering when relocating animal carcasses, based on the teaching that if something is taken, tobacco should be offered in return. This practice is now being implemented and is reflected in BW Gold’s Wildlife Sick, Injured, Dead, Orphaned (SIDO) Standard Operating Procedure (SOP), which outlines the requirement to incorporate cultural values, traditional practices, and guidance from Indigenous Environmental staff in the handling and disposal of wildlife carcasses.

At a meeting with LDN and UFN in June 2025, it was noted that the FDS (Condition 6.5) requires signage where surface water consumption is not advisable. Concerns were raised regarding the effect of this signage on perceptions of water and fish safety. In response, BW Gold committed to proposing specific locations and rationale for sign placement. A suggestion was made to provide water testing kits or strips for public use. While signage was installed at the Tailings Storage Facility in 2025, engagement with Indigenous nations regarding additional signage locations is ongoing.

3. Engagement Reflected in 2025 Annual Reports

As reflected in the *Blackwater Gold Mine Annual DS Follow-Up Report: January 1, 2024 – December 31, 2024* comments received on this document were divided into 4 categories:

- 1. BW Gold will respond by either providing clarification or the information requested by the reviewers.
- 2. BW Gold will respond by indicating the opportunity to continue to discuss through existing forums, and identifying opportunities for involvement offered through management plans, such as the Aboriginal Group Monitoring Plan.
- 3. BW Gold will aim to include an update in the 2024 report, the ability to accommodate this is dependent on timing of the comment.
- 4. BW Gold will respond to by noting that the comment provided will be considered as part of the next report, or as part of a future update to the applicable FUP. Opportunities to continue discussion on those concerns and recommendations based on priorities are in place following submission of this report.

Table 2 provides a summary of what changes reflective of those comments were made in the 2025 reports, and where in the applicable document those changes are discussed. This summary also reflects changes made in consideration of discussions and comments associated with those opportunities described above.

Table 2 Engagement

Annual Report	Location of Information
Air Quality and Fugitive Dust Management Annual Report	Where applicable, comments were addressed in the final <i>Air Quality and Fugitive Dust Management Plan Annual Report</i> (March 2026) Section: Section 7: Adaptive Management
Federal Decision Statement Condition 3.15 Results Report	Where applicable, comments were addressed in the final <i>Federal Decision Statement Condition 3.15 Results Report</i> (March 2026): - Differentiating between wildfire and mine related impacts (Source Comment ID#1] is addressed in Section 1.6. - Rationale for missed stream field data (Source Comment ID#2] is addressed in Section 2.3. - Guidelines and benchmarks are displayed on figures (Source Comment ID#4] provided in Appendix A-7 and A-8 and in Section 2.3-1. - Zinc concentrations in Creek 661 (Source Comment ID#5, #6] potentially related to the Q1 2025 dust event from the ore stockpile are discussed in Section 2.3 (surface water), Section 4.3 (sediment quality), and Section 6.3 (Benthic Invertebrate Community and Tissue Metals). - Multiple comments with respect to resident fish community metrics (NFN Comment ID#3, #4, #5, #6), as well as salvaged fish (NFN Comment ID#2) are addressed in Section 7.3.1 - Mesohabitat data presented in tabular format (NFN Comment#7) are provided in Section 8.3.5 - Multiple comments with respect to rainbow trout spring spawner surveys, including CPUE, abundance (NFN Comment ID#10, #11) and box traps (NFN Comment ID#14) are addressed in Section 10.3
Country Foods Monitoring Plan Annual Report	Comments were addressed in the final <i>Country Foods Monitoring Plan Annual Report</i> (March 2026), Sections: Section 2.2: Engagement on CFMP.
Federal Decision Statement Condition 3.14 Results Report	Comments were addressed in the final <i>Federal Decision Statement Condition 3.14 Results Report</i> (March 2026) Section 1.6: - BW Gold has conducted engagement regarding the FUP for Condition 3.14 with Indigenous nations and has planned additional engagement sessions. Much of the engagement regarding the AEMP is also applicable to this report. - Activities specific to the 3.15 FUP Results Report are described below: - September 18, 2025 – Meeting with the Nechako First Nations (NFNs) during which NFNs provided an overview of their comments with respect to the 2024 Annual Report. - September 26, 2025 – Responses to NFNs comments were provided by BW Gold.
Federal Decision Statement Condition 3.16 Results Report	Comments were addressed in the final <i>Federal Decision Statement Condition 3.16 Results Report</i> (March 2026) Section 1.6: - Tatelkuz Lake Littoral (TLLit) sites were added to Figure 1-1 to display annual trends in Tatelkuz Lake littoral fish community throughout Tatelkuz Lake. - Causes of fish mortality have been listed in tables where necessary. - Several recommendations have been proposed for consideration during the next update to the FUP for Condition 3.16 in Section 4.0.
Wildlife Mitigation and Monitoring Program Compliance Report (WMMP)	Comments were addressed in the final <i>Wildlife Mitigation and Monitoring Program Compliance Report</i> (March 2026), Sections: Section 2.4 (2.4.2.2 and Table 2.4-1) - In addition to the WMP, four permanent (IECD, TSF, CWTP, and LGO) and one temporary (Pit Sump) facility water structures were operational in 2025. Cameras were deployed at each facility water in 2025 (Figure 2.4-1; Appendix G). For temporary facility water structure, such as the Pit Sump, cameras were only deployed while the structure was operational. Section 2.4.2.2 - The cameras were serviced bi-monthly to maintain working condition, replace batteries, and download photos (Appendix K).
Wetland Management and Offsetting Plan Annual Report (WMOP)	Comments were addressed in the final <i>Wetland Management and Offsetting Plan Report</i> (March 2026), Sections: - Section 2.1: Engagement on the WMOP Annual Report - Section 3.5: Updated language to clarify change in wetland extent and function at the mine – describes wetland extent and function loss in comparison with predicted loss in Section 3.5.3. - Table 5-1, 1d engagement

4. Engagement through the Accidents and Malfunctions Plan

Table 3 below summarizes events that occurred in 2025 (see Table 3) that were reportable under the Accidents and Malfunctions Administration and Communication Plan. **Appendix 2-B** contains the reports provided to applicable provincial regulatory authorities, and Indigenous groups. These documents further support the information contained in Table 3.



Table 3 Summary of reportable events in 2025 through the AMCP

Classification	Date Observed	Event	Date Reported	30 Day Follow up Report	90 Day Follow up Report	Mitigation
Minor	January 17	MMU operator noticed MMU filling slower than usual and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result. Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area, and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The water course is non-fish bearing and serves to fill a water management pond. The water is not released downstream.	January 18	January 22	N/A	• Install remote start/stop controls to use from top of MMU • Install an indicator light to indicate pump is in operation • Update work procedures to include communication if using two operators or if not remote is available. • Post new pump procedures at pumping station • Review revised procedure with all operators. • Management & SHES to follow up and ensure all critical actions are completed and verified. • Review of supervision and personnel updates
Moderate	February/March	Due to persistent cold weather conditions at the beginning of February 2025, the Central Water Transfer Pond (CWTP) pump failed due to freezing conditions, and subsequently the discharge line froze.	August 11	N/A	August 11	In response to the pump failures in February, a review of pump and supply systems was done to identify: 1. Changes should be made to limit the potential for freezing during winter conditions; and, 2. Electrical components inventory for regularly used parts (such as breakers) to limit the potential of downtime for pumping infrastructure Following this review, pipeline improvements for the CWTP and WMP were made in early March: - Pipelines sections were re-graded to minimize low points for water accumulation and ice buildup during freezing weather - Low point drains were maintained and heated with frost fighters for draining of sections during expected downtime. - Select pipeline sections were buried under 3 meters of material to reduce freezing risk under frost line.
Minor	April 6	Waste oil drum tipped over as a result of melting snow and ice it was sitting on.	April 6	May 4	N/A	Spill cleanup was initiated immediately - ERT was dispatched to the scene with the spill response trailer, the area was closed to traffic, and 15-20 personnel contributed to the cleanup. The source of the spill was ceased. Runoff water was prevented from entering the contaminated area. Spill booms were placed in the ditch line to contain the spill and prevent hydrocarbons from leaving site. Spill pads were placed on the ground where waste oil and sheen were visible. A hydrovac was utilized to remove contaminated water and snow from the ditch line. A backhoe was used to remove contaminated soil from the road.
Minor	May 14	Excavator loading material as part of mine operations had a Coolant hose/clamp failure on main suction line for left engine coolant system. Spill site was a bench in the open pit at Blackwater Gold Mine. Material affected was PAG overburden. Stripped rock with no vegetation present. Nearest watercourse was 370 metres, a tributary of Mine Creek.	May 15	June 8	N/A	Hose and clamps were reinstalled and tightened. Then proceeded to verify all other accessible rad hose clamps were tight. Unit was filled with coolant, and no leaks were found. A replacement hose and clamps have been ordered to be changed as a precautionary measure.
Minor	May 17	Haul truck dumping material as part of laydown construction had a Hose failure from coolant heater line from engine to cab. Spill site was Mine Services Area (MSA). Material affected was general construction aggregate, a laydown area with no vegetation present. Closest watercourse was 390 metres away, Creek 704/Mine Creek. Watercourse was not affected.	May 18	June 7	N/A	Upon inspection, found a heater hose underneath the cab had split open. Clamps were tight, appears to just be a failure of the hose. Hose was a little on the soft side but not bad. The hose has been replaced.
Minor	May 28	Construction Camp had a Pipe under camp that developed a crack leading to leak. Spill site was under Dorm 1 at Construction Camp at Blackwater Gold Mine. Affected material was packed construction aggregate with no vegetation present. Closest watercourse was Creek 146, 170m away.	June 18	July 2	N/A	Exact spill date is not known and approximated at May 28. Initial pipe bypass was put in place after notification was received. Spill clean up was planned including coordination of confined space training for Hydro-Vac operators and scheduling cleanup once shift change was complete and night shift employees were not staying in dorm. Once spill cleanup was initiated a full connection repair was put in place for the pipe on June 12.
Minor	June 14	Mixed mobile unit truck was filling tank with dry Ammonium Nitrate prill product when gate closure mechanism malfunctioned leading to an overflow and spillage. Spill site was Orica Laydown. Material affected was general construction aggregate, packed material for a laydown with no vegetation present. Closest watercourse was 475 m away, Mine Creek.	June 15	July 25	N/A	Investigation was done for mechanical issue of the gate closure, and they are working towards a more robust system to limit future failures.
Moderate	June 24	A slope failure was identified that resulted in the deposition of natural materials (soil, vegetation, etc.) into Davidson Creek.	June 25	July 25	N/A	The area will be visually monitored and corrective actions taken if required and only when it is safe to do so. Monitoring will also continue under BW Gold’s surface water quality sampling program. Resources at the mine are available to support monitoring and corrective actions as needed. Post event sampling and monitoring measures that occurred are listed below: • Bank Walks (800 m) • Upstream SWQ Sample • Downstream SWQ Sample • SWQ Sample at DC-05 (approximately 800 m downstream) • Gauges placed in downstream (to identify sediment deposition)
Minor	July 3	Diesel pump was transferring slurry from one tank to another when the outflow hose line failed resulting in spilled material reporting to the ground.	July 3	July 9	N/A	Pump was immediately shut down, supervisor and environment department were notified. Released material was contained with a dirt bund and clean up was coordinated with a hydro-vac truck. Contaminated material was cleaned up with a loader and disposed of in TSF.
Minor	July 8	Operator of 1 Ton fuel truck was filling booster pump 1. After refueling, the truck was moved with nozzle still in place at booster pump 1. Fuel hose detached and spill to ground occurred.	July 9	July 9	N/A	Shut off pump, placed spill tray where leak was from container of truck, placed spill pads in positions that would prevent spreading further. Excavator cleaned up contaminated material.
Minor	July 25	During scheduled work to install new HDPE piping workers were instructed to have the pipe drained prior to the maintenance taking place. When work began to install the new flange where the new HDPE pipe would be tied into the current pipe, the head pressure from the drain pushed a gasket out of its seat causing a leak.	July 26	August 21	N/A	• Source of spill was stopped. • Environment was notified. • Environment collected soil samples at affected area. • Cleanup initiated and completed. • Post clean-up soil sample collected.
Minor	October 28	• Hose failure • Damaged coolant line fitting • Activity during spill – approaching LGO stockpile dump location	November 3	November 3	N/A	Truck was shut down, Dispatch was informed. Maintenance was dispatched out to stop the leak. Spill tray placed under area of leak. Lube truck evacuated all surface Coolant that had pooled. EX349 scraped up contaminated soil and loaded it onto a 773 HT to be brought to the PAG Waste storage area.
Major	November 26	Operator was putting totes of caustic soda away into storage sea can and punctured tote in second row with fork of telehandler.	November 26	December 26	N/A	• Incident investigation resulted in corrective actions being identified and actioned including: • Procurement of forklift collars to limit protrusion on other end of tote when handling totes. • Procurement of materials to raise floor of sea can storage, increasing containment capacity. • Procurement of materials to install external drain camlock and allow easier access for maintenance of secondary containment. • Training audit for chemical handling of forklift staff. • Phase 1A construction package has included installation of caustic soda bulk tank resulting in overall less chemical tote handling.
Minor	November 27	A hydraulic leak occurred in the swing circuit of the SH3601, resulting in the release of approximately 930 liters of oil. Of this amount, 500 liters were recovered by the lube truck from the deployed spill containment trays. A significant portion of the spill was effectively contained by these trays and absorbent pads.	November 27	December 22	N/A	• Truck was shut down, Dispatch was informed. • Maintenance was dispatched out to stop the leak. • Spill tray placed under area of leak. • Deployed absorbent pads around area • Lube truck evacuated all surface hydrocarbon had pooled • 988 loader collected all soiled material and loaded into 773 HT
Major	December 6	Operator was placing tote of caustic soda in reagents seacan and punctured a tote behind the one he was placing with the tip of his zoom boom fork that was protruding past the tote that he was placing.	December 7	January 6	N/A	• Incident investigation resulted in corrective actions being identified and actioned including: • Procurement of forklift collars to limit protrusion on other end of tote when handling totes. • Procurement of materials to raise floor of sea can storage, increasing containment capacity. • Procurement of materials to install external drain camlock and allow easier access for maintenance of secondary containment. • Training audit for chemical handling of forklift staff. • Phase 1A construction package has included installation of caustic soda bulk tank resulting in overall less chemical tote handling.

Appendix 2-A: Change Logs



May 29, 2025

Authorization Number: 110652

VIA EMAIL: KHalwas@artemisgoldinc.com

BW Gold Ltd.
PO Box 49314
Suite 2600 – Three Bentall Centre,
595 Burrard Street
Vancouver, BC V7X 1L3

Dear Karen Halwas,

RE: Approval of the Aquatic Effects Monitoring Program at the BW Gold Mine, Permit 110652, issued under the *Environmental Management Act*

The Ministry of Environment and Parks (ENV) is in receipt of the Aquatic Effects Monitoring Program (AEMP) V4, dated April 2025. The AEMP was reviewed by ENV and pursuant to Section 4.6 of Permit 110652 and to Section 16 of the *Environmental Management Act* (EMA), I hereby approve the AEMP V4 for the BW Gold Mine subject to the following terms and conditions:

- 1) The permittee must conduct a power analysis, using data collected in 2023, 2024, and 2025, to determine the frequency of mark recapture sampling needed on kokanee fry outmigration. The results of the power analysis must be submitted to ENV, Lhoosk'uz Dene Nation, Ulkatcho First Nation, Nadleh Whut'en First Nation, Saik'uz First Nation, and Stellat'en First Nation by December 31, 2025
- 2) The permittee must report all fish mortalities under the AEMP by species, cause of mortality, and type of sampling in the subsequent AEMP Interpretive Reports.
- 3) The permittee must collect PAH samples in sediment during the 2025 sampling program to establish baseline at sites 661-01, 661-05, 661-10, DC-05, DC-15, TC-05, and 705-05. Analysis and discussion of PAH concentrations in sediment must be included in the 2025 AEMP Interpretive Report.
- 4) The permittee must update Figure 4.2-1 and 4.2-2 to include current and proposed sampling activities and include them within future versions of the AEMP Plan.
- 5) The permittee must use statistical analysis where covariates can be accounted for when completing fish tissue analysis.

This approval does not constitute approval by any other agency with jurisdiction over this matter.

This decision does not affect any other requirements of the Permit 110652, which remain in full force and effect.

This authorization does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the permittee. This authorization is issued pursuant to the provisions of the *Environmental Management Act* to ensure compliance with Section 120(3) of that statute, which makes it an offence to discharge waste, from a prescribed industry or activity, without proper authorization. It is also the responsibility of the permittee to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Administration of this permit will be carried out by staff from the Environmental Protection Division's Authorizations and Remediation Branch. Plans, data and reports pertinent to the permit are to be submitted by email at ENVAuthorizationsReporting@gov.bc.ca or electronic transfer to the director, designated Officer, or as further instructed.

If you have any questions regarding this letter, please contact Breanne Hill at Breanne.Hill@gov.bc.ca or (250) 645-9315.

Yours truly,

A handwritten signature in cursive script, appearing to read 'Kristy Wade'.

Kristy Wade, RPBio
for Director
Environmental Management Act

BLACKWATER AIR QUALITY AND FUGITIVE DUST MANAGEMENT PLAN

The following presents a summary of the primary changes made since the Air Quality and Fugitive Dust Management Plan (AQFDMP) was last updated (Version H.1; August 28, 2023). This table is current to the J.1 version of the plan (April 30, 2025). Other editorial revisions (eg. grammar, spelling) have not been described in this change log. Primary changes include:

- Changes made based on the results/recommendations of the Memo EMA Permit 110650 – Air Quality and Fugitive Dust Management Plan Review (December 19, 2024; ERM 2024).
- Updated information to align with the new requirements of the air discharge Permit 110650 that was amended on September 9, 2024.
- Updated information to align with the November 2023 guidance document Developing a Fugitive Dust Management Plan for Mines in BC (BC EMLI & ENV 2023). This new guidance document came out after the previous AQFDMP version was issued.
- Changes to language to reflect current mine operations (e.g. from using the word “Project” to “Mine”) and including as-built mine information where available.
- Updated information based on the AQFDMP update review meeting between ERM and Artemis Gold on April 23, 2025 to discuss the draft document version I.1.
- Updated information based on Artemis Gold’s review of the draft I.1 version of the AQFDMP on April 27, 2025.

Section	Revision	Rationale
-	Acronym list	Use of current and relevant acronyms
1.0 Purpose and Scope	Updated permit information and references to other plans (Air Quality Trigger Response Plan). The Trigger Response Plan (TRP; Appendix D) was also updated to align with the relevant information in the AQFDMP.	Identifies linkages in plans and includes updates to permits. TRP updated to align with the corresponding information in the AQFDMP. The TRP is included as a new appendix in the AQFDMP to have both documents in one central location.
2.0 Mine Overview	New paragraph to describe current and proposed operations, and editorial revisions.	Reflects current phase of operations and alignment of ‘Mine Overview’ text across all Blackwater management plans
3.0 Roles and Responsibilities	Editorial revisions. and removal of references related to construction.	Consistency in project roles and responsibilities across all Blackwater management plans. Includes reference to Blackwater as the ‘Mine’.

5.0 Facility Description and Setting	Editorial revisions.	Includes reference to Blackwater as the 'Mine'. Updates to data units for consistency.
7.0 Identification of Potential Effects of Fugitive Dust	Table 7.1-1 Federal and BC Ambient Air Quality Objectives – Updated to reflect 2025 CAAQS values that came into effect in 2025. Removed a sentence regarding the assessment of wildlife and vegetation receptors relating to BC dust deposition objectives. Updated map Figure 7.1-1 to include revised monitoring station locations. Editorial revisions.	Updated the provincial and federal ambient air quality objectives/standards to only include those applicable in 2025. Updated air quality human receptor map to show the latest locations of air quality monitoring station.
8.0 Implementation	Editorial revisions.	Includes reference to Blackwater as the 'Mine'. Updates to references.
8.3 Monitoring	Table 8.3-1: Blackwater Mine Meteorological Stations - Added	Adjusted location information
8.3.2 Dustfall Monitoring	Updated the wording about BC ENV's stance on dust deposition monitoring. Updated visual dust monitoring wind speed threshold and wind data source.	Adjusted the wording for clarity. Adjusted the wind speed threshold based on the nearby on-site meteorological station data source and applying AP42 wind erosion methodology for winds measured at 10 m height rather than surface level.
8.3.3.1 Partisol Matter 8.3.3.2 Purple Air Monitor	Revised section describing Partisol sampling locations and details. New section describing Purple Air Sensor sampling locations and details.	New information based on information from the Blackwater Mine: Blackwater Gold Project Annual Report for PA-110650 (March 2025)
8.3.3.3 Regional Data	New section describing how regional data will be used to inform wildfire smoke conditions.	Data used to inform regional wildfire smoke influences on the Mine.
8.3.4 Nitrogen Dioxide and Sulfur Dioxide Monitoring	Revised section describing approach to using Radiello samplers for NO ₂ and SO ₂ .	New information based on information from the Blackwater Mine: Blackwater Gold Project Annual Report for PA-110650 (March 2025)
8.3.5 Carbon Dioxide	Revised section describing approach to passive CO sampling.	New information based on information from the Blackwater Mine: Blackwater Gold Project Annual Report for PA-110650 (March 2025)
8.3.6 Point Source Discharge Monitoring	Revised section with additional details about monitoring method and parameters.	Updated the information to better align with the wording in the amended air discharge Permit #110650 (amended September 9, 2024).
9.1 Air Quality Trigger Response Framework	Table 9.1-1: Trigger Action Response – Revised to include permit limit, levels, and thresholds. Added new column about documentation and notification. New paragraph was added regarding forest fire smoke.	Updating information to clarify and quantify thresholds and include note regarding potential forest fire smoke implications.

10.2 Emergency Reporting and Process Modification Procedures	Added airborne spill clarification wording and editorial revisions.	Adjusted wording for clarity.
10.3 Record Keeping	Added CO monitoring to the record keeping list.	Added in CO to align with the Monitoring section (8.3).
12.0 Authorship and Declaration	Changed section heading from “Qualified Professionals” to “Authorship and Declaration” to better describe the section. Change in authorship and reviewers. Added additional paragraph clarifying limitations of qualified professional review based on the required text from the amended air discharge Permit #110650 (amended September 9, 2024).	Updated based on authors and reviewers supporting the update, and in accordance with the new conditions in the amended air discharge Permit #110650 (amended September 9, 2024), regarding Qualified Professionals.
13.0 References	Update to references	Based on current information
Appendix C	Update the text and section numbers to reflect the new referenced guidance document.	Updated information to reflect the information in the new guidance document <i>Developing a Fugitive Dust Management Plan for Mines in BC</i>
Appendix D and F	Inclusion of Appendix D: Blackwater Mine: Air Quality Trigger Response Plan (April 30, 2025 revision); and Appendix F: BC ENV Conflict of Interest and Declaration of Competency Forms	Added the Trigger Response Plan (TRP) document as an appendix to the AQFDMP document to keep the two documents consolidated together. Added BC ENV filled out forms for Conflict of Interest and Declaration of Competency Forms completed by the Qualified Professional as they are new requirements in the amended air discharge Permit #110650 (amended September 9, 2024).

REFERENCES

ERM. 2024. *Memo: EMA Permit 110650 – Air Quality and Fugitive Dust Management Plan Review* (December 19, 2024). Prepared for Artemis Gold Inc. by ERM Consultants Canada Ltd.: Vancouver, BC.

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Director, *Environmental Management Act*
Ministry of Environment and Climate Change Strategy
Regional Operations Branch, Environmental Protection Division
Suite 325 – 1011 4th Avenue
Prince George, BC V2L 3H9

March 27, 2025

Dear Sir or Madam:

The Aquatic Effects Monitoring Program (AEMP) Plan, Version 3.0 was revised to Version 3.1 based on comments received from the Ministry of Environment and Climate Change Strategy (BC ENV), BC Ministry of Water, Land and Resource Stewardship (WLRS), and Nechako First Nations following the review of the Plan, Version 3.0 (Attachment A to C). The 'Revision History' in the AEMP Plan, Version 3.1 provides detail regarding sections, figures, and tables revised in response to the comments provided.

The following Round 3 comments that were considered 'Open' were addressed in the AEMP Plan, Version 3.1 (Attachment A):

- **Recommend monitoring of Polycyclic Aromatic Hydrocarbons in sediments (BC ENV Comment ID#1):** Section 1.4 (Components included in the Aquatic Effects Monitoring Program) has been revised to indicate that there may be special studies (i.e., as requested by the Director or as an investigation of cause triggered by the response framework) that will be reported under a separate cover from the annual AEMP Interpretive Reports. This approach recognizes that the special studies (such as the monitoring recommended by the reviewer) will have specific objectives, monitoring frequency, and reporting requirements that are not required by the AEMP Plan but will support AEMP analysis and interpretation.
- **Recommend consideration of laser ablation and muscle plug methods if there is an intention to increase sample size for fish tissue monitoring (BC ENV Comment ID#5):** There is no intention to increase the fish tissue sample size in streams at this time. Section 4.8.1.2 has been revised to indicate that consideration of muscle plugs for collection of tissue metals from fish in lakes.
- **Recommend updating the maps to include locations of water temperature loggers (BC ENV Comment ID#6):** Figure 4.2-4 has been revised to indicate the location of the water temperature loggers.
- **Recommend inclusion of the best available covariate for fish tissue analysis (BC ENV Comment ID#9):** Section 4.8.1.3 has been revised to address potential bioaccumulation for fish tissue to be influenced by external factors including age, size, and weight. Age or the most appropriate metric (i.e., length or weight) to address the potential for bioaccumulation in fish tissue will be included as a covariate in statistical analyses of fish tissue concentrations of mercury and selenium.

- **Recommend incorporation of the fish implementation framework study design into the body of the AEMP Plan (WLRS ID#28):** Sections 4.8.1.2, 4.8.2.2, 4.8.3.2, and 4.8.4.2 have been revised to incorporate the implementation framework (commencement and termination triggers) for fish community inventory and tissue metal sampling, kokanee spawner surveys, kokanee fry outmigration surveys, and rainbow trout spawner surveys.
 - The implementation framework (section 4.8.1.2) was also revised to incorporate ATU calculations into the commencement trigger for fish community inventory surveys (NFN ID#7 / NFN IF ID#1)

A meeting to discuss kokanee fry outmigration survey frequency and kokanee spawning survey reporting areas was held on March 6, 2025 with BW Gold, BC ENV, and WLRS in attendance. Following the meeting a further request for clarification from BC ENV and WLRS was received via email on March 21, 2025. The following revisions were made in the AEMP Plan Version 3.1 in response to the clarification request:

- Section 4.8.2.2 (Table 4.8-3) has been revised to indicate that the kokanee spawning reach 3 (DC-3-KO) in Davidson Creek will be replaced by reach 2 (DC-2-KO).
- Section 4.8.2.2 has been revised to indicate special study of kokanee spawner distribution throughout Middle Chedakuz Creek, planned to occur in 2025.
- The implementation framework (Section 4.8.2.2) for kokanee spawner surveys was revised to include a process if barriers (e.g., beaver dams) become passable by fish during the survey season.
- Section 4.8.3.2 and 4.8.3.3 have been revised to include an expanded description of kokanee fry outmigration field and abundance estimate data analysis methods, respectively. These revisions include clarification of sampling frequency, including wording for when to move from initial sampling to increased sampling frequency, wording with respect to terminating sampling if fry mortality is high, as well as trap efficiency (mark-recapture) and area-based expansions methods.
- Section 4.8.3.3 has been revised to indicate that the number kokanee fry mortalities and mortality rate will be reported upon in the annual AEMP Interpretive Report.

Sincerely,



Karen Halwas
Manager, Compliance and Permitting, Artemis Gold Inc.

Attachment A – Round 3 Comments, Issues Tracking Table (ITT) Comments

Comment ID	Comment Date	Reviewer Agency	Reviewer Name	Application Section or Page	Comment Type	Potential Permit Condition?	Round 1 Comment	Blackwater Gold Response	Status - Open or Closed	Round 2 Comments	BWG Round 2 Responses	Status - Open or Closed	Round 3 Comments
Unique identifying ID to keep track of comments	Date comment provided from reviewer	ENV / WLRs			AEMP requirement, information, clarification, question, or comment	Yes/No							
1	18/Dec/24	ENV	Tom Pretty	4.5	AEMP requirement	Yes	Sediment quality will be compared to relevant BC and CCME sediment quality guidelines, but polycyclic aromatic hydrocarbons (PAH) were not included in the analyzed sediment quality parameters. There are several PAH sediment quality guidelines that will be overlooked if not analyzed. This is particularly important during the first few years of construction and operation to establish better background conditions. For example, the PAH compound 6PPD quinone can have detrimental effects to salmonids and has a draft BC sediment quality guideline that may become approved in the near future. Please include PAH compounds as part of the regular sediment quality analysis.	The AEMP sampling design (including monitoring components and sites) was developed to meet the objectives listed in Section 1.1 of the AEMP Plan which includes 'detect Mine-related effects on the aquatic ecosystem components'. In addition management plans (e.g., Fuel Management and Spill Control Plan) are in place to prevent or minimize the release of hydrocarbons into the receiving environment. Although polycyclic aromatic hydrocarbons (PAH) in sediments can be naturally occurring, monitoring of PAHs in the receiving environment would only be completed if Mine-generated PAHs are detected in waters discharged to the receiving environment. This would be included as a special study in response to a Mine site activity (e.g., hydrocarbon spill) to understand potential effects in a localized area in the receiving environment and will not be a component of the regular AEMP monitoring program. No changes to AEMP Plan, Version 3.0 have been made regarding sediment quality analysis.	Open	PAH compounds in receiving aquatic environments from mine-related effects could occur due to run-off and gradual exposure. For example, the PAH compound 6PPD quinone generally enters aquatic ecosystems through weathering of tires on roadways and exposure to runoff. Given the longevity of the mine's lifespan and its exposure to runoff, PAH compounds within the receiving environment may increase as a direct result of mine-related effects and should be monitored at some frequency. Collecting baseline data in 2025 would allow regional comparison before an event (e.g., hydrocarbon spill) occurred. As sediment sampling is already proposed, completing sediment PAH analysis should require minimal effort. Please be aware CCME PAH WQGs may be coming in the future. Since the purpose of the 2025 AEMP is to help provide a baseline characterization of sediment quality (Section 1.2) and sampling PAHs in sediment would require minimal effort, I will likely request PAHs are included as a condition for this year.	Analysis of sediment PAH compounds is not appropriate for the AEMP based on the proposed Mine activities (i.e., they were not identified as parameters of potential concern). BW Gold would like to re-iterate and highlight the following additional rationale for why sediment PAHs (and 6PPD quinone specifically) should not be considered an AEMP sampling component: the 2025 AEMP sampling objectives are not to collect baseline data; the objectives of the program is to evaluate the potential effect of the Blackwater Mine activities in the receiving environment and confirm effects assessments (see Section 1.1 of the AEMP Plan, Version 3.0); there are no current guidelines for sediment PAHs- The Fuel Management and Spill Control Plan is in place to prevent or minimize the release of hydrocarbons into the receiving environment. Although PAH in sediments can be naturally occurring, monitoring of PAHs in the receiving environment would only be completed if Mine-generated PAHs are detected in waters discharged to the receiving environment. The example compound 6PPD quinone is not a PAH and as indicated in BC ENV (2025) it is a product of a reaction between the tire compound (6PPD) and ozone that leaches into road runoff. The greatest concentrations in road runoff tend to be in urban areas (i.e., paved roads). There is only an acute water quality guideline for 6PPD quinone (BC ENV 2025) thus monitoring in sediments is not required. In addition, based on review of BC ENV (2025) there is no clear 6PPD quinone pathway to sediments (or rationale to monitor this compound in sediments) and it is BW Gold's understanding that the standardized methods for analysis of 6PPD quinone in sediments are still in development (i.e., it is not listed in the BC Environmental Laboratory Manual). However, BW Gold acknowledges that analysis of sediment PAH compounds could be required as a component of the 2025 monitoring program. In this case, analysis of sediment PAH compounds would be considered a special study (not an AEMP component) to be developed with clear objectives, sampling locations, with results to be reported outside of any AEMP interpretive report. Reference: B.C. Ministry of Water, Land, and Resource Stewardship, 2025, 6PPD-quinone Water Quality Guidelines – Freshwater Aquatic Life, Water Quality Guideline Series, WQGS-24, Prov. B.C., Victoria B.C.	Open	Thank you for your response. Since it was already acknowledged that hydrocarbon spills have occurred (re-February ELOMC meeting: multiple hydrocarbon spills around Andrew's Hill and staining in the U-Drom parking lot that will wait until spring thaw to finalize the inspection), there is already some concern of PAH compounds to the receiving environment via runoff. PAHs are not being monitored in the surface water so there are no current methods routinely employed to detect hydrocarbons to the receiving environment. Accumulation of PAHs can be detected in sediment analysis with little to no extra effort to the current plan. Table 4.5-1 indicates sediment quality is to be assessed based on both BC ENV and CCME 2024 or updated guidelines (there are several CCME guidelines for PAHs in sediment https://ccme.ca/en/res/polycyclic-aromatic-hydrocarbons-2010-canadian-soil-quality-guidelines-for-the-protection-of-environmental-and-human-health-en.pdf). At minimum, baseline PAH concentrations need to be known to facilitate any before-after comparisons in the event of a spill or other unforeseen event and understand regional concentrations. I will likely recommend be required as a condition of this years AEMP to establish PAH in sediment concentrations at sites 661-01, 661-05, 661-10, DC-05, DC-15, TC-05, and 705-05.
2	18/Dec/24	ENV	Tom Pretty	4.2	Information	No	Sample site 661-01 on Creek 661 is considered an upstream control site (Table 4.2-1) but is within the footprint of the mine where some influence (e.g., runoff) may occur (Figure 4.2-3). As a result, the site does not appear to be a true reference control site with potential impacts to water quality, sediment quality, aquatic resources, and fish. Please provide additional information in the plan to justify if this is a true control site. Alternatively, please identify it as a partial control and adjust the description of the Type of Site as required.	Site 661-01 was selected as a control site based on BC ENV comments during the Joint Mines Act/Environmental Management Act Application review (see response to Round 1 BC ENV Comment ID4938 on the Application). The control site, 661-01, was added to the mainstem of Creek 661 upstream of the confluence with Creek 543585 and the confluence with Creek 505659. This location was selected because it was accessible year round for sampling of all AEMP components, and upstream of potential mine-related impacts. There will be no discharges to surface water from the Plant site and the associated Plant Site Sediment Control Pond discharges to ground inferred flow directions are towards Creek 661 tributaries (Creek 505659 and Creek 146920). Groundwater seepage from the Camp Site was modelled to report to the Creek 661 mainstem upstream of the confluence with Creek 505659. Therefore it is assumed that the 661-01 site is monitoring upstream of the location where seepage would enter the creek from the Camp Site and the Plant Site. Dust generated from the roads, even with increased traffic, is expected to result in negligible loading of parameters of potential concern into adjacent waters. In addition to chronic toxicity testing, this control site includes sampling for water quality (monthly and 5- to 30-), sediment quality, aquatic resources (including benthic invertebrate tissue metals), and fish inventory and fish tissue. Baseline seasonal trends in surface water quality at the upstream sites suggest that they are appropriate for use in the statistical analysis to detect Mine related effects in Creek 661. Therefore site 661-01 will continue to be considered a control site as defined in the AEMP Plan.	Closed	Great, thank you for clarifying the site selection. In the event a new seep that impacts site 661-01 is detected, I assume the site would be reclassified as not a true control. Currently I have no concern with using the site as a control; comment closed.			
3	18/Dec/24	ENV	Tom Pretty	4.2 and 5.2	Comment	No	A reduction of sampling benthic invertebrates and fish tissue to once every six years would not be protective of aquatic life. For example, benthic invertebrate lifespans are 2-3 years, while kokanee live and mature around at 3-5 years. A reduction of sampling to every 6 years would overlook whole generations of sensitive and important receptor biota. The federal MDMER program requires sampling every three years. It would be beneficial to coincide both the AEMP program and Federal MDMER program as one to reduce detriment to biota. Additionally, I am concerned the reduction to once every 6 years will arrive prior to maximum effects from the mine. For example, 2025 is unlikely to show differences between reference and mine-exposed sites given it is the first year. This would be the first instance of no difference. Since operations would have just commenced and there is a lag-time to see impacts to the higher trophic level fish, it is also likely that no differences would result after three more years. If the frequency transfers to once every six years after this second iteration, the majority of impacts would likely not be detected. This is further to similar comments posed in the version 2 AEMP (comment ENV-6). Please consider removing the decrease to every six years or adjust to a more appropriate frequency that is protective of aquatic life.	Comment ENV-6 on AEMP Plan Version 2.0 (with a similar response) was closed August 2, 2024. A fish tissue monitoring program is currently not triggered for the Federal Environmental Effects Monitoring Program (EEM). In addition, if fish tissue sampling is triggered, the EEM program sampling would be completed in the 'exposure area' with the least effluent dilution (i.e., DC-05). The AEMP Plan sampling frequency for stream fish tissue metals is annual and could be decreased to a sampling frequency of once every three years if no effects are identified after a three year period (consistent with the EEM). The reduction in sampling frequency to once every 6 years is proposed only for benthic invertebrate tissue and lake fish tissue metal analysis (both of which were permitted [PE-110652] for sampling once every three years and would not be subject to EEM sampling). Thus, the first year of sampling is Year 1 of Operations (2025) which as the reviewer suggests there is unlikely to be effects detected. The two reporting periods (or three year cycles) for the analysis of effects would be 2028 (compare 2025 and 2028 results to baseline) and 2031 (compare 2025, 2028 and 2031 results to baseline). Both the 2028 and 2031 AEMP interpretive reports conclude there are no effects, the QP would evaluate all results of the AEMP (i.e., weight of evidence approach) to provide a rationale for a reduction in sampling frequency that continues to be protective of aquatic life.	Open	I do not support potential reduction of monitoring benthic invertebrates and fish tissue to once every six years due to the short life spans of fish and invertebrates. I am unlikely to provide a favorable recommendation to a decision maker to support a reduction in tissue monitoring to once every six years. ENV can consider this proposal in the future, but I recommend the proposed wording of "six years" be removed altogether.	BW Gold acknowledges that ENV may not provide a favorable recommendation to a decision maker to support a reduction in benthic invertebrate tissue and lake fish tissue monitoring to once every six years. The statement ("six years") has been revised to simply state a reduction in frequency will be required.	Closed	Thank you for your response.
4	18/Dec/24	ENV	Tom Pretty	5.2	Comment	TBD	The management response for high levels states that sampling will be done annually. While there is benefit in annual sample programs, this does not take into account seasonal variability. E.g. tissue concentrations of metals may be higher in winter when flows are low. Please change the management response to include "at minimum annually" where frequency can be increased even further if deemed appropriate.	A return to annual sampling is proposed at the high action level for the monitoring components sediment, periphyton, aquatic invertebrates, and stream fish tissue because this is what is defined in the permit [PE-110652] as the initial sampling frequency and will provide a consistency with the baseline dataset. The annual sampling frequency also represents the critical time period for the monitoring component (e.g., when adult life stages of benthic invertebrates are present and diversity is typically high) and there is access to all sites (e.g., at winter low flows all sites may not be accessible or particular life stages may not be present). At the high action level, sampling programs are also proposed to define magnitude and extent in which additional months may be sampled to address objectives of the study (i.e., not completed every monitoring year). Therefore no changes to the 'annual monitoring frequency' at the high action level have been completed.	Open	There is a chance of high impact or unforeseen event where increased frequency of sampling beyond annually may be necessary. References to annually sampling is for generalized monitoring including CABIN sampling which is time specific. Permit PE-110652 indicates water samples for metals are to be taken monthly at the majority of permit sites. Prolonged exceedances of guidelines may require bioaccumulation modeling to better understand why concentrations are so high in biota. For example, in the event modeling is to be created, the timing of the water samples and associated receiving biota (i.e. periphyton and benthic invertebrates) would need to be sampled together to form accurate models. Please note this is only a hypothetical situation if tissue metals become a persistent concern, hence why the request for "at minimum annually" so model creation or unforeseen occurrence can be accounted for. Without the similar timing, any bioaccumulative model would likely be inaccurate and not helpful for determining why and the extent of impact. I do understand though that the perceived risk is currently low meaning this request is more of a nuance.	BW Gold acknowledges the 'hypothetical case' that ENV has provided. However BW Gold will again suggest that this type of hypothetical case will be covered as part of a special study indicated for the high action level. The intent of the statement is to maintain an annual sampling frequency (as determined by the original permit condition) until a Qualified Professional has determined that the parameter is no longer at levels of concern (i.e. the parameter meets the conditions of a 'none' or 'low' action level).	Closed	Thank you this is fine and acceptable.
5	18/Dec/24	ENV	Tom Pretty	4.8.1	Comment	No	Please consider the use of muscle plug or laser ablation spectrometry instead of lethal sampling of fish tissue. This is a continuation of version 2 comments (ENV-20).	Refer to response to version 2 comment (ENV-20)	Open	Comment ENV-20 in version 2 did not indicate if muscle plugs or laser ablation spectrometry would be considered to avoid unnecessary harm to fish populations with low abundances. I'm looking for confirmation so I close out the comment. Will muscle plugs and laser ablation spectrometry be considered as a way to reduce sampling impacts?	ENV response in V2 comment ID20 indicated it was closed. Yes, muscle plugs and other technologies have been considered as a way to reduce sampling impacts. However, the size of fish encountered in the AEMP creeks is not conducive to collecting tissue plugs due to the size of plugs required for laboratory analysis. Muscle plugs were considered for the fish sampled in the lake, however contaminants that accumulate through various parts of the fish are being assessed, including liver, muscle, and carcass tissues, therefore the fish are being euthanized in order to separate these parts. Wording will be included in AEMP-v3 to indicate considerations for this.	Open	Thank you. I agree that muscle plugs are more intended for larger fish (which may or may not be present), however, the use of laser ablation methods can be performed on juvenile fish as it only requires minimal sample volume (<20mg). Please note the intention of usage of laser ablation for consideration is to avoid concerns regarding unnecessary mortality that can be present with traditional tissue analysis. I do acknowledge that the analysis of liver tissue would cause mortality, however, there are methods available to analyze large sample sizes of fish muscle tissue (including juveniles) with negligible mortality concerns. Thus, for future references (documented to be reviewed) and considerations, if there is the intention to increase sample sizes (minus liver tissue), please include consideration of laser ablation as well as the muscle plugs.
6	18/Dec/24	ENV	Tom Pretty	4.1	Question	No	Sample site 661-20 on Creek 661 is not being monitored for temperature, or any of the quality measurements besides water quality (i.e. sediment quality, benthic invertebrate tissue, fish tissue, etc.). Since this site is located near the confluence of Chedoke Creek, and is more likely to be spawning grounds for salmonids, would additional sampling be considered here in the event of exceedances upstream (i.e. 661-10) to monitor risks and ensure the downstream receiving biota are not influenced (i.e. a far-field site)?	Monitoring water quality at 661-20 provides an indication of potential effects to aquatic life (i.e., comparison to water quality guidelines and assess long-term trends). Fish spawning and outmigration surveys are also assessed in the area of 661-20 to assess mine-related changes in the assessment endpoint for the surveys (e.g., Table 4.8-2 of the AEMP Plan). In addition, the adaptive management plan (Section 5 of the AEMP Plan) is in place to provide an early-warning system such that when defined action level numeric performance metrics for water quality are exceeded at the near-field sites (including 661-10) there is sufficient time to identify the cause of unexpected changes and modify existing or implement new mitigation measures to prevent irreversible adverse effects. Therefore, no additional surveys of AEMP sampling components (e.g., benthic invertebrates) are anticipated to be implemented to monitor risk to aquatic life.	Open	Since spawning migration is reliant on temperatures (i.e. ATU), and site 661-20 is at the confluence, the temperatures here would likely be a much better indicator of the commencement to salmonid spawning than further upstream (please see WLRs-30 in this V3 Comment (IT)). Please include temperature monitoring at site 661-20 so appropriate migration timing can be calculated.	A temperature logger was installed at 661-20 in late summer 2024 to collect temperature data for the purposes of ATU calculations	Open	Thank you. Please update the maps (e.g. Figure 4.2-2) to indicate water temperature is being collected at 661-20.
7	18/Dec/24	ENV	Tom Pretty	4.9	Comment	No	Trigger response plans should be developed to prevent exceedances of permit limits. Although there are no current permit limits for receiving environments, there may be unforeseen changes during the lifespan of the mine. Please consider including "permit limits" to the Trigger Response Plans.	The Response Frameworks provided as part of the adaptive management in the AEMP Plan were developed in accordance with the BC ENV guidance indicating that Trigger Response Plans are different than adaptive management plans (BC ENV 2022). Therefore permit limits will not be included in the AEMP adaptive management plan. A Trigger Response Plan for Authorized Discharges is currently in development to be protective of the receiving environment. Reference: BC ENV, 2022, Technical Guidance MIN-12: Development and Use of Trigger Response Plans, Version 1.0. Available online at: https://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/mining-smelterenergy/guidance-documents/tg12_trigger_response_plans.pdf.	Closed	Thank you, I will close this comment and ENV will review and look forward to the Trigger Response Plan.			
8	23/Dec/24	ENV	Tom Pretty	4.7.2.1	Comment	No	When collecting benthic invertebrates for tissue analysis, please ensure specimens sampled are randomized in some form. It is very easy to take the biggest bug in the batch to collect the required 0.5 g tissue weight. This can skew results given selenium and mercury are bio accumulative. To ensure better representation of the site, please include in the AEMP design and ensure that benthic invertebrates are collected by some form of randomization to avoid bias (e.g. collect a variety of different sized invertebrates for better representation). The randomization of collection will help reduce this bias in combination of the 5 samples per site.	Acknowledged. Randomizing specimens for the collection of benthic invertebrate tissue samples is standard practice for the qualified and experienced biologists completing the field sampling. Therefore this level of detail is not required for the AEMP Plan.	Closed	Thank you for your diligence. Comment closed. ☺			

Comment ID	Comment Date	Reviewer Agency	Reviewer Name	Application Section or Page	Comment Type	Potential Permit Condition?	Round 1 Comment	Blackwater Gold Response	Status - Open or Closed	Round 2 Comments	BWG Round 2 Responses	Status - Open or Closed	Round 3 Comments	
Unique identifying ID to keep track of comments	Date comment provided from reviewer	ENV / WLRS			AEMP requirement, information, clarification, Question, or Comment	Yes/No								
9	23/Dec/24	ENV	Tom Pretty	4.8.1.3	AEMP requirement	Yes	Analysis of bioaccumulative fish tissue is likely to be influenced by external factors such as size/ weights of the fish. For instance, a larger fish will likely have more mercury than a smaller fish. If not accounted for, this can greatly skew the results. E.g. catching small fish one year then the next iteration catching larger fish would artificially cause inflated results in the second sample. Please use a mixed model ANCOVA instead of ANOVA where the covariate is site-specific.	The AEMP Plan does address the potential bioaccumulation for fish tissue concentrations of mercury and selenium and indicates that the age of the fish may be included as a covariate in statistical analysis of fish tissue concentrations.	Open	I am looking for confirmation of how the AEMP will apply the covariate in statistical analysis. My recommendation is for a mixed model ANCOVA since it is similar to the proposed mixed model ANOVA and easy to change. Please indicate in the AEMP how covariates will be applied as part of the statistical analysis.	Age is included as a random effect in the mixed model ANCOVA for the comparison of the lake fish tissue metals to control for differences in growth rates of fish among the two lakes.	Open	The mention of using ANCOVA is not in the AEMP. The initial comment is related to fish tissue analysis in all sites, not just the lakes. As such, please update the AEMP to include the use of an ANCOVA for fish tissue. If ANCOVA is not included in the AEMP, I will likely recommend that fish tissue analysis is performed with a determined best available covariate (e.g. size, weight, or age) as an AEMP approval condition. Please note size or weight can be better covariates for tissue analysis and should be considered after appropriate analysis (e.g. r ²).	
10	23/Dec/24	ENV	Tom Pretty	4.7.3	Comment	No	A typo was left in at the bottom of the Tissue Metals Before-After-Control-Impact Analysis section: "will be applied will be applied".		Open		The repeated 'will be applied' has been removed from the statement.	Closed	Great thank you.	
11	3/Jan/25	WLRS	Luc Turcotte	1	Comment	No	"two sediment control ponds (SCPs) are proposed:" are these approved yet? seems late to be having these proposed.	PE-110652 authorizes the discharge of effluent from the sediment control ponds described in the AEMP Plan.	Open	Please update section to remove "proposed" if the discharge effluent ponds are already approved	The introduction of the sediment control ponds (SCP) has been revised to indicate the three SCPs permitted for discharge in the revised AEMP Plan.	Closed	Thank you	
12	3/Jan/25	WLRS	Luc Turcotte	1	Question	No	"The plant site SCP will capture contact water around the Plant Site and will discharge effluent to ground via rapid infiltration basins (RIBs) during the construction phase" will this effluent be tested prior to being put to ground? Is this just run off water or is the Plant site going to generate water with other chemicals/ materials in it?	The testing of effluent is not an objective of the AEMP Plan. The reviewer is referred to the Mine Site Water and Discharge Monitoring and Management Plan for effluent characterization and monitoring of effluent discharged to the receiving environment.	Open	Could the proponent refer to the page or section in the Mine Site Water and Discharge Monitoring and Management Plan where the response to the comment would be described, or if capturing of contact water is out of scope for this AEMP - remove the wording referencing contact water and effluent, as the construction phase is nearing completion or is complete this wording maybe irrelevant now.	The reference of the Plant Site SCP discharge to ground during the Construction phase has been removed in the revised AEMP Plan.	Closed	Thank you	
13	3/Jan/25	WLRS	Luc Turcotte	1	Question	No	Creek 705 will receive diverted flows from the headwaters of Davison Creek, predicted increase in flow of 101%, what is this as a change in percent mean annual discharge?	The reviewer is referred to the Joint Mines Act/Environmental Mines Act Permits Application Chapter 5 that provides the predicted changes in flow. As described on pages 5-62 and in Figures 5.3-25 and Figure 5.3-26 in Chapter 5 the predicted change in flow is a 43% increase at the upstream Creek 705 node (at the outflow of Lake 1538) and a 4% increase in flow at the downstream Creek 705 node (at the same location as AEMP site 705-10).	Open	thank you, please update section to reference Chapter 5 and incorporate intext response to the left	The revised AEMP Plan provides a reference to Chapter 5 of BW Gold 2022 (The Joint Mines Act/Environmental Management Act Application) with regards to the predicted increase in flow of 10 U/s.	Closed	Thank you	
14	3/Jan/25	WLRS	Luc Turcotte	4.1	Question	No	Creek 705 - has there been consideration to the change in flow as a potential effect on sediment, substrate composition and benthic invertebrates as a result of the increase in flow in creek 705?	Sediment quality and benthic invertebrates are monitored at two stations in Creek 705 where there are predicted to be minor changes in flow. Fawmie Creek Tributary may be used as an alternative control site for Davidson Creek. If monitoring results that suggest minor changes in flow affects other components or that seepage is unexpectedly reporting to the Creek 705 watershed.	Closed					
15	3/Jan/25	WLRS	Luc Turcotte	4.1	Question	No	has the potential sediment influence from the airstrip been assessed for Fawmie creek? question relates to using this as a control for other areas	The Fawmie Creek site (FC-01) is located on Fawmie Creek tributary. Fawmie Creek is located on the southern side of the topographic divide flowing southwest to join the Entabako River. The airstrip will not be located near Fawmie Creek or any of its tributaries that flows into Fawmie Creek.	Closed	Thank you				
16	3/Jan/25	WLRS	Luc Turcotte	Table 4.2-2	Comment	No	page 4-18 table 4.2-2, foot note 5 - thanks for noting this. Please define this earlier in text, so future readers know what is encompassed in Aquatic resources.	Aquatic resources will be defined defined to include aquatic primary producers and benthic invertebrates in Section 1.4 of the final AEMP Plan, Version 3.0.	Closed	Thank you				
17	3/Jan/25	WLRS	Luc Turcotte	4.2	Comment	No	page 4-22 (middle of page) I think 6 years is too long of a cycle, this could miss the life cycle of the Kokanee time of sampling, with a 23yr mine life this could potentially only happen 3 times.	The reduction in sampling for benthic invertebrate tissue and lake fish tissue metal analysis to once every 6 years would only occur with approval from BC ENV. Thus as currently planned and permitted (PE-110652), the first year of sampling is Year 1 of Operations (2025). The two reporting periods (or three year cycles) for the analysis of effects would be 2028 (compare 2025 and 2028 results to baseline) and 2031 (compare 2025, 2028 and 2031 results to baseline). If both the 2028 and 2031 AEMP interpretive Reports conclude there are no effects, the qualified professional would evaluate all results of the AEMP (i.e., weight of evidence approach) to provide a rationale for a reduction in sampling frequency that continues to be protective of aquatic life.	Open	I agree with this rational, and that ENV and QP would discuss possible adjustment of sample times based on future results. For now please remove the reference to 6 years.	Acknowledged. The revised AEMP Plan will state a reduction in sampling frequency (with no reference to 6 year reduction) may be proposed and only implemented upon approval.	Closed		
18	3/Jan/25	WLRS	Luc Turcotte	4.2	Comment	No	Page 4-22 "Spawning substrate composition will be characterized for one year during baseline conditions..." "will 2025 data be consider construction or operations?"	The majority of 2025 data will be considered operations.	Closed					
19	3/Jan/25	WLRS	Luc Turcotte	4.3.2.1	Comment	No	"The stations will be instal year-round..." Stated as will be? This should have been done already, when will these stations be installed?	The sentence will be revised to indicate the 'stations are installed'. As indicated in the subsequent paragraphs in Section 4.3.2.1, the dates of installation are provided and PE-110652 states the required monitoring frequency at the stations.	Closed					
20	3/Jan/25	WLRS	Luc Turcotte	4.4.2.3	Clarification	No	page 4-35, WQ-10, where was this site? I don't see it on the map on page 48 (fig 4.2-1), 49 (fig 4.2-2), or reference to it prior in the text	The Cumulative Aquatic Effects Monitoring Program Baseline Report (ERM 2023) is referenced regarding the use of WQ-10 (page 4-35 of the AEMP Plan). Site WQ-10 was located immediately upstream of DC-05 (in the footprint of where the Freshwater Reservoir will be constructed) and therefore discontinued for long-term monitoring. Reference:ERM, 2023. Blackwater Gold Project: 2022 Cumulative Aquatic Effects Monitoring Program Baseline. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd., Vancouver, BC, June 2023.	Closed					
21	3/Jan/25	WLRS	Luc Turcotte	4.6.3	Question	No	"therefore, only the 2017, 2021, and 2022 observations..." BACI biomass, were samples collected in 2023, so please mention intext?	The sentence is referring to baseline years (prior to Construction in October 2022). Aquatic primary producers were sampled in 2023 however they are considered Year 1 of Construction.	Closed					
22	3/Jan/25	WLRS	Luc Turcotte	4.7.1	Question	No	Has a comparison been done between mine impact benthic sites and mine reference sites? how do your reference sites compare to the CABIN model?	The reviewer is referred to the Cumulative Aquatic Effects Monitoring Program Baseline Report referenced for the evaluation of the appropriate reference site model (ERM 2023). Annual interpretive reports provide the comparison of benthic invertebrate communities at potential Mine impact sites and reference sites (see Section 6.3.1.4 BEAST analysis in ERM 2024 for example). Reference:ERM, 2023. Blackwater Gold Project: 2022 Cumulative Aquatic Effects Monitoring Program Baseline. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd., Vancouver, BC, June 2023.ERM, 2024. Blackwater Gold Project: 2023 Aquatic Effects Monitoring Program Interpretive Report. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd., Vancouver, BC, March 2024.	Closed					
23	3/Jan/25	WLRS	Luc Turcotte	4.7.2.1	Clarification	No	Field methods first line, please make reference to the number of sample sites in the mine area and reference sites in text	The number and location of sample sites downstream of the Mine and in reference areas are provided in Table 4.2-2.	Open	Please state in text as well, table 4.2-2 has a lot of data in it. When looking at table 4.2-2 it is not clear to me what sites are reference and which are potential impact sites.	The revised AEMP Plan indicates that periphyton, sediment quality, and benthic invertebrate community sampling will be completed at six potentially impacted sites in Davidson Creek (DC-05 and DC-15), Turtle Creek (TC-05 and TC-10), and Creek 661 (661-05 and 661-10), at the upstream control sites (661-01 and TC-01) and three regional controls sites (FC-01, 705-05, and 705-10).	Closed	Thank you for the clarification	
24	3/Jan/25	WLRS	Luc Turcotte	4.7.3	Question	No	page 4-53, how will Turtle Creek sites TC-01 and TC-05 be assessed for divergence from reference condition, if not being assessed? Will CABIN sampling be done at these sites, according to figure fig 4.2-2 it appears that CABIN will be done at these sites, but text on page 4-53 says otherwise	Environment and Climate Change Canada recommended to use a modified wadable streams protocol to assess the aquatic invertebrate community at sites TC-01 and TC-05 (see Section 4.7.2.1 of the AEMP Plan). Turtle Creek sites TC-01 and TC-05 are sampled using the modified CABIN however they will not be included in the BEAST analysis because the modified CABIN sampling protocol data do not meeting assumptions for interpretable and comparable BEAST analysis results (as stated on page 4-53 of the AEMP Plan). The Turtle Creek sites will continue to be evaluated for abundance and community composition as stated in Section 4.7.3 of the AEMP Plan.	Closed					
25	3/Jan/25	WLRS	Luc Turcotte	4.7.3	Clarification	No	Page 4-54 - Tissue metals BACI, 2023 tissue metal concentrations, I think a decision on what period to put the 2023 data into should be made, not <u>may</u> . The influence of the fires could have an effect on species, composition, diversity and abundance.	The primary objective of the AEMP is to assess if Mine-related effects have occurred using a gradient design and a before/after- control-impact analysis. The decision to add Year 1 of Construction (i.e., 2023) as 'Before' year would only be completed if Mine activities in that year did not affect benthic invertebrate tissue metals. The sentence has been removed to avoid any confusion (i.e., evaluation of effects is completed using statistical methods to test hypotheses that that if mine activities affected benthic invertebrate tissues, then there would be a significant change in benthic invertebrate tissues at near-field sites in comparison with site-specific baseline benthic invertebrate tissues or control sites). The influence of fires could have an effect on water quality resulting in changes in tissue metal concentrations, species, composition, diversity and abundance. However the fire occurred in July 2023 and is therefore unlikely to have affected benthic tissue metal concentrations (benthic invertebrates were collected in early September 2023 for tissue (metal analysis)).	Closed					
26	3/Jan/25	WLRS	Luc Turcotte	4.8.1.3	Question	No	fish condition - what was the range of years of baseline data? 2012, 2017, 2022?	Baseline (before October 2022) fish community inventory sampling was completed in 2011, 2012, and 2013 at six of the AEMP monitoring sites and in September 2022 at all sites. Captured fish were measured for length and weight to calculate condition.	Closed					
27	3/Jan/25	WLRS	Luc Turcotte	4.8.2.2	Comment	No	page 4-65 extra space and comma after 2023	Thank you for noting this. Corrected.	Closed					
28	3/Jan/25	WLRS	Luc Turcotte	4.8.2.2	Comment	No	please add in community implementation framework as appendix when completed	The intent is to append the implementation framework to the AEMP once it is finalized.	Open	is this going to be an appendix or updated in text?	The Implementation Framework will be an Appendix.	Open	Reflecting on the numerous conversations around the fish implementation framework study design (BWG, NFN, BCGOV) please incorporate this text into the body of the AEMP so that readers have this information within the body of the document. In this instance the details within the fish implementation framework are not supplementary but are important to understanding the AEMP study design, and triggers set out in it.	
29	3/Jan/25	WLRS	Luc Turcotte	4.8.2.2	Comment	No	"by walking upstream..." in the creek or beside it? repeated walking upstream has the potential to disturb the fish, redds, eggs, and substrate - these are relatively small streams correct?	Walking upstream beside, not in, the creeks, except when topographic features; heavy large woody debris, log jams, and/or thick vegetation requires that field crews move from one side of the watercourse to the other. In these instances, care is taken to cross where there are no observed redds or spawning fish present. Text has been adjusted in the AEMP to reflect this response.	Closed					
30	3/Jan/25	WLRS	Luc Turcotte	4.8.3.2	Comment	No	suggestion that staff use ATU as a proxy to help with emergence time forecasting, temperature has the potential to be a bigger driver of embryic development and emergence timing than peak spawn time.	As outlined in the Implementation Framework document, specific timing of the sampling program will be informed using ATUs to determine emergence timing, where temperature data are available.	Closed					
31	3/Jan/25	WLRS	Luc Turcotte	4.8.3.2	Comment	No	typo, two periods in middle of first paragraph	Thank you for noting this. Corrected.	Closed					
32	3/Jan/25	WLRS	Luc Turcotte	6.1	Clarification	No	3rd paragraph page 6-1, the first two sentences, seem to be in-conflict, the first stating that the AEMP components will be annual, then goes on to state that invertebrate and fish tissue will be every three years in the next. Please clarify. Due to limited baseline data, all components of the AEMP should be undertaken in the first 3 years. Does the second sentence refer to the lentic environment? Will there be Zooplankton sampling, and benthic lake sampling?	As defined in the EMA PE-110652 all AEMP sampling components are annual with the exception of benthic invertebrate and lake fish tissue metals. The AEMP Plan does not include zooplankton or benthic invertebrate lake sampling.	Closed					
33	3/Jan/25	WLRS	Luc Turcotte	6.2	Comment	No	once finalized I would like to see this AEMP and other plans publicly posted on BW golds website, in a tab that is easy to find	Since 2022, the most current AEMP has been posted: https://www.blackwatergoldmine.com/eac-plans/	Closed	Thank you				
34	3/Jan/25	WLRS	Luc Turcotte	6.4	Clarification	No	are past plain language reports currently posted?	The plain language reports are provided at the beginning of each AEMP Interpretive Report, which are not posted.	Closed					
35	23/Dec/24	ENV	Tom Pretty	4.4.2.2	Comment	No	Zooplankton is an essential food source for Kokanee and are sensitive to upstream changes, especially with metal and nutrient inputs. Please consider sampling zooplankton in Tazeluz and Koyukuz lakes while collecting depth profile and water quality samples.		Open		There is no discharge direct to Tazelukuz Lake and fish communities are not assessed in the lake for the purpose of the AEMP. The lake is monitored for changes in water quality because it will be the source of make-up water for Davidson Creek IFN via discharge from the FWR and is located downstream of Creek 661 which will receive unrecovered seepage from the Plant Site, or Camp Site during Construction phase and seepage from the TSF in Operations. Tazelukuz Lake is considered a 'far-field' site for the purpose of water quality analysis and fish tissue metals analysis. The Adaptive Management Plan has been developed to mitigate changes in metal and nutrients in upstream sites that have the potential to cause adverse effects to aquatic life. Therefore zooplankton sampling is not considered.	Closed	Since the discharge flows into the lake, there are potential concerns for lake conditions of the lake (i.e. considered far-field site not a reference site). For now, I do not anticipate concerns with the lake, so this comment is more for consideration (i.e. not a requirement) especially to obtain beneficial comparisons in the event effects are detected. Since zooplankton sampling and lake profile monitoring is inexpensive, non-invasive, great for indicating conditions within the lake as zooplankton are sensitive species, and are the primary food source for kokanee, the addition can be very useful indicators of the overall ecosystem health. I will close this comment for now as I do not anticipate this is currently necessary but wanted to bring to your attention the valuable usage of zooplankton sampling, particularly for the case of kokanee concerns within the system.	

Attachment B– Round 2 Comments

B.1 – ITT AEMP – BC Ministry of Environment and Climate Change Strategy (BC ENV)

B.2 – ITT Implementation Plan –ENV

B.3 – ITT AEMP – BC Ministry of Water, Land and Resource Stewardship (WLRS)

B.4 – ITT Implementation Plan – WLRS

B.5 – ITT AEMP – Nechako Nations

B.6 – ITT Implementation Plan – Nechako Nations

Blackwater Aquatic Effects Monitoring Plan, Version 3.0							
ADMIN		COMMENTS					
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Type	Comments	Response
1	18-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.5	AEMP requirement	Sediment quality will be compared to relevant BC and CCME sediment quality guidelines, but polycyclic aromatic hydrocarbons (PAH) were not included in the analyzed sediment quality parameters. There are several PAH sediment quality guidelines that will be overlooked if not analyzed. This is particularly important during the first few years of construction and operation to establish better background conditions. For example, the PAH compound 6PPD quinone can have detrimental effects to salmonids and has a draft BC sediment quality guideline that may become approved in the near future. Please include PAH compounds as part of the regular sediment quality analysis.	The AEMP sampling design (including monitoring components and sites) was developed to meet the objectives listed in Section 1.1 of the AEMP Plan which includes 'detect Mine-related effects on the aquatic ecosystem components'. In addition management plans (e.g., Fuel Management and Spill Control Plan) are in place to prevent or minimize the release of hydrocarbons into the receiving environment. Although polycyclic aromatic hydrocarbons (PAH) in sediments can be naturally occurring, monitoring of PAHs in the receiving environment would only be completed if Mine-generated PAHs are detected in waters discharged to the receiving environment. This would be included as a special study in response to a Mine site activity (e.g., hydrocarbon spill) to understand potential effects in a localized area in the receiving environment and will not be a component of the regular AEMP monitoring program. No changes to AEMP Plan, Version 3.0 have been made regarding sediment quality analysis.
2	18-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.2	Information	Sample site 661-01 on Creek 661 is considered an upstream control site (Table 4.2-1) but is within the footprint of the mine where some influence (e.g. runoff) may occur (Figure 4.2-3). As a result, the site does not appear to be a true reference control site with potential impacts to water quality, sediment quality, aquatic resources, and fish. Please provide additional information in the plan to justify if this is a true control site. Alternatively, please identify it as a partial control and adjust the description of the Type of Site as required.	Site 661-01 was selected as a control site based on BC ENV comments during the <i>Joint Mines Act/Environmental Management Act</i> Application review (see response to Round 1 BC ENV Comment ID#39 on the Application). The control site, 661-01, was added to the mainstem of Creek 661 upstream of the confluence with Creek 543585 and the confluence with Creek 505659. This location was selected because it was accessible year round for sampling of all AEMP components, and upstream of potential mine-related impacts. There will be no discharges to surface water from the Plant site and the associated Plant Site Sediment Control Pond discharges to ground inferred flow directions are towards Creek 661 tributaries (Creek 505659 and Creek 146920). Groundwater seepage from the Camp Site was modelled to report to the Creek 661 mainstem upstream of the confluence with Creek 505659. Therefore it is assumed that the 661-01 site is monitoring upstream of the location where seepage would enter the creek from the Camp Site and the Plant Site. Dust generated from the roads, even with increased traffic, is expected to result in negligible loading of parameters of potential concern into adjacent waters. In addition to chronic toxicity testing, this control site includes sampling for water quality (monthly and 5-in-30), sediment quality, aquatic resources (including benthic invertebrate tissue metals), and fish inventory and fish tissue. Baseline seasonal trends in surface water quality at the upstream sites suggest that they are appropriate for use in the statistical analysis to detect Mine-related effects in Creek 661. Therefore site 661-01 will continue to be considered a control site as defined in the AEMP Plan.
3	18-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.2 and 5.2	Comment	A reduction of sampling benthic invertebrates and fish tissue to once every six years would not be protective of aquatic life. For example, benthic invertebrate lifespans are 2-3 years, while kokanee live and mature around at 3-5 years. A reduction of sampling to every 6 years would overlook whole generations of sensitive and important receptor biota. The federal MDMER program requires sampling every three years. It would be beneficial to coincide both the AEMP program and Federal MDMER program as one to reduce detriment to biota. Additionally, I am concerned the reduction to once every 6 years will arrive prior to maximum effects from the mine. For example, 2025 is unlikely to show differences between reference and mine-exposed sites given it is the first year. This would be the first instance of no difference. Since operations would have just commenced and there is a lag-time to see impacts to the higher trophic level fish, it is also likely that no differences would result after three more years. If the frequency transfers to once every six years after this second iteration, the majority of impacts would likely not be detected. This is further to similar comments posed in the version 2 AEMP (comment ENV-6). Please consider removing the decrease to every six years or adjust to a more appropriate frequency that is protective of aquatic life.	Comment ENV-6 on AEMP Plan Version 2.0 (with a similar response) was closed August 2, 2024. A fish tissue monitoring program is currently not triggered for the Federal Environmental Effects Monitoring Program (EEM). In addition, if fish tissue sampling is triggered, the EEM program sampling would be completed in the 'exposure area' with the least effluent dilution (i.e., DC-05). The AEMP Plan sampling frequency for stream fish tissue metals is annual and could be decreased to a sampling frequency of once every three years if no effects are identified after a three year period (consistent with the EEM). The reduction in sampling frequency to once every 6 years is proposed <u>only for benthic invertebrate tissue and lake fish tissue metal analysis</u> (both of which were permitted [PE-110652] for sampling once every three years and would not be subject to EEM sampling). Thus, the first year of sampling is Year 1 of Operations (2025) which as the reviewer suggests there is unlikely to be effects detected. The two reporting periods (or three year cycles) for the analysis of effects would be 2028 (compare 2025 and 2028 results to baseline) and 2031 (compare 2025, 2028 and 2031 results to baseline). If both the 2028 and 2031 AEMP Interpretive Reports conclude there are no effects, the OP would evaluate all results of the AEMP (i.e., weight of evidence approach) to provide a rationale for a reduction in sampling frequency that continues to be protective of aquatic life.
4	18-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	5.2	Comment	The management response for high levels states that sampling will be done annually. While there is benefit in annual sample programs, this does not take into account seasonal variability. E.g. tissue concentrations of metals may be higher in winter when flows are low. Please change the management response to include "at minimum annually" where frequency can be increased even further if deemed appropriate.	A return to annual sampling is proposed at the high action level for the monitoring components sediment, periphyton, aquatic invertebrates, and stream fish tissue because this is what is defined in the permit [PE-110652] as the initial sampling frequency and will provide a consistency with the baseline dataset. The annual sampling frequency also represents the critical time period for the monitoring component (e.g., when adult life stages of benthic invertebrates are present and diversity is typically high) and there is access to all sites (e.g., at winter low flows all sites may not be accessible or particular life stages may not be present). At the high action level, sampling programs are also proposed to define magnitude and extent in which additional months may be sampled to address objectives of the study (i.e., not completed every monitoring year). Therefore no changes to the 'annual monitoring frequency' at the high action level have been completed.
5	18-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.1	Comment	Please consider the use of muscle plug or laser ablation spectrometry instead of lethal sampling of fish tissue. This is a continuation of version 2 comments (ENV-20).	Refer to response to version 2 comment (ENV-20)
6	18-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.1	Question	Sample site 661-20 on Creek 661 is not being monitored for temperature, or any of the quality measurements besides water quality (i.e. sediment quality, benthic invertebrate tissue, fish tissue, etc...). Since this site is located near the confluence to Chedakuz Creek, and is more likely to be spawning grounds for salmonids, would additional sampling be considered here in the event of exceedances upstream (i.e. 661-10) to monitor risks and ensure the downstream receiving biota are not influenced (i.e. a far-field site)?	Monitoring water quality at 661-20 provides an indication of potential effects to aquatic life (i.e., comparison to water quality guidelines and assess long-term trends). Fish Spawning and outmigration surveys are also assessed in the area of 661-20 to assess mine-related changes in the assessment endpoint for the surveys (e.g., Table 4.8-2 of the AEMP Plan). In addition, the adaptive management plan (Section 5 of the AEMP Plan) is in place to provide an early-warning system such that when defined action level numeric performance metrics for water quality are exceeded at the near-field sites (including 661-10) there is sufficient time to identify the cause of unexpected changes and modify existing or implement new mitigation measures to prevent irreversible adverse effects. Therefore, no additional surveys of AEMP sampling components (e.g., benthic invertebrates) are anticipated to be implemented to monitor risk to aquatic life.
7	18-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.9	Comment	Trigger response plans should be developed to prevent exceedances of permit limits. Although there are no current permit limits for receiving environments, there may be unforeseen changes during the lifespan of the mine. Please consider including "permit limits" to the Trigger Response Plans.	The Response Frameworks provided as part of the adaptive management in the AEMP Plan were developed in accordance with the BC ENV guidance indicating that Trigger Response Plans are different than adaptive management plans (BC ENV 2022). Therefore permit limits will not be included in the AEMP adaptive management plan. A Trigger Response Plan for Authorized Discharges is currently in development to be protective of the receiving environment. Reference: BC ENV. 2022. Technical Guidance MIN-12: Development and Use of Trigger Response Plans, Version 1.0. Available online at: https://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/mining-smelt-energy/guidance-documents/tg12-trigger_response_plans.pdf .
9	23-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.7.2.1	Comment	When collecting benthic invertebrates for tissue analysis, please ensure specimens sampled are randomized in some form. It is very easy to take the biggest bug in the batch to collect the required 0.5 g tissue weight. This can skew results given selenium and mercury are bioaccumulative. To ensure better representation of the site, please include in the AEMP design and ensure that benthic invertebrates are collected by some form of randomization to avoid bias (e.g. collect a variety of different sized invertebrates for better representation). The randomization of collection will help reduce this bias in combination of the 5 samples per site.	Acknowledged. Randomizing specimens for the collection of benthic invertebrate tissue samples is standard practice for the qualified and experienced biologists completing the field sampling. Therefore this level of detail is not required for the AEMP Plan.
9	23-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.1.3	AEMP requirement	Analysis of bioaccumulative fish tissue is likely to be influenced by external factors such as size/ weights of the fish. For instance, a larger fish will likely have more mercury than a smaller fish. If not accounted for, this can greatly skew the results. E.g. catching small fish one year then the next iteration catching larger fish would artificially cause inflated results in the second sample. Please use a mixed model ANCOVA instead of ANOVA where the covariate is site-specific.	The AEMP Plan does address the potential bioaccumulation for fish tissue concentrations of mercury and selenium and indicates that the age of the fish may be included as a covariate in statistical analysis of fish tissue concentrations.

Blackwater Aquatic Effects Monitoring Plan, Version 3.0						
ADMIN		COMMENTS				
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Type	Comments
10	23-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.7.3	Comment	A typo was left in at the bottom of the Tissue Metals Before-After-Control-Impact Analysis section: "will be applied will be applied".
						Thank you for noting this. The typo has been corrected in the updated AEMP Plan, Version 3.0.
35	23-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.4.2.2	Comment	Zooplankton is an essential food source for Kokanee and are sensitive to upstream changes, especially with metal and nutrient inputs. Please consider sampling zooplankton in Tatelkuz and Kuyakuz lakes while collecting depth profile and water quality samples.
						There is no discharge direct to Tatelkuz Lake and fish communities are not assessed in the lake for the purpose of the AEMP. The lake is monitored for changes in water quality because it will be the source of make-up water for Davidson Creek IFN via discharge from the FWR and is located downstream of Creek 661 which will receive unrecovered seepage from the Plant Site, or Camp Site during Construction phase and seepage from the TSF in Operations. Tatelkuz Lake is considered a 'far-field' site for the purpose of water quality analysis and fish tissue metals analysis. The Adaptive Management Plan has been developed to mitigate changes in metal and nutrients in upstream sites that have the potential to cause adverse effects to aquatic life. Therefore zooplankton sampling is not considered.

water Aquatic Effects Monitoring Plan, Fisheries Implementation Framework						
ADMIN	COMMENTS					
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comments	Response
1	23-Dec-24	ENV Tom Pretty	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	Page 1 and 2	The Commencement Trigger for sampling is based on daily average water temperatures. Where will the averages be taken? E.g. temperatures may be different at the deeper confluences compared to closer to the mine.	Daily average water temperatures will be taken from the closest hydrometric stations to known spawning grounds in Davidson Creek and Lower Chedakuz Creek that record continuous temperature data year-round as well as temperature loggers (tidbits) in Creek 661 and Middle Chedakuz Creek located in close proximity to Kokanee spawning locations.
2	23-Dec-24	ENV Tom Pretty	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	-	Please include a map(s) of the sample locations in the Implementation Framework. Please also include known fish barriers.	The purpose of the Implementation Framework, as directed by ENV, is to specify the monitoring triggers to be used (e.g. ATU, discharge, temperature, etc.) when commencing field surveys, conducting trap efficiency tests, and terminating the field studies. It is intended that the Implementation Framework be appended to the AEMP Plan once finalized. A map of the sample locations is already provided in the AEMP plan. Map(s) of fish barriers will be provided in the AEMP interpretive report as barriers may change (e.g. new beaver dams constructed or breached/failed) over the year(s).
3	23-Dec-24	ENV Tom Pretty	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	Section 1.3	The trapezoidal area-under-the-curve (TAUC) and Gaussian AUC (GAUC) methods were both proposed for kokanee spawning in the AEMP. Please update the Fisheries Framework to include both as comparisons. Please also include the 95% confidence intervals where possible.	The visual spawner survey commencement and termination triggers do not differ between TAUC and GAUC methods. As outlined in the AEMP plan 95% confidence intervals will be reported in the annual interpretive report.

Blackwater Aquatic Effects Monitoring Plan, Version 3.0						
ADMIN		COMMENTS				
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Type	Response
11	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	1	Comment	"two sediment control ponds (SCPs) are proposed:" are these approved yet? seems late to be having these proposed...
12	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	1	Question	"The plant Site SCP will capture contact water around the Plant Site and will discharge effluent to ground via rapid infiltration basins (RIBs) during the construction phase" will this effluent be tested prior to being put to ground? Is this just run off water or is the Plant site going to generate water with other chemicals/ materials in it?
13	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	1	Question	Creek 705 will receive diverted flows from the headwaters of Davison Creek, predicted increase in flow of 10L/s, what is this as a change in percent mean annual discharge?
14	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.1	Question	Creek 705 - has there been consideration to the change in flow as a potential effect on sediment, substrate composition and benthic invertebrates as a result of the increase in flow in creek 705?
15	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.1	Question	has the potential sediment influence from the airstrip been assessed for fawnie creek? question relates to using this as a control for other areas
16	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	table 4.2-2	Comment	page 4-18 table 4.2-2, foot note 5 - thanks for noting this. Please define this earlier in text, so future readers know what is encompassed in Aquatic resources.
17	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.2	Comment	page 4-22 (middle of page) I think 6 years is too long of a cycle, this could miss the life cycle of the Kokanee time of sampling, with a 23yr mine life this could potentially only happen 3 times.
18	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.2	Comment	Page 4-22 "Spawning substrate composition will be characterized for one year during baseline conditions..., " will 2025 data be consider construction or operations?
19	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.3.2.1	Comment	"The stations will be install year-round..." Stated as will be? This should have been done already, when will these stations be installed?
20	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.4.2.3	Clarification	page 4-35, WQ-10, where was this site? I don't see it on the map on page 48 (fig 4.2-1), 49 (fig 4.2-2), or reference to it prior in the text
21	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.6.3	Question	"therefore, only the 2017, 2021, and 2022 observations..." BACI biomass, were samples collected in 2023, if so please mention intext?
22	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.7.1	Question	Has a comparison been done between mine impact benthic sites and mine reference sites? how do your reference sites compare to the CABIN model?
23	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.7.2.1	Clarification	Field methods first line, please make reference to the number of sample sites in the mine area and reference sites in text
24	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.7.3	Question	page 4-53, how will Turtle Creek sites TC-01 and TC-05 be assessed for divergence from reference condition, if not being assessed? Will CABIN sampling be done at these sites, according to figure fig 4.2-2 it appears that CABIN will be done at these sites, but text on page 4-53 says otherwise
						PE-110652 authorizes the discharge of effluent from the sediment control ponds described in the AEMP Plan.
						The testing of effluent is not an objective of the AEMP Plan. The reviewer is referred to the Mine Site Water and Discharge Monitoring an Management Plan for effluent characterization and monitoring of effluent discharged to the receiving environment.
						The reviewer is referred to the Joint Mines Act/Environmental Mines Act Permits Application Chapter 5 that provides the predicted changes in flow. As described on pages 5-62 and in Figures 5.3-25 and Figure 5.3-26 in Chapter 5 the predicted change in flow is a 43% increase at the upstream Creek 705 node (at the outflow of Lake 1538) and a 4% increase in flow at the downstream Creek 705 node (at the same location as AEMP site 705-10).
						Sediment quality and benthic invertebrates are monitored at two stations in Creek 705 where there are predicted to be minor changes in flow. Fawnie Creek Tributary may be used as an alternative control site for Davidson Creek, if monitoring results that suggest minor changes in flow affects other components or that seepage is unexpectedly reporting to the Creek 705 watershed.
						The Fawnie Creek site (FC-01) is located on Fawnie Creek tributary. Fawnie Creek is located on the southern side of the topographic divide flowing southwest to join the Entiako River. The airstrip will not be located near Fawnie Creek or any of its tributaries that flows into Fawnie Creek.
						Aquatic resources will be defined to include aquatic primary producers and benthic invertebrates in Section 1.4 of the final AEMP Plan, Version 3.0.
						The reduction in sampling for benthic invertebrate tissue and lake fish tissue metal analysis to once every 6 years would only occur with approval from BC ENV. Thus as currently planned and permitted (PE-110652), the first year of sampling is Year 1 of Operations (2025). The two reporting periods (or three year cycles) for the analysis of effects would be 2028 (compare 2025 and 2028 results to baseline) and 2031 (compare 2025, 2028 and 2031 results to baseline). If both the 2028 and 2031 AEMP Interpretive Reports conclude there are no effects, the qualified professional would evaluate all results of the AEMP (i.e., weight of evidence approach) to provide a rationale for a reduction in sampling frequency that continues to be protective of aquatic life.
						The majority of 2025 data will be considered operations.
						The sentence will be revised to indicate the 'stations are installed'. As indicated in the subsequent paragraphs in Section 4.3.2.1, the dates of installation are provided and PE-110652 states the required monitoring frequency at the stations.
						The Cumulative Aquatic Effects Monitoring Program Baseline Report (ERM 2023) is referenced regarding the use of WQ-10 (page 4-35 of the AEMP Plan). Site WQ-10 was located immediately upstream of DC-05 (in the footprint of where the Freshwater Reservoir will be constructed) and therefore discontinued for long-term monitoring. Reference: ERM. 2023. Blackwater Gold Project: 2022 Cumulative Aquatic Effects Monitoring Program Baseline. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd.: Vancouver, BC. June 2023.
						The sentence is referring to baseline years (prior to Construction in October 2022). Aquatic primary producers were sampled in 2023 however they are considered Year 1 of Construction.
						The reviewer is referred to the Cumulative Aquatic Effects Monitoring Program Baseline Report referenced for the evaluation of the appropriate reference site model (ERM 2023). Annual interpretive reports provide the comparison of benthic invertebrate communities at potential Mine impact sites and reference sites (see Section 6.3.1.4 BEAST analysis in ERM 2024 for example). Reference: ERM. 2023. Blackwater Gold Project: 2022 Cumulative Aquatic Effects Monitoring Program Baseline. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd.: Vancouver, BC. June 2023. ERM. 2024. Blackwater Gold Project: 2023 Aquatic Effects Monitoring Program Interpretive Report. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd.: Vancouver, BC. March 2024.
						The number and location of sample sites downstream of the Mine and in reference areas are provided in Table 4.2-2.
						Environment and Climate Change Canada recommended to use a modified wadable streams protocol to assess the aquatic invertebrate community at sites TC-01 and TC-05 (see Section 4.7.2.1 of the AEMP Plan). Turtle Creek sites TC-01 and TC-05 are sampled using the modified CABIN however they will not be included in the BEAST analysis because the modified CABIN sampling protocol data do not meeting assumptions for interpretable and comparable BEAST analysis results (as stated on page 4-53 of the AEMP Plan). The Turtle Creek sites will continue to be evaluated for abundance and community composition as stated in Section 4.7.3 of the AEMP Plan.

Blackwater Aquatic Effects Monitoring Plan, Version 3.0						
ADMIN		COMMENTS				
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Type	Comments
						Response
25	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.7.3	Clarification	Page 4-54 - Tissue metals BACI, 2023 tissue metal concentrations, I think a decision on what period to put the 2023 data into should be made, not may. The influence of the fires could have an effect on species, composition, diversity and abundance.
26	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.1.3	Question	fish condition - what was the range of years of baseline data? 2012, 2017, 2022?
27	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.2.2	Comment	page 4-65 extra space and comma after 2023
28	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.2.2	Comment	please add in community implementation framework as appendix when completed
29	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.2.2	Comment	"by walking upstream,..." in the creek or beside it? repeated walking upstream has the potential to disturb the fish, redds, eggs, and substrate - these are relatively small streams correct?
30	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.3.2	Comment	suggestion that staff use ATU as a proxy to help with emergence time forecasting, temperature has the potential to be a bigger driver of embryic development and emergence timing than peak spawn time.
31	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.3.2	Comment	typo, two periods in middle of first paragraph
32	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	6.1	Clarification	3rd paragraph page 6-1, the first two sentences, seem to be in-conflict, the first stating that the AEMP components will be annual, then goes on to state that invertebrate and fish tissue will be every three years in the next. Please clarify. Due to limited baseline data, all components of the AEMP should be undertaken in the first 3 years. Does the second sentence refer to the lentic environment? Will there be Zooplankton sampling, and benthic lake sampling?
33	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	6.2	Comment	once finalized I would like to see this AEMP and other plans publicly posted on BW golds website, in a tab that is easy to find
34	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	6.4	Clarification	are past plain language reports currently posted?

ater Aquatic Effects Monitoring Plan, Fisheries Implementation Frar						
ADMIN		COMMENTS				
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comments	Response
4	7-Jan-25	WLRS Luc Turcottte	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	General	Thank you for the clarification, it is worth considering incorporating these triggers into AEMP v 3.0, as the explanations are additive to the text there	The intent is to append the implementation framework to the AEMP once it is finalized.
5	7-Jan-25	WLRS Luc Turcottte	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.1	PIT tagging - can you speak to the PIT tagging? I see it listed in the last 2 versions of the AEMP but I don't see any results in the 2023 AEMP interpretive report, or mentioned in this implementation frame work	The purpose of the Implementation Framework, as directed by ENV, is to specify the monitoring triggers to be used (e.g. ATU, discharge, temperature, etc.) when commencing field surveys, conducting trap efficiency tests, and terminating the field studies. PIT tagging details were not included in the implementation framework as the trigger for tagging is contained in the AEMP plan – Rainbow Trout (>200 mm in length or fish producing eggs or milt) with no existing PIT tag. To provide further context for PIT tagging: To determine total abundance of Rainbow Trout spawners, bi-directional box traps are being utilized as a capture method to enumerate migrating fish. As movement is allowed in both directions, so as to not fully impede downstream migration post spawning at the capture sites, it is plausible that the same fish may be recaptured multiple times if it repeatedly moves through the capture site. PIT tags are being used to identify individual fish to determine true total abundance (i.e. total number of unique PIT tags implanted or observed at each site) rather than the total number of captures at a site which might be artificially inflated with repeated captures. PIT tagging also allows for mark-recapture of individual fish and can be used to determine residence time, spawning distribution (assessment endpoint for Condition 3.14), repeat spawning in subsequent years, and/or potential movement between watercourses.
6	7-Jan-25	WLRS Luc Turcottte	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.3	Termination trigger - Kokanee Spawner Surveys, the 2023 interpretive report shows bimodal distributions in 2022 and 2023 in Davidson Creek, flagging this as it is possible that the current end point language might not fully capture the second peak of the run.	Acknowledged. Raw data from 2022, 2023, and 2024 indicated that observed counts in the trough between the bimodal peaks were in the hundreds, if not thousands, of fish. The termination trigger includes a survey event with few to no fish and, based on these previous results, it is anticipated that a survey event with extremely low numbers (<1% of the total) likely would not occur in between the bimodal peaks. Regardless, text has been added to the framework to flag the documented bimodal distribution in Davidson Creek.
7	7-Jan-25	WLRS Luc Turcottte	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.4	Fish Community inventory - does this include lentic inventory?	No, this version only included stream sites. The implementation framework will be updated to differentiate between lentic and lotic sites. There are no specific commencement triggers for the lake sampling. It is generally planned for late summer to early fall to align with sampling timing conducted in previous years. Lake sampling will terminate upon capture of the targeted number of each species required for tissue metals analysis.

Blackwater Aquatic Effects Monitoring Plan, Version 3.0							
ADMIN						COMMENTS	
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Theme	Comment	Response
1	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	All	Issue Resolution	Nechako Nations' memorandum submitted February 26th 2024 outlined our outstanding concerns with the Aquatic Effects Monitoring Program (AEMP) fisheries programs. Since then, Nechako Nations have had several meetings with Artemis Gold and the Province regarding the inadequacy of the Blackwater AEMP. Nechako Nations' ongoing concerns with the fisheries components of the AEMP, which is a requirement of Condition 4.6 of Blackwater Gold's Environmental Management Act (EMA) Permit 110652, and Condition 30 of the Blackwater Environmental Assessment Certificate (EAC). It is also a plan that is fundamental to protecting our aquatic resources and abiding by the Yinka Dene Water Law. Most meetings to resolve the ongoing AEMP concerns occurred between Nechako Nations and Artemis Gold in July 2024. Most of the issues were resolved with agreement by both parties and documented. Further meetings in November 24 resolved the remaining of the issues with agreement by both parties and documented. However, upon review of the AEMP some of these issues that were agreed upon, hence "resolved", have not been reflected in the AEMP V3. The ongoing areas of concerns are briefly highlighted below as Nechako Nations have already commented upon these numerous times in the past. It is apparent that some issues agreed upon by both parties during the July and November 2024 meetings are still unresolved. Given these changes by Artemis Gold, Nechako Nations cannot endorse this AEMP V3.	
2	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Table. 4.2-3 pg. 4-20	Kokanee Summer Spawning Survey	Replication Column. "...at a selected 1,000 m reach of stream" Not previously agreed to. Resulting assessment endpoints wrong (No./100 m2). Escapement estimate by entire stream length was previously agreed to. We are not commenting on the remaining methodology for this component as it is based on a flawed site specific approach.	Regrettably, reference to "selected 1000 m reach of stream" was missed during the update from AEMP V2 to V3. The text from table 4.2-3 will be removed from the final AEMP V3. As a reminder, escapement estimates by entire stream length were agreed to for Davidson Creek (under the federal follow-up program) and Creek 661 (under the AEMP), but not for Chedakuz Creek. For Chedakuz Creek, peak spawner counts at representative sites are implemented, with each site being approximately 1km in length. See BWG response dated July 19, 2024 to Comment ID 1 for rationale for using representative sites. On Wednesday, October 19, 2024, ENV requested that a 2025 Chedakuz Creek fisheries study and January 31, 2026 report be completed outside the submission of the AEMP V3. The purpose of the study and report is to inform how subsequent surveys could be conducted for the purposes of the AEMP. After the study is completed, changes to the AEMP will be made, as applicable.
3	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Table. 4.2-3 pg. 4-20	Kokanee Fry Spring Outmigration Survey	Replication Column. "...Weekly throughout the outmigration survey" Not previously agreed to. Daily sampling was previously agreed to. We are not commenting on the remaining methodology for this component as it is based on a flawed approach.	BW Gold is concerned by the implication that we discussed daily sampling with the NFNs, agreed to it, and then did not include it in the AEMP V3. We have no record of this specific comment or discussion about it. BW Gold understands that to obtain a reliable estimate of fry outmigration, sampling should occur more than once a week. However, sampling frequency should also take into consideration the risk to fish, especially at this fragile life stage; sampling daily may expose a large proportion of out-migrating fry to an undesirable level of handling and potential mortality. BWG considers a sampling frequency of approximately 5 days, with an increased frequency during peak capture periods and mark recapture events, an appropriate balance between adequate data collection and protecting fish from potential undue harm. Therefore, to address this comment, the AEMP V3 will be revised to state: "Sampling will occur approximately every five days over the duration of the fry outmigration period, with an increase in sampling frequency during peak capture periods and during mark recapture events."
4	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Table. 4.2-3 pg. 4-20	Kokanee Fry Spring Outmigration Survey	Replication Column. "...Mark recapture over multiple two night sample events during peak outmigration" Not previously agreed to. Pooled Peterson mark-recapture abundance estimator was previously agreed to. Can't do that when only looking at a peak period. We can't understand how the proposed unconventional methods will provide a reasonable estimate of annual fry abundance. We are not commenting on the remaining methodology for this component as it is based on a flawed approach.	LGL's Technical Memo dated Feb 26, 2024 indicated minimum expectation of "frequent mark-recapture sampling during trap operations to determine trap efficiency..." To address this comment, efforts were made during 2024 field season to conduct multiple mark-recapture events spanning the outmigration period. Regrettably reference to "peak migration" was missed in Table 4.2-3. The table in AEMP V3 will be revised to state: "Mark-recapture over multiple two-night sample events during outmigration". Additionally, section 4.8.3.2 in AEMP V3 will be revised to state: "A separate mark-recapture program over multiple, two-night sampling events (i.e., mark captured fish on night one and recapture marked fish on night two) will be completed spanning the outmigration period, when fry capture rates allow."
5	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Table. 4.8-1 pg. 4-56	Fish Inventory	Not previously agreed to Assessment endpoint of CPUE, abundance, density by species and size/age class.	LGL's Technical Memo dated Feb 26, 2024 indicated minimum expectation of "Fish density (fish per 100m2) estimates for each species and size/age class at all stream sites". BWG provided response to ID14 in the ITT of the NFNs comments on AEMP V2 indicating that fish density per 100 m2 by size class, with population estimate (N), standard error (SE) and 95% confidence limits will be reported". AEMP V3 Section 4.8.1.3 includes text indicating that population estimates (abundance and density) will be calculated for each fish species by size class. Regrettably, the change was missed in Table. 4.8-1, but it will be revised to align with text in section 4.8.1.3.
6	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.1.2 pg. 4-57	Fish Inventory	We previously asked numerous times to justify the size/age classes based on site specific analysis and supporting literature. None has been provided. Until then we don't agree with these size/age classes.	It is acknowledged that the NFNs have previously has requested justification for size/age classes. BW Gold agreed to include a site specific analysis of size/age classes in the 2024 AEMP interpretive report (available March 31, 2025). To further address this comment, the AEMP V3 will be revised to state: "The subsampled size classes (i.e., in mm, 81-125 (1+), 126-200 (2+), 201-275 (3+), 276-350 (4+), 351-400 (5+), 401-450 (6+) generally correspond to the age classes of rainbow trout, although there is variation on an individual and stream subpopulation level. A review of these size/age classes will be provided in the 2024 AEMP interpretive report and may be adjusted at a site specific level, if deemed necessary."
7	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.1.2 pg. 4-57	Fish Inventory	As previously commented, fish community inventory timing needs to be justified with Rainbow Trout ATU calculations. This has been provided in the text for Kokanee Fry outmigration timing but not for Rainbow Trout.	Rainbow Trout ATU calculations will be added to the Implementation Framework.
9	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.2.2 pg. 4-64	Kokanee	Middle Chedakuz Creek paragraph incorrect. We have not previously agreed to these sites. Need to mention the Comprehensive Fisheries Study in 2025 will inform what should be done rather than these are the sites.	As a reminder, for Chedakuz Creek, escapement estimates will be based on peak spawner counts at representative sites, with each site being approximately 1km in length. See BWG response dated July 19, 2024 to Comment ID 1 for rationale for using representative sites. On Wednesday, October 19, 2024, ENV requested that a 2025 fisheries study and January 31, 2026 report be completed outside the submission of the AEMP V3. The purpose of the study and report is to inform how subsequent surveys could be conducted for the purposes of the AEMP. After the study is completed, changes to the AEMP will be made, as applicable.
9	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.2.2 pg. 4-65	Kokanee	Askey et al. 2023 has been cited before to justify peak counts. These statements have been misrepresented to justify previously used methods. One needs to consider the intent of the Askey et al. 2023 study. Askey et al. 2023 was focused on fisheries stock assessment management decisions purposes not for environmental effects monitoring, which requires a greater level of certainty in the estimates.	Acknowledged.
10	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.4.2 pg. 4-73	Rainbow Trout	We previously asked numerous times to justify the 200 mm adult classification based on site specific analysis and supporting literature. None has been provided. Until then we don't agree with this class.	It is acknowledged that the NFNs have previously has requested justification for size/age classes. BW Gold agreed to include a site specific analysis of size/age classes in the 2024 AEMP interpretive report (available March 31, 2025). To further address the comment, the AEMP V3 will be revised to state: "Ageing structures (scales) will be collected from a subset of 30 rainbow trout per site per size class for fish greater than 200 mm fork length (i.e., 3+ age classes that are migrating to spawn). A review of the size/age classes will be provided in the 2024 AEMP interpretive report and the 200 mm fork length may be adjusted at a site-specific level, if deemed necessary."

Blackwater Aquatic Effects Monitoring Plan, Version 3.0							
ADMIN							
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Theme	Comment	Response
11	23-Dec-24	Ana Lima- LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.4.2.3 pg 4-36	Data Analysis	The AEMP does not address testing for ANOVA assumptions. Additionally, it fails to propose alternative statistical approaches in the event that these assumptions are not met, which has been an issue in previous years. This omission leaves a gap in the methodological rigor of the analysis. The AEMP should include a clear assessment of ANOVA assumptions and outline robust alternative methods, such as non-parametric tests or generalized linear models, to ensure the validity of the analysis.	Currently the results provided in the AEMP Interpretive Report 2023 of the before-after-control-impact (BACI) test does not explicitly state that data has met assumptions of the ANOVA (a standard procedure for statistical analysis). However the detailed results of the ANOVA does report on the distribution of untransformed and log-transformed data to meet assumptions. Normality tests (i.e., Anderson-Darling or Shapiro-Wilk) and a test for homogeneity of variance (Levene's test) have not been completed because these tests tend to be highly conservative. Future AEMP Interpretive reports will provide a post-hoc Power Analysis to provide an assessment of the rigor of the ANOVA. The AEMP V3 will be updated to state that an appropriate non-parametric test will be used if deemed appropriate by a subject matter expert (i.e., statistician); however, specific, alternative statistical methods (e.g., generalized linear models) will not be added to the AEMP V3 because the program was designed to be evaluated using the BACI hypothesis testing. However, this does not preclude the use of non-parametric tests should a statistician determine that it is an appropriate method based on the data meeting the assumptions.
12	23-Dec-24	Ana Lima- LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	General	Baseline Data	Please provide a comprehensive table with all the baseline locations and sampling periods for each component (Hydrology, Surface water, Sediment, Aquatic primary producers, Aquatic invertebrates and Fish), as it is not clear in the current version of the AEMP what are the sampling periods considered as "baseline" and how they differ	For all monitoring components the 'Baseline' sampling period are considered to be 2011 to October 2022 when the Construction phase was initiated. The reviewer is encouraged to review the 2022 Cumulative Aquatic Effects Monitoring Program Baseline (ERM 2023) that includes all sampling completed prior to initiation of the Construction phase in October 2022. The attached 'Table 1 Aquatic Effects Monitoring Program Stream and Lake Baseline Sampling Years' provides the summary of baseline monitoring years at each site for each of the AEMP monitoring components for the evaluation of effects. Reference: ERM. 2023. Blackwater Gold Project: 2022 Cumulative Aquatic Effects Monitoring Program Baseline. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd.: Vancouver, BC. June 2023.

Blackwater Aquatic Effects Monitoring Plan, Implementation Framework						
ADMIN						
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	COMMENTS	
					Comment Theme	Comment
1	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.4. Fish Community Inventory Pg. 5	Rainbow Trout ATU	It is advised to calculate ATU for rainbow trout emergence timing to understand when YOY would be susceptible to the gear or not. This would assist in interpretation of the results. YOY often have patchy distribution in a stream network resulting in sites with zero counts because they have not disbursed to all available habitats in the first year. Often parr and older fish are used for monitoring purposes because of this.
2	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.2. Kokanee Fry Outmigration Surveys Pg. 2	Kokanee Fry Sampling	See previous comments in AEMP Design Plan V3 regarding sampling frequency.
3	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.2. Kokanee Fry Outmigration Surveys Pg. 3	Kokanee Fry Sampling	One overnight sampling event with few/zero Kokanee fry captures to justify termination of the program seems premature. I suspect, based on prior experience, that subsequent rain events may trigger further emigration. Recommend similar termination text as proposed for the Rainbow Trout adult monitoring program (e.g. 3+ consecutive days).
4	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.3. Kokanee Spawner Surveys Pg. 4	Kokanee Adult Sampling	It is advised to review site specific water temperature and discharge data to assist in defining the commencement trigger to see if there is any relationship with migration timing. Review of other literature might be informative as well. Just commencement dates do not consider environmental variability between years.

Attachment C – Round 1 Comments

C.1 – ITT AEMP – BC Environmental Assessment Office (EAO)

C.2 – ITT AMEP – BC ENV

C.3 – ITT Implementation Plan –ENV

C.4 – ITT AEMP – WLRS

C.3 – ITT Implementation Plan – WLRS

C.5 – ITT AEMP – Nechako Nations

C.6 – ITT Implementation Plan – Nechako Nations

Blackwater Aquatic Effects Monitoring Plan, Version 3.0							
ADMIN	COMMENTS						
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Specific Text	Comments/Instructions	Response
1	23-Dec-24	EAO	Aquatic Effects Monitoring Plan, Version 3.0	Appendix B, Concordance of EAC #M19-01 Conditions with the Aquatic Effects Monitoring Program Plan	"The AEMP Plan addresses the Environmental Assessment Certificate #M19-01 (EAC; BC EAO 2019) Conditions 3, 28, and 30."	The Table of Concordance for EAC #M19-01 does not include Condition 3, or Condition 30 (a) to (k). Revise the Aquatic Effects Monitoring Plan (AEMP) to include concordance for Condition 3 and Condition 30 (a) to (k).	The Table of Concordance for EAC #M19-01 (Appendix B of the AEMP Plan) was inadvertently left out of Version 3.0. The revised Version 3.0, Appendix B provides the Table of Concordance for EAC #M19-01 Condition 28, 30 (a) to (k), 2, and 3.
2	23-Dec-24	EAO	Aquatic Effects Monitoring Plan, Version 3.0	4.5.1.3, Data Analysis (Sediment Quality)	"It is hypothesized that if mine activities affected sediment quality, then there would be a significant change in sediment quality at near-field impact sites in comparison with baseline concentrations or control sites."	Revise the AEMP to provide references/additional details or supporting information for the hypothesis that mine activity effects will result in a significant changes at near-field impact sites relative to baseline concentrations or control sites. If supporting information is not available, identify the means by which this hypothesis will be tested, and how the monitoring program will be adjusted if is refuted. Ensure this information is identified where equivalent hypotheses were made regarding near-field impact sites for each sub-component of the monitoring program (i.e., hydrology, surface water, sediment, aquatic primary producers, aquatic invertebrates, fish community, and waterdependent wildlife).	Section 4.2 (beginning with paragraph 3) provides the rationale for the hypothesis that mine activity effects will result in significant changes at near-field impact sites relative to baseline concentrations or control sites. The study design selected for evaluation of effects is a gradient design with sampling sites identified as near-field (closest to the mine site or lowest effluent dilution), mid-field, and far-field sites (furthest downstream of the mine site). Statistical evaluation of the gradient design uses the before-after-control-impact analysis to enable the identification of the Mine-related effects (near-field sites, immediately downstream of the mine site in Davidson Creek or Creek 661), as well as mid- and far-field sites to enable identification of potential interactions of Project effects with other, non-Mine-related effects (e.g., cumulative effects, such as from logging or agricultural activities). The use of a hypothesis-testing gradient design is a standard approach for environmental effects studies (e.g., Environment Canada 2012). No changes have been made to AEMP, Version 3.0. The details were provided at the beginning of Section 4.2 to avoid repetition of the same rationale for each monitoring component. Reference: Environment Canada. 2012. Metal Mining Technical Guidance for Environmental Effects Monitoring. National Environmental Effects Monitoring Office, Environmental Canada. Available online: https://www.ec.gc.ca/esee-eem/AEC7C481-D66F-4B9B-BA08-A5DC960CDE5E/COM-1434---Tec-Guide-for-Metal-Mining-Env-Effects-Monitoring_En_02[1].pdf .
3	23-Dec-24	EAO	Aquatic Effects Monitoring Plan, Version 3.0	4.5.1.3, Data Analysis (Sediment Quality)	"A precautionary approach will be used to determine if an effect is attributable to Project activities in cases of unexplained significant interactions using professional judgement, additional sampling, and/or field data to confirm significantly elevated or lower concentrations."	Revise the AEMP to clarify the circumstances under which an unexplained significant change would be considered attributable to the Project, including the personnel whose professional judgement would be relied upon to make this determination and the contingency sampling and/or additional field data that would be used to support these conclusions. Ensure this information is identified where this approach will be used for each sub-component of the monitoring program (i.e., hydrology, surface water, sediment, aquatic primary producers, aquatic invertebrates, fish community, and water-dependent wildlife).	The statement ‘precautionary approach’ refers when there are unexplained (not unexpected) significant interactions. For example sites DC-05, DC-10, DC-15, and DC-20 downstream of the FWR does not have elevated concentrations of a water quality parameter but statistical analysis suggest the further downstream site CC-20 there has been an increase in the water quality parameter (there is a significant before-after comparison not observed at the control sites). In this case, a QP (i.e., a RPBIol or subject matter expert) will use professional judgement to determine if the statistical significance is a Mine-related effect based on potentially obtaining additional samples at the site in question, identifying if it was as a result of a single sample collected, examining field data or weather conditions when the sample was collected, and/or identifying other potential non-Mine related activities (e.g., agriculture, logging, wildfire, etc.) that may have caused the changes in water quality (or other monitoring component). In addition other monitoring components at that site may be examined to understand the unexplained effect. The details of the exact plans to determine the unexplained effect have not been provided in AEMP Plan, Version 3.0 because it will be dependent on the site location, the monitoring component, and site conditions.
4	23-Dec-24	EAO	Aquatic Effects Monitoring Plan, Version 3.0	4.8.1.2, Sampling Locations and Methods (Fish Community)	"Fish will be examined for ... adipose fin clips. Any fish with clearly clipped adipose fin will be classified as salvaged (i.e.,...relocated from upstream watercourses within the mine footprint. Any lesions, parasites, other deformities (or lack thereof) will be recorded before the fish are live released at the site of capture."	Table 1 (Revision History) indicates that the AEMP was revised to clarify that assessment of catch-per-unit-effort (CPUE), abundance, and density will exclude fish classified as salvaged. The quoted text indicates that previously salvaged fish will be live released (i.e., not sacrificed and included in tissue analysis); however, the AEMP does not explicitly state that these individuals will be excluded from CPUE, abundance, and density assessment. Revise the AEMP to clarify that fish classified as salvaged will be excluded from CPUE, abundance, and density assessment.	1st paragraph under 4.8.1.3 Data Analysis in V3 states "'Salvaged' fish will be excluded from assessment endpoints (e.g. CPUE, abundance, density)". Minor sentence structure revision made.
5	23-Dec-24	EAO	Aquatic Effects Monitoring Plan, Version 3.0	4.8.2.2, Sampling Locations and Methods (Kokanee Summer Spawning Survey)	"... a fish community Implementation Framework that specifies the monitoring triggers to be used (e.g., temperature, ATU, discharge, etc.) when commencing and terminating field surveys is being developed. The framework will be reported under a separate cover."	The monitoring triggers to be included in the Implementation Framework are details necessary for implementation of the monitoring program, as such, these details must be included and/or appended to the AEMP. Revise the AEMP to clarify that the monitoring triggers identified in the Implementation Framework will be included and/or appended to the AEMP.	Revised footnote 5 to include clarifying statement - "Once finalized, it is intended that this document be appended to and used in tandem with the field methodologies described within the AEMP plan."

Blackwater Aquatic Effects Monitoring Plan, Version 3.0								
ADMIN		COMMENTS						
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Type	Comments	Response	
5	18-Dec-24	ENV Tom Pretty	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.1	Comment	Please consider the use of muscle plug or laser ablation spectrometry instead of lethal sampling of fish tissue. This is a continuation of version 2 comments (ENV-20).	Refer to response to version 2 comment (ENV-20)	

Blackwater	Aquatic Effects Monitoring Plan, Fisheries Implementation Framework					
ADMIN	COMMENTS					
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comments	Response
1	23-Dec-24	ENV Tom Pretty	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	Page 1 and 2	The Commencement Trigger for sampling is based on daily average water temperatures. Where will the averages be taken? E.g. temperatures may be different at the deeper confluences compared to closer to the mine.	Daily average water temperatures will be taken from the closest hydrometric stations to known spawning grounds in Davidson Creek and Lower Chedakuz Creek that record continuous temperature data year-round as well as temperature loggers (tidbits) in Creek 661 and Middle Chedakuz Creek located in close proximity to Kokanee spawning locations.
2	23-Dec-24	ENV Tom Pretty	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	-	Please include a map(s) of the sample locations in the Implementation Framework. Please also include known fish barriers.	The purpose of the Implementation Framework, as directed by ENV, is to specify the monitoring triggers to be used (e.g. ATU, discharge, temperature, etc.) when commencing field surveys, conducting trap efficiency tests, and terminating the field studies. It is intended that the Implementation Framework be appended to the AEMP Plan once finalized. A map of the sample locations is already provided in the AEMP plan. Map(s) of fish barriers will be provided in the AEMP interpretive report as barriers may change (e.g. new beaver dams constructed or breached/failed) over the year(s).
3	23-Dec-24	ENV Tom Pretty	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	Section 1.3	The trapezoidal area-under-the-curve (TAUC) and Gaussian AUC (GAUC) methods were both proposed for kokanee spawning in the AEMP. Please update the Fisheries Framework to include both as comparisons. Please also include the 95% confidence intervals where possible.	The visual spawner survey commencement and termination triggers do not differ between TAUC and GAUC methods. As outlined in the AEMP plan 95% confidence intervals will be reported in the annual interpretive report.

Blackwater Aquatic Effects Monitoring Plan, Version 3.0							
ADMIN		COMMENTS					
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Type	Comments	Response
16	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	table 4.2-2	Comment	page 4-18 table 4.2-2, foot note 5 - thanks for noting this. Please define this earlier in text, so future readers know what is encompassed in Aquatic resources.	Aquatic resources will be defined defined to include aquatic primary producers and benthic invertebrates in Section 1.4 of the final AEMP Plan, Version 3.0.
17	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.2	Comment	page 4-22 (middle of page) I think 6 years is too long of a cycle, this could miss the life cycle of the Kokanee time of sampling, with a 23yr mine life this could potentially only happen 3 times.	The reduction in sampling for benthic invertebrate tissue and lake fish tissue metal analysis to once every 6 years would only occur with approval from BC ENV. Thus as currently planned and permitted (PE-110652), the first year of sampling is Year 1 of Operations (2025). The two reporting periods (or three year cycles) for the analysis of effects would be 2028 (compare 2025 and 2028 results to baseline) and 2031 (compare 2025, 2028 and 2031 results to baseline). If both the 2028 and 2031 AEMP Interpretive Reports conclude there are no effects, the qualified professional would evaluate all results of the AEMP (i.e., weight of evidence approach) to provide a rationale for a reduction in sampling frequency that continues to be protective of aquatic life.
18	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.2	Comment	Page 4-22 "Spawning substrate composition will be characterized for one year during baseline conditions..., " will 2025 data be consider construction or operations?	The majority of 2025 data will be considered operations.
25	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.7.3	Clarification	Page 4-54 - Tissue metals BACI, 2023 tissue metal concentrations, I think a decision on what period to put the 2023 data into should be made, not may. The influence of the fires could have an effect on species, composition, diversity and abundance.	The primary objective of the AEMP is to assess if Mine-related affects have occurred using a gradient design and a before-after-control-impact analysis. The decision to add Year 1 of Construction (i.e., 2023) as 'Before' year would only be completed if Mine activities in that year did not affect benthic invertebrate tissue metals. The sentence has been removed to avoid any confusion (i.e., evaluation of effects is completed using statistical methods to test hypothesis that that if mine activities affected benthic invertebrate tissues, then there would be a significant change in benthic invertebrate tissues at near-field sites in comparison with site-specific baseline benthic invertebrate tissues or control sites). The influence of fires could have an effect on water quality resulting in changes in tissue metal concentrations, species, composition, diversity and abundance. However the fire occurred in July 2023 and is therefore unlikely to have affected benthic tissue metal concentrations (benthic invertebrates were collected in early September 2023 for tissue metal analysis).
26	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.1.3	Question	fish condition - what was the range of years of baseline data? 2012, 2017, 2022?	Baseline (before October 2022) fish community inventory sampling was completed in 2011, 2012, and 2013 at six of the AEMP monitoring sites and in September 2022 at all sites. Captured fish were measured for length and weight to calculate condition.
27	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.2.2	Comment	page 4-65 extra space and comma after 2023	Thank you for noting this. Corrected.
28	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.2.2	Comment	please add in community implementation framework as appendix when completed	The intent is to append the implementation framework to the AEMP once it is finalized.
29	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.2.2	Comment	"by walking upstream,...." in the creek or beside it? repeated walking upstream has the potential to disturb the fish, redds, eggs, and substrate - these are relatively small streams correct?	Walking upstream beside, not in, the creeks, except when topographic features, heavy large woody debris, log jams, and/or thick vegetation requires that field crews move from one side of the watercourse to the other. In these instances, care is taken to cross where there are no observed redds or spawning fish present. Text has been adjusted in the AEMP to reflect this reponse.
30	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.3.2	Comment	suggestion that staff use ATU as a proxy to help with emergence time forecasting, temperature has the potential to be a bigger driver of embyric development and emergence timing than peak spawn time.	As outlined in the Implementation Framework document, specific timing of the sampling program will be informed using ATUs to determine emergence timing, where temperature data are available.
31	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	4.8.3.2	Comment	typo, two periods in middle of first paragraph	Thank you for noting this. Corrected.
33	3-Jan-25	WLRS Luc Turcottte	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	6.2	Comment	once finalized I would like to see this AEMP and other plans publicly posted on BW golds website, in a tab that is easy to find	Since 2022, the most current AEMP has been posted: https://www.blackwatergoldmine.com/eac-plans/

Blackwater ADMIN	Aquatic Effects Monitoring Plan, Fisheries Implementation Framework				COMMENTS	
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comments	Response
4	7-Jan-25	WLRS Luc Turcottte	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	General	Thank you for the clarification, it is worth considering incorporating these triggers into AEMP v 3.0, as the explanations are additive to the text there	The intent is to append the implementation framework to the AEMP once it is finalized.
5	7-Jan-25	WLRS Luc Turcottte	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.1	PIT tagging - can you speak to the PIT tagging? I see it listed in the last 2 versions of the AEMP but I don't see any results in the 2023 AEMP interpretive report, or mentioned in this implementation frame work	The purpose of the Implementation Framework, as directed by ENV, is to specify the monitoring triggers to be used (e.g. ATU, discharge, temperature, etc.) when commencing field surveys, conducting trap efficiency tests, and terminating the field studies. PIT tagging details were not included in the implementation framework as the trigger for tagging is contained in the AEMP plan – Rainbow Trout (>200 mm in length or fish producing eggs or milt) with no existing PIT tag. To provide further context for PIT tagging: To determine total abundance of Rainbow Trout spawners, bi-directional box traps are being utilized as a capture method to enumerate migrating fish. As movement is allowed in both directions, so as to not fully impede downstream migration post spawning at the capture sites, it is plausible that the same fish may be recaptured multiple times if it repeatedly moves through the capture site. PIT tags are being used to identify individual fish to determine true total abundance (i.e. total number of unique PIT tags implanted or observed at each site) rather than the total number of captures at a site which might be artificially inflated with repeated captures. PIT tagging also allows for mark-recapture of individual fish and can be used to determine residence time, spawning distribution (assessment endpoint for Condition 3.14), repeat spawning in subsequent years, and/or potential movement between watercourses.
6	7-Jan-25	WLRS Luc Turcottte	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.3	Termination trigger - Kokanee Spawner Surveys, the 2023 interpretive report shows bimodal distributions in 2022 and 2023 in Davidson Creek, flagging this as it is possible that the current end point language might not fully capture the second peak of the run.	Acknowledged. Raw data from 2022, 2023, and 2024 indicated that observed counts in the trough between the bimodal peaks were in the hundreds, if not thousands, of fish. The termination trigger includes a survey event with few to no fish and, based on these previous results, it is anticipated that a survey event with extremely low numbers (<1% of the total) likely would not occur in between the bimodal peaks. Regardless, text has been added to the framework to flag the documented biomodal distribution in Davidson Creek.
7	7-Jan-25	WLRS Luc Turcottte	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.4	Fish Community inventory - does this include lentic inventory?	No, this version only included stream sites. The implementation framework will be updated to differentiate between lentic and lotic sites. There are no specific commencement triggers for the lake sampling. It is generally planned for late summer to early fall to align with sampling timing conducted in previous years. Lake sampling will terminate upon capture of the targeted number of each species required for tissue metals analysis.

Blackwater Aquatic Effects Monitoring Plan, Version 3.0						
ADMIN	COMMENTS					Response
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Theme	Comment
1	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	All	Issue Resolution	Nechako Nations' memorandum submitted February 26th 2024 outlined our outstanding concerns with the Aquatic Effects Monitoring Program (AEMP) fisheries programs. Since then, Nechako Nations have had several meetings with Artemis Gold and the Province regarding the inadequacy of the Blackwater AEMP. Nechako Nations' ongoing concerns with the fisheries components of the AEMP, which is a requirement of Condition 4.6 of Blackwater Gold's Environmental Management Act (EMA) Permit 110652, and Condition 30 of the Blackwater Environmental Assessment Certificate (EAC). It is also a plan that is fundamental to protecting our aquatic resources and abiding by the Yinka Dene Water Law. Most meetings to resolve the ongoing AEMP concerns occurred between Nechako Nations and Artemis Gold in July 2024. Most of the issues were resolved with agreement by both parties and documented. Further meetings in November 24 resolved the remaining of the issues with agreement by both parties and documented. However, upon review of the AEMP some of these issues that were agreed upon, hence "resolved", have not been reflected in the AEMP V3. The ongoing areas of concerns are briefly highlighted below as Nechako Nations have already commented upon these numerous times in the past. It is apparent that some issues agreed upon by both parties during the July and November 2024 meetings are still unresolved. Given these changes by Artemis Gold, Nechako Nations cannot endorse this AEMP V3.
2	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Table. 4.2-3 pg. 4-20	Kokanee Summer Spawning Survey	Replication Column. "...at a selected 1,000 m reach of stream" Not previously agreed to. Resulting assessment endpoints wrong (No./100 m2). Escapement estimate by entire stream length was previously agreed to. We are not commenting on the remaining methodology for this component as it is based on a flawed site specific approach.
3	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Table. 4.2-3 pg. 4-20	Kokanee Fry Spring Outmigration Survey	Replication Column. "...Weekly throughout the outmigration survey" Not previously agreed to. Daily sampling was previously agreed to. We are not commenting on the remaining methodology for this component as it is based on a flawed approach.
4	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Table. 4.2-3 pg. 4-20	Kokanee Fry Spring Outmigration Survey	Replication Column. "...Mark recapture over multiple two night sample events during peak outmigration" Not previously agreed to. Pooled Peterson mark-recapture abundance estimator was previously agreed to. Can't do that when only looking at a peak period. We can't understand how the proposed unconventional methods will provide a reasonable estimate of annual fry abundance. We are not commenting on the remaining methodology for this component as it is based on a flawed approach.
5	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Table. 4.8-1 pg. 4-56	Fish Inventory	Not previously agreed to Assessment endpoint of CPUE, abundance, density by species and size/age class.
6	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.1.2 pg. 4-57	Fish Inventory	We previously asked numerous times to justify the size/age classes based on site specific analysis and supporting literature. None has been provided. Until then we don't agree with these size/age classes.
7	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.1.2 pg. 4-57	Fish Inventory	As previously commented, fish community inventory timing needs to be justified with Rainbow Trout ATU calculations. This has been provided in the text for Kokanee fry outmigration timing but not for Rainbow Trout.
9	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.2.2 pg. 4-64	Kokanee	Middle Chedakuz Creek paragraph incorrect. We have not previously agreed to these sites. Need to mention the Comprehensive Fisheries Study in 2025 will inform what should be done rather than these are the sites.
9	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.2.2 pg. 4-65	Kokanee	Askey et al. 2023 has been cited before to justify peak counts. These statements have been misrepresented to justify previously used methods. One needs to consider the intent of the Askey et al. 2023 study. Askey et al. 2023 was focused on fisheries stock assessment management decisions purposes, not for environmental effects monitoring, which requires a greater level of certainty in the estimates.
10	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.8.4.2 pg. 4-73	Rainbow Trout	We previously asked numerous times to justify the 200 mm adult classification based on site specific analysis and supporting literature. None has been provided. Until then we don't agree with this class.

Blackwater Aquatic Effects Monitoring Plan, Version 3.0							
ADMIN							
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Theme	COMMENTS	
						Comment	Response
11	23-Dec-24	Ana Lima- LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	Section. 4.4.2.3 pg. 4-36	Data Analysis	The AEMP does not address testing for ANOVA assumptions. Additionally, it fails to propose alternative statistical approaches in the event that these assumptions are not met, which has been an issue in previous years. This omission leaves a gap in the methodological rigor of the analysis. The AEMP should include a clear assessment of ANOVA assumptions and outline robust alternative methods, such as non-parametric tests or generalized linear models, to ensure the validity of the analysis.	Currently the results provided in the AEMP Interpretive Report 2023 of the before-after-control-impact (BACI) test does not explicitly state that data has met assumptions of the ANOVA (a standard procedure for statistical analysis). However the detailed results of the ANOVA does report on the distribution of untransformed and log-transformed data to meet assumptions, Normality tests (i.e., Anderson-Darling or Shapiro-Wilk) and a test for homogeneity of variance (Levene's test) have not been completed because these tests tend to be highly conservative. Future AEMP Interpretive reports will provide a post-hoc Power Analysis to provide an assessment of the rigor of the ANOVA. The AEMP V3 will be updated to state that an appropriate non-parametric test will be used if deemed appropriate by a subject matter expert (i.e., statistician); however, specific, alternative statistical methods (e.g. generalized linear models) will not be added to the AEMP V3 because the program was designed to be evaluated using the BACI hypothesis testing. However, this does not preclude the use of non-parametric tests should a statistician determine that it is an appropriate method based on the data meeting the assumptions.
12	23-Dec-24	Ana Lima- LGL Limited, on behalf Nechako Nations	Blackwater Gold Project - Aquatic Effects Monitoring Program, Version 3.0 (ERM 2024). Dated December 2024	General	Baseline Data	Please provide a comprehensive table with all the baseline locations and sampling periods for each component (Hydrology, Surface water, Sediment, Aquatic primary producers, Aquatic invertebrates and Fish), as it is not clear in the current version of the AEMP what are the sampling periods considered as "baseline" and how they differ	For all monitoring components the "Baseline" sampling period are considered to be 2011 to October 2022 when the Construction phase was initiated. The reviewer is encouraged to review the 2022 Cumulative Aquatic Effects Monitoring Program Baseline (ERM 2023) that includes all sampling completed prior to initiation of the Construction phase in October 2022. The attached Table 1 Aquatic Effects Monitoring Program Stream and Lake Baseline Sampling Years provides the summary of baseline monitoring years at each site for each of the AEMP monitoring components for the evaluation of effects. Reference: ERM. 2023. Blackwater Gold Project: 2022 Cumulative Aquatic Effects Monitoring Program Baseline. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd., Vancouver, BC, June 2023.

						Blackwater Aquatic Effects Monitoring Plan, Implementation Framework		
ADMIN	COMMENTS							
ID	Comment Date	Reviewer Agency	Reviewer Source Doc	Plan Section	Comment Theme	Comment	Response	
1	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.4. Fish Community Inventory Pg. 5	Rainbow Trout ATU	It is advised to calculate ATU for rainbow trout emergence timing to understand when YOY would be susceptible to the gear or not. This would assist in interpretation of the results. YOY often have patchy distribution in a stream network resulting in sites with zero counts because they have not disbursed to all available habitats in the first year. Often parr and older fish are used for monitoring purposes because of this.	Agreed. Calculation of ATUs for Rainbow Trout emergence timing and subsequent YOY sampling will be added to the Implementation Framework.	
2	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.2. Kokanee Fry Outmigration Surveys Pg. 2	Kokanee Fry Sampling	See previous comments in AEMP Design Plan V3 regarding sampling frequency.	Acknowledged. BW Gold replied to the sampling frequency comment in the AEMP V3 ITT. No changes are required to the Implementation Framework.	
3	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.2. Kokanee Fry Outmigration Surveys Pg. 3	Kokanee Fry Sampling	One overnight sampling event with few/zero Kokanee fry captures to justify termination of the program seems premature. I suspect, based on prior experience, that subsequent rain events may trigger further emigration. Recommend similar termination text as proposed for the Rainbow Trout adult monitoring program (e.g. 3+ consecutive days).	As indicated in the Implementation Framework, a sampling event with few/zero Kokanee fry captures is not intended as a stand-alone trigger, rather it is one of three criteria (peak outmigration observed during current years sampling program, sampling date falling after the latest estimated emergence date, and sampling event with few to no Kokanee fry captures) that need to meet in order to terminate the Kokanee outmigration surveys. As BWG does not intend to sample Kokanee fry daily (see response to ID3 comment for AEMP v3), the reviewer recommendation of similar text as proposed for the Rainbow Trout adult monitoring program does not apply. While it is acknowledged that environmental factors such as rain events may trigger emigration, it is anticipated that the majority of fry outmigration will have occurred by the latest (conservatively estimated) emergence date. BWG maintains that conducting a sampling event, that results in few to no captures, after the predicted tail-end of fry emergence is an adequate trigger to terminate the surveys.	
4	20-Dec-24	Christopher Burns - LGL Limited, on behalf Nechako Nations	Blackwater Gold Mine AEMP Fish Community Implementation Framework (Artemis Gold 2024).	1.3. Kokanee Spawner Surveys Pg. 4	Kokanee Adult Sampling	It is advised to review site specific water temperature and discharge data to assist in defining the commencement trigger to see if there is any relationship with migration timing. Review of other literature might be informative as well. Just commencement dates do not consider environmental variability between years.	Acknowledged. Water temperature and discharge data, when available near kokanee spawning reaches, will be considered in defining commencement triggers. The commencement triggers for Kokanee Spawner Surveys will be updated in Implementation Framework will state "As more years of watercourse specific data become available, the roles of water temperature and discharge on timing of Kokanee migration will be investigated, for watercourses where both datasets are available near kokanee spawning reaches."	



Blackwater Mine

December 6, 2024

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Suite 325 – 1011 4th Avenue
Prince George, BC V2L 3H9

The Aquatic Effects Monitoring Program (AEMP) Plan, Version 2.0 was revised to Version 3.0 as directed by the Ministry of Environment and Climate Change Strategy (BC ENV). Below is a summary of the key changes in response to comments from BC ENV, BC Ministry of Water, Land and Resource Stewardship (WLRS), and Nechako First Nations following the review of the Plan, Version 2.0. The 'Revision History' in the AEMP Plan, Version 3.0 provides additional detail regarding sections, figures, and tables revised.

Key changes in the plan in response to BC ENV (Comments Received May 8, 2024) are:

- Additional text has been provided to indicate that a reduction in sampling frequency will be implemented only upon approval from BC ENV. (Comment ID#1, #4, #6)
- Additional text has been provided to indicate that a post-hoc power analysis will be completed with statistical analysis of effects to verify that the existing sample sizes are sufficient to determine an effect has or has not occurred. (Comment ID#18)
- The plan no longer indicates 10 aging structures will be collected from fish collected from lakes. The fish community sampling methods have been clarified to indicate aging structures (scales) will be obtained for up to ten rainbow trout per size class collected at stream sites. Aging structures (otoliths) will be collected for fish collected from streams and lakes used for tissue metal analysis. (Comment ID#19)
- The Kokanee spawning analysis methods have been revised to indicate that Kokanee escapement estimates using both the Gaussian AUC (GAUC) and the trapezoidal AUC (TAUC) method will be reported, for comparison. (Comment ID#23)
- A new section has been added to the plan to provide the documentation and map of the 2023 Wildfire and how future AEMP interpretive reports will assess the potential impacts of the wildfire (current and historical). (Comment ID#24)

The BC ENV Comment ID#22 recommended changes to the benthic invertebrate community sampling replication to increase confidence in the data analysis (i.e., increase power to detect effects). No changes to the benthic invertebrate community sampling replication were made in the plan because the Reference Condition Approach (RCA) for evaluation of the effects provides a comparison to the natural

variability across the study area and this can be completed at a range of temporal scales and doesn't rely on the control site conditions and variability to be the same as the impact sites.

Key changes in the plan in response to WLRS (Comments received June 22, 2024) are:

- Text has been provided to indicate that a reduction in sampling frequency will be requested by a Qualified Registered Professional with supporting rationale for the change in frequency. A reduction in sampling frequency will be implemented only upon approval from BC ENV. (Comment ID#26, #52, and #53)
- Text has been provided to specify the available baseline data to be used in the assessment of effects. (Comment ID#30 and #32)
- Text has been provided to add detail regarding how the Bray-Curtis Index is calculated to compare the community composition among the sites sampled. (Comment ID#31)
- The plan specifies that fish classified as 'salvaged' will not be included in the assessment of fish community endpoints (e.g., CPUE, abundance, density). (Comment ID#35)
- Fulton's condition (K) will be used as the metric for fish condition. (Comment ID#36 and #48)
- Additional detail has been provided regarding the field methods for the Kokanee fry outmigration assessment. (Comment ID#42, #44, and #45)
- Additional text has been provided to indicate that counts of the unique implanted Passive Integrated Transponder (PIT) tags will be used to determine fish abundance. (Comment ID#47)

Revisions to the plan in response to discussion with Nechako First Nations are:

- Kokanee summer spawner surveys in Creek 661 have been updated to encompass the entire Kokanee spawning distribution.
- The Kokanee spawning analysis methods have been revised to indicate that Kokanee escapement estimates using both the Gaussian AUC (GAUC) and the trapezoidal AUC (TAUC) method will be reported, for comparison.
- Text has been provided to indicate that annual reporting will include a spatial analysis of Kokanee redd Distribution for Davidson Creek, Creek 661 and middle Chedakuz Creek survey sites.
- Text has been provided to indicate that an Implementation Framework is being developed under separate cover and will be used to inform the specific timing of fish community field surveys.
- Text has been provided to indicate that data from Kokanee summer spawning surveys in Davidson Creek, conducted under the Federal Condition 3.14 Follow-up Program, will be considered in the annual AEMP Interpretive Report.
- Text has been provided regarding inclusion of Kokanee egg to fry survival estimates in the annual reporting.

To:

Date: February 20, 2026

From: Karen Halwas

Subject: Updated Accidents and Malfunctions Communication Plan (AMCP) – Version E.1

Please find attached the updated Accidents and Malfunctions Administration and Communication Plan (AMCP) for the Blackwater Gold Mine (BW Gold), revised to Version E.1. This version incorporates all revisions made following the November 2025 draft submission.

This version represents a revision of the April 2022 AMCP, which was developed and submitted prior to the creation of the Mine Emergency Response Plan (MERP). The MERP establishes a structured and systematic approach for responding to emergencies, including accidents and malfunctions, at BW Gold, in compliance with the *Mines Act* (British Columbia) and Part 3.7 of the *Health, Safety and Reclamation Code for Mines in British Columbia*.

The updates in Version E.1 of the AMCP removes overlap and inconsistencies with the MERP, which provides the overarching framework for emergency response, including health, safety, and operational emergencies. Version E.1 of the AMCP is focused on accidents and malfunctions likely to cause an adverse environmental effect and clarifies the AMCP's role in outlining notification and communication procedures, and environmental response planning, in alignment with regulatory expectations [i.e., Environmental Assessment Certificate (EAC) Conditions 2, 4, and 36 and Federal Decision Statement (DS) Conditions 2.14, and 10.1 through 10.5.]. It complements the MERP by addressing environmental-specific events and reinforces timely, coordinated communication with Indigenous groups, regulators, and other stakeholders.

Key updates in Version E.1 (See attachment 1, Change Log for the full table of updates):

- Notification procedures (Table 7-1), and consequence descriptors (Table 6-1) have been revised to reflect MERP standards.
- Table 5-1 lists the types of accidents and malfunctions likely to cause an adverse environmental effect in relation to the Mine. These types of accidents and malfunctions align with the MERP. Further, the nature of the adverse environmental effect has been added and is aligned with the Application for an Environmental Assessment Certificate.
- Notification timelines, recipients, and delivery methods for accidents and malfunctions with moderate, significant and high consequence descriptors have been clarified and are aligned with MERP protocols.

As outlined in Section 3.0 (Engagement and Consultation), the AMCP was originally developed in consultation with EMPR (now MCM), Northern Health Authority (NHA), Environment Canada (ENV), Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD), and Aboriginal / Indigenous Groups, and was approved for implementation by the Environmental Assessment Office (EAO) on February 18, 2022.

In accordance with EAC Condition 4 and Section 10 of Version *D.1*, the consultation on Version E.1 occurred as follows:

- Proposed revisions to this plan were reviewed and discussed with the Blackwater Joint Occupational Health and Safety Committee, Mine Manager, and Artemis Gold staff involved in emergency response.
- A draft of Version E.1 was submitted on November 15, 2025, with a request for comments by January 9, 2026.
 - Comments were received from NHA on December 30, 2025.
 - Response to comments were provided on February 20, 2026.
 - Comments were received from the Nechako First Nations (NFNs) on January 9, 2026.
 - Comments were discussed with the NFNs on January 15, 2026, and responses were provided on February 20, 2026.
 - The Plan was discussed with Lhoosk'uz Dené Nation (LDN) and Ulkatcho First Nation (UFN) on January 23, 2026; no comments were provided.

With this submission, Version E.1 is being shared with the same recipients and is published on the Blackwater Gold website as required by DS Condition 2.14.

Also note that a Qualified Professional (QP) has reviewed the changes and has signed off on the final version.

Should you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Karen Halwas
Manager, Permitting and Compliance
Artemis Gold Inc.



Attachment 1: Change Log

Accidents and Malfunctions Administration and Communication Plan

The following presents a summary of the primary changes made from the D.1 version of the Accidents and Malfunctions Administration and Communication Plan. This table is current to the E.1 version of the plan. Editorial grammar and spelling revisions have not been included in this summary.

Section	Revision	Rationale
1.0 Mine Overview	Updated mine development timeline to remove specific years and align with phased approach language.	Reflects current mine status and phased development approach.
2.1 Purpose and Objectives	Clarified scope of AMCP to focus on environmental effects and notification procedures.	Strengthens understanding of the plan's role in environmental protection and stakeholder communication. Aligns with EAC Condition 36 and DS Conditions 10.1–10.5.
2.2 Exclusions	Clarified exclusions (e.g., medical emergencies, non-environmental incidents).	Make sure that the focus remains on environmental impacts. Aligns with MERP coverage and avoids duplication.
3.0 Engagement and Consultation	Documented consultation with internal committees and external agencies. Added language summarizing the consultation activities conducted during the Version E.1 draft revision period.	Fulfills Plan Revision requirements under EAC Condition 4. Demonstrates collaborative development and transparency.
4.0 Roles and Responsibilities	Updated organizational titles and roles.	Reflects current organizational structure and ensures accuracy in role descriptions. Limits list to key roles associated with the AMCP.
5.0 Accidents and Malfunctions 5.1 Types of Accidents and Malfunctions	Reorganized and expanded accident types; added mitigation and response measures. Updated Table 5-1 with response plans for accident/malfunction types that could cause environmental adverse effects; aligned with MERP and Application/EIS.	Provides comprehensive coverage of potential incidents and environmental effects; improves usability and aligns with EA Application and MERP. Enhances environmental focus of response actions.
6.0 Risk Matrix for Classifying Accidents and Malfunction	Added consequence descriptors and clarified classification methodology.	Standardizes incident classification. Supports consistent response prioritization and aligns with MERP protocols.
7.0 Notification Procedures, Response Plans and Response Assistance 7.1 Notification Timeline	Rewritten to clarify the relationship between AMCP and MERP, and to introduce the structure of notification and response protocols. Updated Table 7-1; Reorganized to align with consequence descriptors from Table 6-1. Revised Table 7-1 by removing redundant AMCP notification	Improves clarity on how environmental incidents are assessed and communicated, and how AMCP complements the MERP for environmental aspects of emergency response. Improve usability and operational clarity and add consistency with risk matrix; notification protocols are proportionate to the severity of the incident and that all relevant parties are informed in a timely and appropriate manner.

Section	Revision	Rationale
	procedures for Moderate, Significant, and High consequence events and replacing them with a reference to MERP Section 6.4, where these protocols are already defined.	Avoids duplication between the AMCP and MERP, improves clarity, and ensures that notification procedures for Significant and High consequence events are guided by the protocol already established in MERP Section 6.4.
7.4 Contact Information and Management	Defined procedures for annual updates, version control, and privacy protection; added water licence holders as potentially affected users to Appendix C	Makes sure that accurate contact data is available. Addresses EAC Condition 36(a) and supports readiness to notify groundwater users if impacted.
7.5 Response Plans	Clarified that AMCP response plans focus on environmental impacts; added reference to Table 5-1.	Differentiates AMCP from MERP and emphasizes mitigation to reduce potential adverse environmental effects. Ensures that environmental consequences are assessed and addressed.
7.7 Project Vehicle-related Accidents	Removed: Original narrative stating that vehicle-related accidents have higher incidence and variable outcomes, and referencing Section 6 for communication protocols.	Removed redundant risk narrative and vague references.
8.0 Reporting and Record Keeping	Consolidated reporting requirements for accidents and malfunctions to include only essential components.	Streamline reporting to focus on compliance-critical information and reduce unnecessary detail.
9.0 Plan Revision	Clarified consultation process and review steps for future updates.	Better reflects the consultation requirements as per the EAC and FDS.
11.0 References	Update to references.	Based on current information.
Appendix A & B Concordance Tables	Updated references to reflect new section numbers and content alignment.	Maintains traceability to EAC and DS conditions; supports regulatory compliance.
Appendix A Concordance Table	Removed: Adaptive Management from the concordance table and plan	Adaptive Management does not apply to the AMCP. The purpose of the ACMP is to identify the means by which BW Gold will notify Indigenous groups, Tatelkus Lake Indian Reserve 28, nearby residents and businesses, local communities or other user groups should an accident or malfunction occur in relation to the Blackwater Project. It does not include monitoring.
Appendix C Call-Out Sheet	Updated procedures and privacy notes; added water licence holders as potentially affected users	Enhances emergency communication protocols and ensures sensitive data protection. Supports EAC Condition 36(a).

Director, *Environmental Management Act*
Ministry of Environment and Climate Change Strategy
Regional Operations Branch, Environmental Protection Division
Suite 325 – 1011 4th Avenue
Prince George, BC V2L 3H9

Dear Sir or Madam:

The Aquatic Effects Monitoring Program (AEMP) Plan, Version 3.1 was revised to Version 4.0 as required by Condition 4.6.6 of Permit 110652 and based on comments received from the Ministry of Environment and Climate Change Strategy (now Ministry of Environment and Parks), BC Ministry of Water, Land and Resource Stewardship, and recommendations made in the 2024 Interpretive Report. The 'Revision History' in the AEMP Plan, Version 4.0 provides detail regarding sections, figures, and tables revised in response to the comments provided.

The approval of AEMP, Version 3.1 was subject to the following terms and conditions that were addressed in Version 4.0:

- **Section 4.8.3.2 in the AEMP Plan, Version 4.0:** *The permittee must conduct kokanee fry outmigration sampling at the frequency of every other night for the duration of the peak outmigration period, as indicated in the memo from Rebecca Gayowski (Triton) to Karen Halwas (GW Gold), dated March 28, 2025. This sampling protocol must be updated in future versions of the AEMP Plan.*
- **Figures 4.2-1 to 4.2-4, and Figure 4.8-1 and 4.8-2 in the AEMP Plan, Version 4.0:** *The permittee must update all maps and figures with the current and proposed sampling activities and include them within future versions of the AEMP Plan.*

The approval of AEMP, Version 3.1 was subject to the following draft terms and conditions that will be addressed as a special study, and/or future iterations of AEMP Interpretive Reports:

- *The permittee must conduct a power analysis, using data collected in 2023, 2024, and 2025, to determine the frequency of mark recapture sampling needed on kokanee fry outmigration. The results of the power analysis must be submitted to ENV, Lhoosk'uz Dene Nation, Ulkatcho First Nation, Nadleh Whut'en First Nation, Saik'uz First Nation, and Stelat'en First Nation by December 31, 2025*
- *The permittee must report all fish mortalities under the AEMP by species, cause of mortality, and type of sampling in the subsequent AEMP Interpretive Reports.*
- *The permittee must collect PAH samples in sediment during the 2025 sampling program to establish baseline at sites 661-01, 661-05, 661-10, DC-05, DC-15, TC-05, and 705-05. Analysis and discussion of PAH concentrations in sediment must be included in the 2025 AEMP Interpretive Report.*



Blackwater Mine

- *The permittee must use statistical analysis where covariates can be accounted for when completing fish tissue analysis.*

Sincerely,

Karen Halwas
Manager, Compliance and Permitting, Artemis Gold Inc.

Appendix 2-B: ACMP Reports

Initial Spill Report					
Name & Company:	Orica Canada.				
Date & Time Observed:	1/17/2025 @ 1:30pm.				
Emulsion Spilled:	200KG +/-	Fluid Quantity (L)	244L +/-		
Location & Description of Spill Area	ANE Transfer Area, Orica Facility. Pump Shack – MMU.				
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes	☐ No
Equipment/Source of Spill:	MMU Tank Overflow.				
Circumstances/Cause of Spill:	Un-attended MMU Tank during ANE transfer. Pump was being attended, Tank level was not being overseen.				
Spill Response Actions Taken:	The pump was shut off immediately, spill reported to Orica supervisor, and manual clean up of the spilled ANE started right away. While clean up ensued the Orica SHES team and the BWG Environmental team were notified as well. If Reportable to "authority" to be determined.				
Contaminated Material Disposal Methods:	Some Gravel/aggregate. To be Bagged and disposed of down bore hole on blast patterns intermittently.				
Reportable Spills					
Responsible Persons:	Ben Doxtator, Orica - BWG Supervisor. Travis Smith, Orica - Sr. Site Supervisor B.C.				
Reported to Spill Hotline	☐ Yes	☐ No	DGIR #		
Date & Time Reported:	Between 1:30pm – 2:30pm through-out multiple levels of spill control response and management. (Orica & BWG)				
Government Agencies Notified:	N/A				
Government or First Nation Agencies At Spill Site:	N/A				

Update to Minister/End-of-Spill Report Form

This report template can be completed to satisfy the requirements of either the End-of-Spill Report or the Update to Minister Report. Please specify which report you are completing in section I of this form. If any of the fields of this form are not applicable to the spill for which this form is being completed, indicate 'N/A' in the field; reports with incomplete fields will be sent back to the responsible person.

End-of-Spill Report: Section 6 of the Spill Reporting Regulation outlines the requirements for the End-of-Spill Report. Responsible persons must submit a written End-of-Spill Report to the Ministry of Environment and Climate Change Strategy within 30 days following the emergency response completion date of a spill as outlined in section 6 (1) of the Spill Reporting Regulation. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if either of the following two conditions are present:

1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

Complete this form and submit it by email to SpillReports@gov.bc.ca. For additional information, please visit the British Columbia [Environmental Emergency Program Report a Spill webpage](#).

Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report	Name of company representative: Marco Haust
	Company name: Artemis Gold Inc.
	Email: mhaust@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non-fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is inaccurate to the current practice.

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.
7. Review of supervision and personnel updates.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

August 5, 2025

Impact Assessment Agency of Canada
22nd Floor, Place Bell
160 Elgin Street
Ottawa ON K1A 0H3

Dear sir or madam:

As per BW Gold's Accidents and Malfunctions Administration and Communication Plan, please see information below regarding an incident that occurred on the Blackwater Mine.

Due to persistent cold weather conditions at the beginning of February 2025, the Central Water Transfer Pond (CWTP) pump failed due to freezing conditions, and subsequently the discharge line froze. Maintenance of this system occurred from February 6, including the removal of ice blockages, and replacing the pump. Pumping from the CWTP resumed February 22nd.

On February 2nd, the breaker for the Water Management Pond (WMP) pump failed. A long lead time for the replacement parts results in a delay in return to pumping. Additionally, due to the conditions described above, the CWTP did not contribute flows to the WMP, resulting in limited water volumes to pump. Maintenance of this system occurred over the following days, and pumping from the WMP resumed February 21st.

In response to the pump failures in February, a review of pump and supply systems was done to identify:

1. Changes should be made to limit the potential for freezing during winter conditions; and,
2. Electrical components inventory for regularly used parts (such as breakers) to limit the potential of downtime for pumping infrastructure

Following this review, pipeline improvements for the CWTP and WMP were made in early March:

- Pipelines sections were re-graded to minimize low points for water accumulation and ice buildup during freezing weather
- Low point drains were maintained and heated with frost fighters for draining of sections during unexpected downtime.
- Select pipeline sections were buried under 3 meters of material to reduce freezing risk under frost line.

To support those activities, discharge from the CWTP and WMP occurred intermittently, until the pump at the CWTP was brought back online on March 18th.

Water from the CWTP and WMP discharge to Davidson Creek, and support meeting Construction Instream Flow Needs (CIFN) regulated by the Mine's *Fisheries Act Authorization*. The natural reduction in flow associated with those persistent cold periods in February and March, in conjunction with the limited pumping capacity of those facilities over this time resulted in flows below CIFN on February 6, 7, 9, and March 14 and 15. Details on these low flow events, including follow up actions, have been provided through the monthly *Fisheries Act Authorization* reports for February and March. A

subsequent review of potential impacts to fish and fish habitat during these events was done by a Qualified Professional and determined that the potential risk of a significant effect is low (attached).

To further reduce risks related to discharges the Freshwater Reservoir (FWR) will be commissioned in Q4, 2025. The FWR operates as a pipe discharge system where no pumping of water to meet IFN is required. Remaining critical piping infrastructure will be buried to ensure reduction in freezing risk. These changes were discussed and reviewed with the Independent Environmental Monitor (IEM) during the May inspection. As reflected in this conversation, BWG anticipates that these changes will reduce the potential for freezing events to limit pumping at the CWTP and the WMP.

Upon review of these occurrences the IEM indicated that based on their interpretation of an example included in the Accidents and Malfunctions Administration and Communication Plan that this event should be reported as a moderate occurrence. BW Gold does not align with this interpretation; however, this submission is the outcome associated with subsequent discussion with the IEM. It is important to note that while the timing of this submission is tied to this outcome, reviews of the pump failure and downstream risks were not similarly delayed. As outlined above, fulsome review of these events has occurred, including a review of the cause, identification and implementation of mitigations, and a review of potential downstream risks. This report, and attachment, include information needed to fulfill those follow-up reporting requirements and no additional follow-up will occur.

Please do not hesitate to contact the undersigned if there are any further questions.

Kind regards,

Mark Warbanski
Environment Manager
Blackwater Gold Mine

Attachment:

- Memorandum – Risk to Fish and Fish Habitat Due to Discharge Below CIFN Threshold

Attention: Mark Warbanski, BW Gold Ltd.

Date: May 29, 2025

Project Name: Blackwater Gold

No. of Pages: 10

From: Robert St. Jean, P.Bio

Re: Risk to Fish and Fish Habitat Due to Discharge Below CIFN Threshold

1. Introduction

BW Gold Ltd. (BW Gold) is currently constructing the Blackwater Project, an open pit mine located 112 kilometres (kms) southwest of Vanderhoof, and approximately 160 kms west-southwest of Prince George, British Columbia (BC).

The Blackwater Project received Environmental Assessment Certificate (EAC) #M19-01 under the 2002 Environmental Assessment Act on June 21, 2019, and an Environmental Assessment Decision Statement (FDS) under the Canadian Environmental Assessment Act, 2012 on April 15, 2019, and on June 30, 2023, Fisheries and Oceans Canada (DFO) issued BW Gold a Fisheries Act Authorization (FAA) number 21-HPAC-01447. Condition 2.2.9 requires downstream flows in Davidson Creek to be always maintained during construction, with condition 2.2.9.1 establishing the Construction Instream Flow Needs (CIFN) for Davidson Creek during various periods throughout the year (DFO, 2023).

Condition 2.2.9: Downstream flows to Davidson Creek shall be maintained at all times during construction and commissioning of mine infrastructure, including diversion channels, reservoirs, and the freshwater supply system (FWSS), such that death of fish is avoided and impacts to fish habitat are limited to what is authorized:

2.2.9.1: Prior to the operation of the FWR when the natural discharge in Davidson Creek exceeds the Construction Instream Flow Needs (CIFN) threshold (below), water withdrawals from Davidson Creek may occur at a rate such that the actual instream flow in Davidson Creek immediately downstream of the Freshwater Reservoir (FWR) meet the CIFN thresholds:

- | | |
|-----------------------------------|----------------------------|
| - August 31 – May 14: | 0.07m³/s |
| - May 15 – June 30 (min.21 days): | 0.56m³/s |
| - May 15 – June 30 (remaining): | 0.35m³/s |
| - July 1 – July 15: | 0.30m³/s |
| - July 16 – August 31: | 0.15m³/s |



2. Background Information

Fisheries Act Authorization 21-HPAC-01447 was issued to BW Gold based on the Blackwater Project's application for authorization submitted to DFO under paragraph 35(2)(b) of the *Fisheries Act* (Palmer, 2023a). This application includes direct habitat losses as a result of the project and potential downstream impacts to Davidson Creek due to flow changes. Appendix D: Construction Phase Temporary Minimum Flow Threshold Memo of the FAA application describes in detail the rationale in determining the temporary minimum instream flow thresholds, to minimize the potential for harm to fish during flow reduction, for Davidson Creek (Palmer, 2023b). Review of Appendix D is recommended to get a better understanding of the FAA condition 2.2.9.1 flow requirements.

The Davidson Creek watershed supports both Rainbow Trout (*Oncorhynchus mykiss*) and Kokanee (*Oncorhynchus nerka*). Rainbow Trout utilize Davidson Creek year-round for spawning, rearing and overwintering while Kokanee only utilize the lower Davidson Creek for spawning activity (Figure 1) (Palmer, 2023b). Kokanee eggs incubate throughout the winter months, hatching in spring and out-migrating to Tatelkuz Lake (ERM, 2023).

In accordance with the reporting requirements set out in the FAA, BW Gold submits a monthly compliance monitoring report to DFO. The February and March 2025 report provided CFIN flow measurements associated with monitoring station DC-05 in table 2 on page 7 and page 6, respectively. (BWG, 2025a; BWG, 2025b).

Table 1: Discharge data at DC-05 as per table 2 of February 2025 FAA 21-HPAC-01447 Compliance Report (BWG, 2025a).

Date (February)	IFN (m ³ s)	Flow (m ³ /s)
Feb 1	0.07	Flow measurement attempted and could not be collected. Daily temps below operating temperature for SonTek FlowTracker 2.
Feb 2		Flow measurement attempted and could not be collected. Daily temps below operating temperature for SonTek FlowTracker 2.
Feb 3		Flow measurement attempted and could not be collected. Daily temps below operating temperature for SonTek FlowTracker 2.
Feb 4		Flow measurement attempted and could not be collected. Daily temps below operating temperature for SonTek FlowTracker 2.
Feb 5		Flow measurement attempted and could not be collected. Daily temps below operating temperature for SonTek FlowTracker 2.
Feb 6		0.02
Feb 7		0.02
Feb 9		0.02
Feb 14		Flow measurement attempted and could not be collected. Daily temps below operating temperature for SonTek FlowTracker 2.
Feb 22		0.07
Feb 25		0.08



Table 2: Discharge data at DC-05 as per table 2 of March 2025 FAA 21-HPAC-01447 Compliance Report (BWG, 2025b).

Date (March)	IFN (m ³ /s)	Flow (m ³ /s)
1	0.07	0.10
8		0.08
14		0.05
15		0.06
18		0.15
26		0.21
31		0.09

The data provided in table 1 & 2 shows flow measurements under the CFIN requirement of 0.07m³/s outlined in Condition 2.2.9.1. DFO has requested BW Gold to have a Qualified Professional (QP) review relevant information and provide a memorandum on potential fish and fish habitat impacts due to measured flows being below CFIN.

2.1 Memorandum Objective

The purpose of this memorandum is to provide a suggested risk of impacts to fish and fish habitat through a review of available information and outline any follow up actions required.

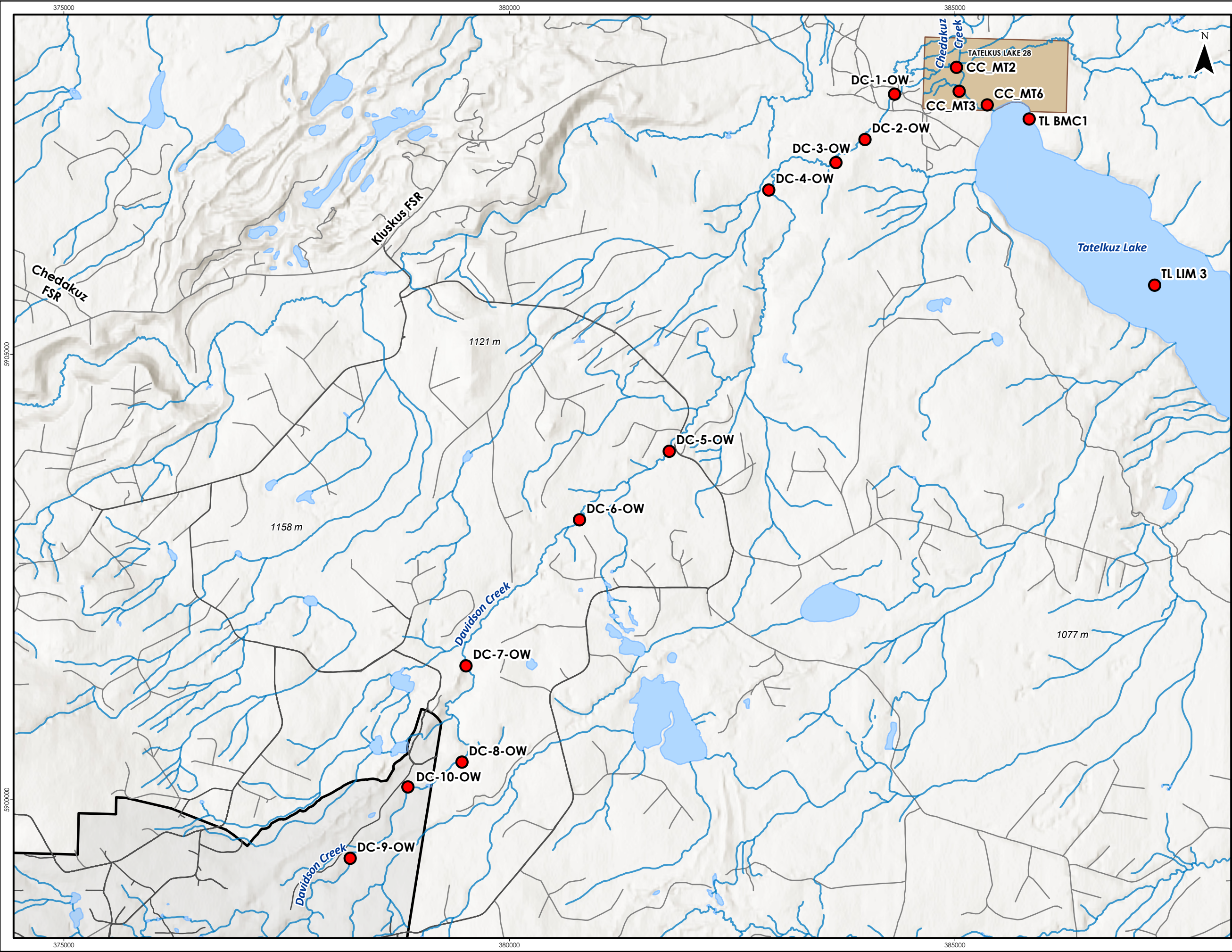
3. Risk to Fish and Fish Habitat

Utilizing the flow values presented in table 1 & 2 there is a period between February 6th – 9th, March 14th – 15th with recorded values shown to be below the CFIN threshold. With no field readings recorded between February 1st – 5th, February 10th – 21st, March 9th – 13th, and 16th – 17th, it is not possible to determine if flows on these days were below or above 0.07m³/s. The duration of days below the CFIN threshold is a minimum of 4 days in February and 2 days in March. Assuming the days with no field measurements were below CFIN, the maximum low flow days would be 21 in February and 9 in March.

The potential risk to fish associated with a period of reduced flow, below CFIN threshold, for February and March can be categorized as potentially either effecting Rainbow Trout overwintering or Kokanee egg incubation in lower Davidson Creek. This is supported by the life history information collected in Davidson Creek during the baseline surveys in 2011 and 2012 (Table 2, AMEC, 2015; Palmer, 2023b).

Table 2: Species and life stage utilization for Davidson Creek as reported by AMEC (2015).

Species	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainbow Trout	Juvenile overwintering												
	Juvenile rearing and migration												
	Adult migration and spawning												
	Egg incubation												
Kokanee	Adult migration and spawning												
	Egg incubation												



Blackwater Gold

Figure 1.
Davidson Creek Assessment
Site Locations

Project No.	Date	Revision
12009	May 23, 2024	00
Prepared By	Reviewed By	Page Size
TK	SH	11 x 17



- Overwintering RB Abundance
- ▭ BWG Certified Project Footprint
- Transportation**
 - Gravel Road
 - Project Access
- Hydrology**
 - ~ Streams
 - ☪ Lake
 - ▭ Indian Reserve

Figure 2

0	750	1,500	2,250
m			
Scale: 1:40,000			
Projection: NAD 1983 UTM Zone 10N			
Base map Source: ESRI World Imagery			

Disclaimer: This map is a visual aid to be used together with the accompanying report, including and incorporating any disclaimer contained therein. This map illustrates the results of Triton Environmental Consultants Ltd. work, and is not to be used for navigation. Information shown on this map is based, in whole or in part, on geographic information that may have been provided by third parties, including government data. Triton Environmental Consultants Ltd. disclaims (without limiting the generality of the foregoing) all responsibility for the accuracy of any such third party information, regardless of the source.





3.1 Rainbow Trout Overwintering

The flows within Davidson Creek did not cease but were reduced, to approximately 0.02m³/s in February and 0.05m³/s in March, from the CFIN threshold of 0.07m³/s at the monitoring location DC-05. This reduction in flow would likely cause water elevations in Davidson Creek to also reduce, although not measured at the time of the event.

During the winter months Rainbow Trout, primarily overwinter in the deeper pools of Davidson Creek and are less likely to be found in the margins. This behaviour would reduce the likelihood of individuals being stranded due to a reduction in water elevation. BW Gold completed fish stranding and stream dewatering bank walks daily at DC-05 for at least 100m, with no observations of dewatering or fish stranding (BWG, 2025a; BWG, 2025b). At DC-05 flows continued through the period of reduced flow, mitigating any potential for Davidson Creek to freeze to the bottom.

Triton Environmental Consultants Ltd. (Triton), on behalf of BW Gold, were completing Rainbow Trout overwintering field assessments in Davidson Creek between March 4th and 11th in association with the long-term monitoring requirements set out in the Federal Decision Statement Condition 3.14. Established monitoring points DC-5-OW, DC-2-OW, and DC-3-OW (Figure 2) were visited March 9th, March 10th, and March 11th respectively (Triton, 2025). As part of the monitoring requirements, underwater cameras are set for up to 60 minutes, water quality and general observations are recorded. Triton noted live juvenile Rainbow Trout were observed at every site, no observations of fish mortality were recorded, and water quality was not a concern (Table 3) (Triton, 2025).

Table 3: Water quality for monitoring sites as reported by Triton (2025).

Site	Date	Pool Location	Depth (m)	Temperature (°C)	DO (%)	DO (mg/L)	Conductivity (µS)	Specific Conductivity (µS)	pH	Turbidity
DC-2-OW	2025-03-10	Head	0.08	0	94.8	13.84	59.7	114.2	7.56	3.64
DC-2-OW	2025-03-10	Middle	0.52	0	90.1	13.15	59.7	114	7.57	4.03
DC-2-OW	2025-03-10	Tailout	0.27	0	94.6	13.82	59.7	114.1	7.55	3.59
DC-3-OW	2025-03-11	Head	0.21	0	91.6	13.38	64.2	122.9	7.54	5.26
DC-3-OW	2025-03-11	Middle	0.35	0	86.7	12.64	64.8	124	7.9	5.45
DC-3-OW	2025-03-11	Tailout	0.19	0	94.3	13.78	64.9	124.1	7.47	5.54
DC-5-OW	2025-03-09	Head	0.09	0.1	94.2	13.73	57.8	110.1	7.84	7.5
DC-5-OW	2025-03-09	Middle	0.3	0.3	93	13.48	57.9	109.6	7.84	3.48
DC-5-OW	2025-03-09	Tailout	0.11	0.3	93.1	13.5	57.8	109.6	7.82	2.85

The dissolved oxygen (DO, mg/L) recorded by Triton (table 3) are similar to the 12.9 mg/L value provided by BW Gold in the March 2025 FAA compliance monitoring report (BWG, 2025b).

A reduction in flow below 0.07m³/s at DC-05 is not outside the parameters of the natural flow drop in Davidson Creek for the month of March with flows only having exceeded the CFIN threshold 35% of the time within the data set between 1981-2020 (Figure 3, Palmer, 2023b). Appendix D: Construction Phase Temporary Minimum Flow Threshold Memo of the FAA application states, “*The proposed temporary threshold is significantly more conservative during winter than it is during summer.*” (page 10, Palmer, 2023b). The CFIN being conservative provides a buffer if flows are reduced to be closer to the mean discharge of approximately 0.06m³/s.

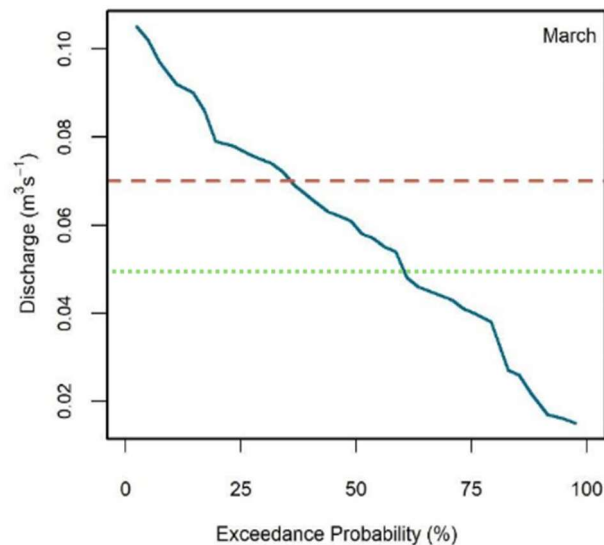


Figure 3: March flow-duration curve (solid blue line) for Davidson Creek, using modelled monthly data (1981-2020). The dashed red line represents CFIN and dotted green line representing lowest flow recorded on March 14th, 2025 (Palmer, 2023b).

Although a similar figure, was not available for February it is likely the historical February flows would be similar to what is has been seen in March. A discharge rate of 0.02m³/s in Davidson Creek has been shown to naturally occur, occasionally.

Flow below the CFIN threshold may reduce the wetted channel width and overwintering pool depth but the risk of causing a significant effect on overwintering Rainbow Trout in Davidson Creek is low as flows downstream were maintained.

3.2 Kokanee Egg Incubation

Kokanee spawning habitat and the location of potential redds is restricted to the lower Davidson Creek area (Figure 1). Lower Davidson Creek will see less influence from reductions in flow at DC-05 due to receiving other water inputs such as, additional groundwater, tributary inputs and runoff. As previously discussed, and seen in figure 3, the reduction of flow down to 0.02 - 0.05m³/s is within the historical range of discharge in upper Davidson Creek.

BW Gold monitors the Kokanee fry spring outmigration through the Aquatic Effects Monitoring Program (AEMP) with one measurement being the calculated total fry abundance for the outmigration period (ERM, 2023). Triton is completing this component of the AEMP in spring 2025 and at the time of writing this memo the results are not available for review.

The risk of causing a significant effect on Kokanee egg incubation in lower Davidson Creek is low, however; it is recommended that the results of the AEMP total fry abundance survey be reviewed to determine if outmigration numbers were within confidence intervals of previous years including the baseline data.



3.3 Fish Habitat

Fish habitat downstream of DC-05 remained in place throughout the reduction in flow in February & March 2025. The temporary reduction in flow down to 0.02 - 0.05m³/s would likely cause a decrease in wetted channel width depending on channel morphology and amount of additional water inputs as you progress downstream.

Any reduction in usable habitat by overwintering Rainbow Trout would be temporary and fall within natural flow fluctuations during the winter months. The risk of a significant effect on fish habitat in Davidson Creek is low.

4. Recommendations

Summary of follow up recommendations:

- 1) Continue to monitor CIFN discharge and Davidson Creek per BW Gold FAA application Appendix D section 6: Proposed Monitoring Strategy (Palmer, 2023b).
- 2) Review the 2025 Kokanee fry total abundance results, compiled by Triton under the AEMP, to see if estimates are within expected confidence range.

5. Conclusion

This memo provides background information on the CIFN, monitoring information collected during the period of reduced flows below the CIFN threshold, follow up recommendations and potential risk to fish and fish habitat.

Table 4: Summary of potential risk of significant effect to fish and fish habitat.

Environmental Aspect	Potential Risk of Significant Effect
Rainbow Trout Overwintering	Low
Kokanee Egg Incubation	Low (with follow up data review)
Fish Habitat	Low

6. Statement of Limitations

This memorandum was prepared for BW Gold Ltd. in connection with the Blackwater Gold Mine Project. The material in this memo reflects Whisky Jack Consulting Ltd. best judgment in light of the information available to us at the time of preparing this memo. Conclusions and recommendations in



this report are based on an analysis of the best available information and professional judgement that is subject to a degree of scientific uncertainty and therefore cannot be used as absolute fact. Whisky Jack Consulting has made the findings and conclusions set out in this report in a manner consistent with the level of care and skill normally exercised by members of the environmental science profession practicing under similar conditions at the time the work was performed.

The report author believes this report to be accurate. However, he cannot guarantee the completeness or accuracy of information supplied to him. Any use which a third party, other than the parties mentioned above, makes of this report, or any reliance on, or decisions to be made based on it, are the responsibility of such third parties. The author accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken.

Prepared By:

Name	Signature	Title	Phone	Date
Robert St. Jean, P.Bio		Senior Biologist, Whisky Jack Consulting Ltd.	587.777.5667	May 29, 2025



7. References

- AMEC. 2015. Blackwater Gold Project – Instream Flow Study. Appendix 5.1.2.6D. Prepared for New Gold Inc.
- BWG. 2025a. *Fisheries Act* Authorization 21-HPAC-01447 - Monitoring Report – February 2025. Prepared by BW Gold Ltd. February, 2025.
- BWG. 2025b. *Fisheries Act* Authorization 21-HPAC-01447 - Monitoring Report – March 2025. Prepared by BW Gold Ltd. March, 2025.
- DFO. 2023. Paragraphs 34.4(2)(b) and 35 (2)(b) *Fisheries Act* Authorization, Path No.: 21-HPAC-01447. Prepared by Fisheries and Oceans Canada., Vancouver, BC. June 30, 2023.
- ERM. 2023. Blackwater Gold Project: Aquatic Effects Monitoring Program Plan, Version 1.0. Prepared for BW Gold Ltd. by ERM Consultants Canada Ltd., Vancouver BC. July, 2023.
- Palmer. 2023a. Blackwater Gold Project Application for Authorization under Paragraph 35(2)(b) of the *Fisheries Act* (Non-Emergency Situations). Prepared by Palmer Environmental Consulting Group Inc., Vancouver, BC. March 7, 2023.
- Palmer. 2023b. Appendix D: Blackwater Fisheries Offsetting Plan, Construction Phase: Temporary Minimum Flow Threshold in Davidson Creek. Memorandum prepared for Blackwater Gold Ltd. by Palmer Environmental Consulting Group Inc., Vancouver, BC. February 23, 2023.
- Triton. 2025. *Email*: RE: Winter Overwintering Assessment. Prepared by Triton Environmental Consultants Ltd. Prince George, BC. May 16, 2025.

Initial Spill Report					
Name & Company:	Samantha Lynch, BWG				
Date & Time Observed:	April 6, 2025 12:00 pm				
Fluid Spilled:	Waste Oil	Fluid Quantity (L)	170 L		
Location & Description of Spill Area	Plant Site Fuel Station (53.181574, -124.852837)				
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes	☐ No
Equipment/Source of Spill:	Waste oil drum				
Circumstances/Cause of Spill:	Waste oil drum tipped over as a result of melting snow and ice it was sitting on.				
Spill Response Actions Taken:	Spill cleanup was initiated immediately - ERT was dispatched to the scene with the spill response trailer, the area was closed to traffic, and 15-20 personnel contributed to the cleanup. The source of the spill was ceased. Run off water was prevented from entering the contaminated area. Spill booms were placed in the ditch line to contain the spill and prevent hydrocarbons from leaving site. Spill pads were placed on the ground where waste oil and sheen were visible. A hydrovac was utilized to remove contaminated water and snow from the ditch line. A backhoe was used to remove contaminated soil from the road.				
Contaminated Material Disposal Methods:	Spill pads and booms were disposed of in hydrocarbon impacted waste bins. Contaminated soil was disposed of in contaminated soil bins. Contaminated water was removed via hydrovac. Final destination of all impacted material is at a licensed off site facility.				
Reportable Spills					
Responsible Persons:	Mark Warbanski				
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	251381	
Date & Time Reported:	April 6, 2025 18:00				
Government Agencies Notified:	BC Spill Hotline				
Government or First Nation Agencies At Spill Site:	None				

Update to Minister/End-of-Spill Report Form

Environmental Emergency Program
SpillReports@gov.bc.ca

This report template can be completed to satisfy the requirements of either the End-of-Spill Report or the Update to Minister Report. Please specify which report you are completing in section I of this form. If any of the fields of this form are not applicable to the spill for which this form is being completed, indicate 'N/A' in the field; reports with incomplete fields will be sent back to the responsible person.

End-of-Spill Report: Section 6 of the Spill Reporting Regulation outlines the requirements for the End-of-Spill Report. Responsible persons must submit a written End-of-Spill Report to the Ministry of Environment and Climate Change Strategy within 30 days following the emergency response completion date of a spill as outlined in section 6 (1) of the Spill Reporting Regulation. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if either of the following two conditions are present:

1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

Complete this form and submit it by email to SpillReports@gov.bc.ca. For additional information, please visit the British Columbia [Environmental Emergency Program Report a Spill webpage](#).

Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report

Name of company representative: Marco Haust

Company name: Artemis Gold Inc.

Email: mhaust@artemisgoldinc.com

Address: 101-139 1st Street East
Vanderhoof, BC, V0J 3A0

Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

Spill Attachments

Spill Photos & Area Photos

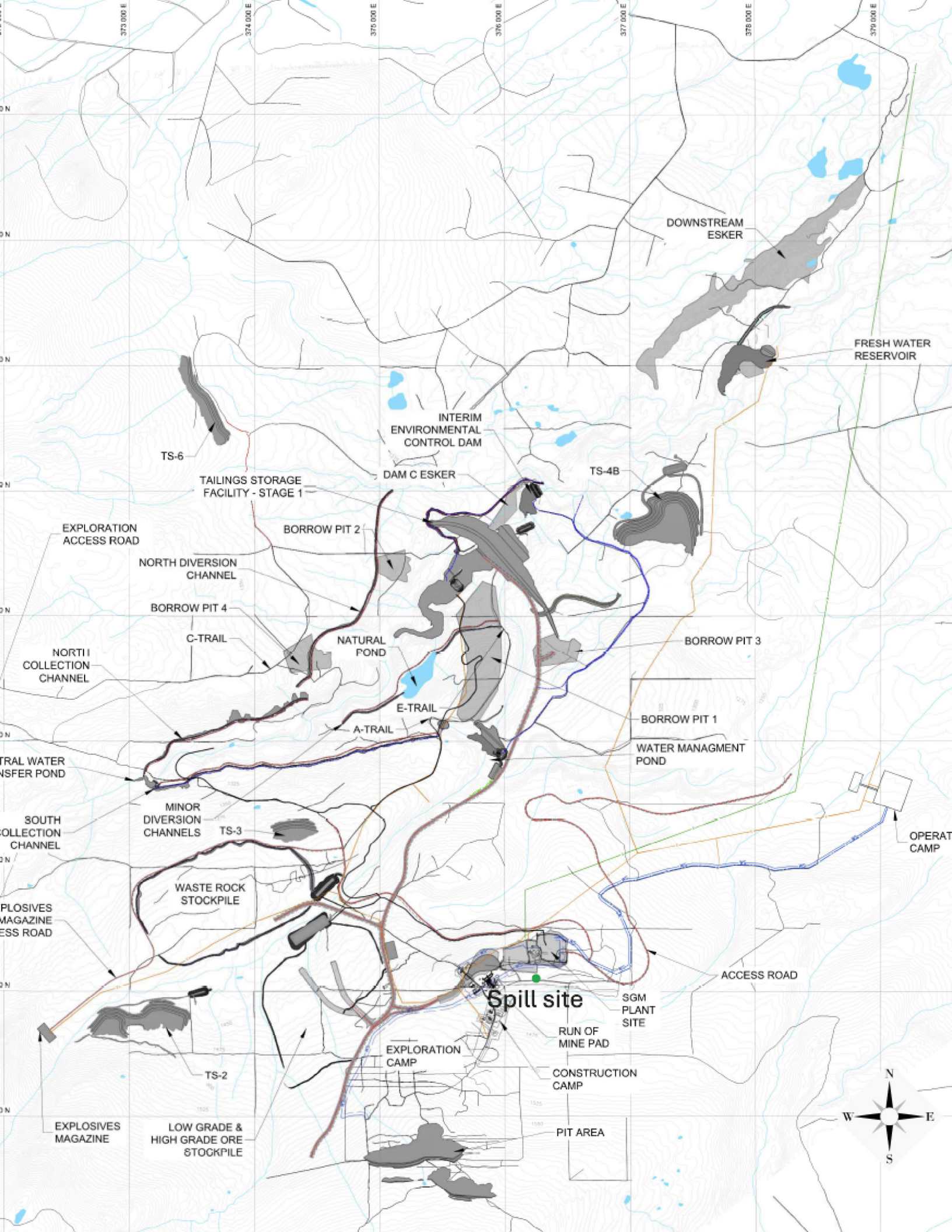












Initial Spill Report					
Name & Company:	Lukas Traude – Blackwater Gold				
Date & Time Observed:	May 14, 2025 19:20				
Fluid Spilled:	Engine Coolant	Fluid Quantity (L)	370 L		
Location & Description of Spill Area	BWG Open Pit 1590 Pit Lat: 53.169376 Long: -124.860044				
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes	☐ No
Equipment/Source of Spill:	Shovel 3601				
Circumstances/Cause of Spill:	Hose clamp wear/failure on main suction line for left engine coolant system.				
Spill Response Actions Taken:	Engine shut off when alarm indicated. Mechanics were called, hose repaired, and coolant measured during top up for fluid quantity. All contaminated material was excavated to dry ground below.				
Contaminated Material Disposal Methods:	Material was moved to the contaminated soil transfer area for processing and disposal.				
Reportable Spills					
Responsible Persons:	Mark Warbanski				
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	251900	
Date & Time Reported:	2025-05-15 07:45				
Government Agencies Notified:	BC Spill Hotline				
Government or First Nation Agencies At Spill Site:	None				

Update to Minister/End-of-Spill Report Form

Environmental Emergency Program
SpillReports@gov.bc.ca

This report template can be completed to satisfy the requirements of either the End-of-Spill Report or the Update to Minister Report. Please specify which report you are completing in section I of this form. If any of the fields of this form are not applicable to the spill for which this form is being completed, indicate 'N/A' in the field; reports with incomplete fields will be sent back to the responsible person.

End-of-Spill Report: Section 6 of the Spill Reporting Regulation outlines the requirements for the End-of-Spill Report. Responsible persons must submit a written End-of-Spill Report to the Ministry of Environment and Climate Change Strategy within 30 days following the emergency response completion date of a spill as outlined in section 6 (1) of the Spill Reporting Regulation. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if either of the following two conditions are present:

1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

Complete this form and submit it by email to SpillReports@gov.bc.ca. For additional information, please visit the British Columbia [Environmental Emergency Program Report a Spill webpage](#).

Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report	Name of company representative: Marco Haust
	Company name: Artemis Gold Inc.
	Email: mhaust@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

DGIR 251900 Attachments



Photo One: Coolant Spill



Photo Two: Spill Clean Up



Photo Three: Spill Clean Up Closeup

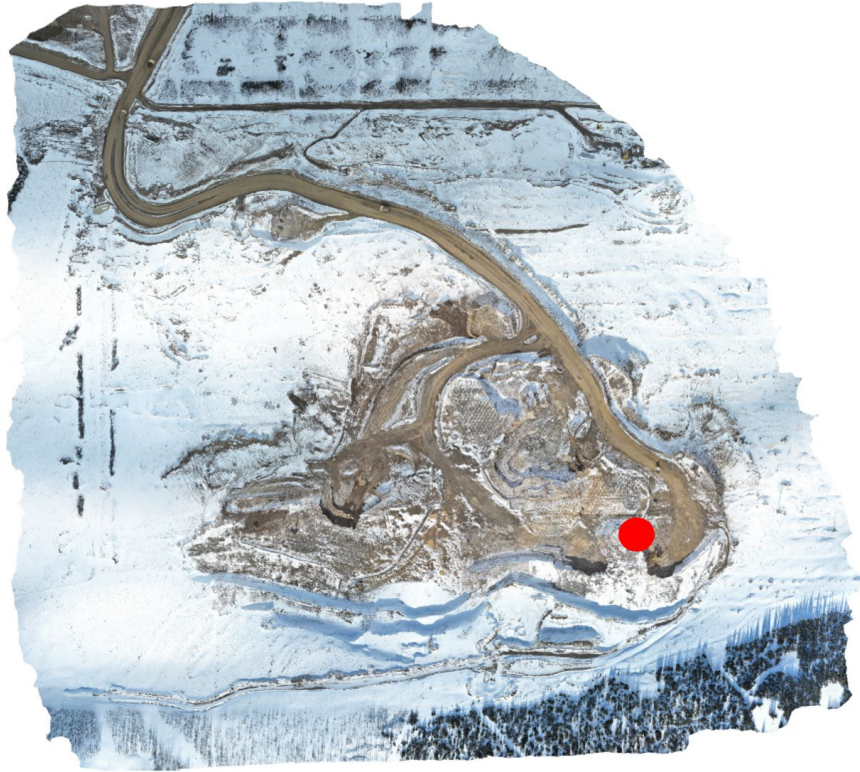


Photo Four: Drone Photo of Spill Location in BWG Open Pit

Initial Spill Report					
Name & Company:	Dan O'Neil - BWG				
Date & Time Observed:	May 17, 2025 – 4:00 PM				
Fluid Spilled:	Coolant/Antifreeze	Fluid Quantity (L)	132		
Location & Description of Spill Area	MSA/Mobile Maintenance Pad				
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes	☐ No
Equipment/Source of Spill:	Haul Truck 1504				
Circumstances/Cause of Spill:	Coolant hose failure, line from engine to cab.				
Spill Response Actions Taken:	Spill response was initiated immediately. Spill was contained with spill cleanup booms, 2.5 gallon buckets to catch spill and spill pads used to clean up material.				
Contaminated Material Disposal Methods:	Spill pads and booms were disposed of in hydrocarbon impacted waste GFL bins. Contaminated material was disposed of in contaminated soil/snow bins.				
Reportable Spills					
Responsible Persons:	Mark Warbanski				
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	251947	
Date & Time Reported:	May 18, 2025 - 8:24 AM				
Government Agencies Notified:	BC Spill Hotline				
Government or First Nation Agencies At Spill Site:	None				

Update to Minister/End-of-Spill Report Form

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1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

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Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report

Name of company representative: Marco Haust

Company name: Artemis Gold Inc.

Email: mhaust@artemisgoldinc.com

Address: 101-139 1st Street East
Vanderhoof, BC, V0J 3A0

Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

Initial Spill Report					
Name & Company:	Steven Hayward, BWG				
Date & Time Observed:	May 28				
Fluid Spilled:	Sewage/Waste Water	Fluid Quantity (L)	250		
Location & Description of Spill Area	Construction Camp Dorm 1				
Spill to:	☒ Ground	☐ Water	Photos Taken:	☐ Yes	☐ No
Equipment/Source of Spill:	Waste Water Pipe under Construction Camp				
Circumstances/Cause of Spill:	Cracked pipe resulted in slow leak				
Spill Response Actions Taken:	Vacuum trucks were mobilized and put through confined space training. Spilt liquid was drained using Hydro-Vac truck and material removed. Hydrated lime was used to disinfect area and fans used to dry area.				
Contaminated Material Disposal Methods:	Waste water was disposed of off-site by 3 rd party vendor with trucks designed for waste water.				
Reportable Spills					
Responsible Persons:	Alan Matthews				
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	252415	
Date & Time Reported:	June 18, 19:00				
Government Agencies Notified:	Ministry of Environment				
Government or First Nation Agencies At Spill Site:	Environmental Assessment Agency				

Update to Minister/End-of-Spill Report Form

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3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

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Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report	Name of company representative: Marco Haust
	Company name: Artemis Gold Inc.
	Email: mhaust@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
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	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

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Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

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Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

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Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

DGIR 252415 Attachments



Photos 1 & 2: Spill Photos



Photo 3: Pipe Failure



Photo 4: Pipe Repair



Photo 5: Spill Clean Up



Photo 6: Spill Clean Up



Photo 7: Drone Photo of Spill Location at BWG Construction Camp

Initial Spill Report					
Name & Company:	Ken Barnes- Orica Canada Inc				
Date & Time Observed:	June 14, Approx 18:00				
Fluid Spilled:	Dry Ammonium Nitrate	Fluid Quantity (L)	500Kg		
Location & Description of Spill Area	Silo pad and ground beside 10U 372362.00m 5893709.00m				
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes	☐ No
Equipment/Source of Spill:	60 Tonne and Silo				
Circumstances/Cause of Spill:	Slide gate operating chain derailed				
Spill Response Actions Taken:	Source of the spill was stopped. Material had a tarp placed over top and weighted down to protect from precipitation. Prills and contaminated material on ground were cleaned up immediately and bagged.				
Contaminated Material Disposal Methods:	Contaminated material was bagged and will be used in future blasts by being placed in bore holes on pattern.				
Reportable Spills					
Responsible Persons:	Ken Barnes				
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	252356	
Date & Time Reported:	15:11, 15-June-2025				
Government Agencies Notified:	Ministry of Environment				
Government or First Nation Agencies At Spill Site:	N/A				

Update to Minister/End-of-Spill Report Form

Environmental Emergency Program
SpillReports@gov.bc.ca

This report template can be completed to satisfy the requirements of either the End-of-Spill Report or the Update to Minister Report. Please specify which report you are completing in section I of this form. If any of the fields of this form are not applicable to the spill for which this form is being completed, indicate 'N/A' in the field; reports with incomplete fields will be sent back to the responsible person.

End-of-Spill Report: Section 6 of the Spill Reporting Regulation outlines the requirements for the End-of-Spill Report. Responsible persons must submit a written End-of-Spill Report to the Ministry of Environment and Climate Change Strategy within 30 days following the emergency response completion date of a spill as outlined in section 6 (1) of the Spill Reporting Regulation. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if either of the following two conditions are present:

1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

Complete this form and submit it by email to SpillReports@gov.bc.ca. For additional information, please visit the British Columbia [Environmental Emergency Program Report a Spill webpage](#).

Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report	Name of company representative: Marco Haust
	Company name: Artemis Gold Inc.
	Email: mhaust@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

DGIR 252356 Attachments



Photo 1: Spill Photo



Photos 2 & 3: Spill Cleanup In Progress



Photo 4: Spill Cleanup



Photo 5: Gate Malfunction



Photo 6: Drone Photo of Spill Location at BWG Orica Laydown



BW Gold Ltd.
Suite 2600 Three Bentall Centre
595 Burrard Street
PO BOX 49314
Vancouver, BC, V7X 1L3

Dear sir or madam:

As per BW Gold's Accidents and Malfunctions Management Plan and Fisheries Act Authorization, please see information below regarding an incident that occurred on the Blackwater Mine.

On June 24, 2025, at approximately 12:20 pm, a slope failure was identified that resulted in the deposition of natural materials (soil, vegetation, etc.) into Davidson Creek. The affected location (10U 377761, 5899065) is sited within the Freshwater Reservoir footprint and spanned a small section of Davidson Creek.

Minimal impact to flow and turbidity in Davidson Creek downstream were identified as a result of the event, with the Creek returning to previous conditions shortly after the occurrence was identified. The location of the incident is within the ultimate footprint of the Freshwater Reservoir in an area that is subject to the Fisheries Act Authorization.

The area will be visually monitored and corrective actions taken if required and only when it is safe to do so. Monitoring will also continue under BW Gold's surface water quality sampling program. Resources at the mine are available to support monitoring and corrective actions as needed. Post-event sampling and monitoring measures that occurred are listed below:

- Bank Walks (800 m)
- Upstream SWQ Sample
- Downstream SWQ Sample
- SWQ Sample at DC-05 (approximately 800 m downstream)
- Gauges placed in downstream (to identify sediment deposition)

Further information will be provided in a 30-day follow up report sent on or before July 25, 2025.

Please do not hesitate to contact the undersigned if there are any further questions.

Kind regards,

Mark Warbanski
Environment Manager
Blackwater Gold Mine



BW Gold Ltd.
Suite 2600 Three Bentall Centre
595 Burrard Street
PO BOX 49314
Vancouver, BC, V7X 1L3

Dear sir or madam:

As per Blackwater Gold's Accidents and Malfunctions Management Plan, the information below acts as the 30-day follow up report to the "Initial Incident Report – June 24, 2025" submitted on June 25, 2025.

On June 24, 2025, at approximately 12:20 pm, a slope failure was identified that resulted in the deposition of natural materials (soil, vegetation, etc.) into Davidson Creek. The affected location (10U 377761, 5899065) is sited within the Freshwater Reservoir footprint and spanned a small section of Davidson Creek. The impacted area is covered under Fisheries Act Authorization 21-HPAC-01447.

While logging in the footprint of the Freshwater Reservoir (FWR), a saturated slope was identified requiring special procedures. The area was hand felled to avoid mechanical equipment in the area. However, during timber recovery, the slope failed, and material entered Davidson Creek below. Approximately 322 m³ of material was estimated to have sloughed.

Flows in Davidson Creek were briefly impacted by material entering the creek. However, flows returned to previous levels shortly after the incident occurred as the creek naturally travelled around the area where material entered the creek walks were completed once environment personnel arrived at the scene and did not identify any stranding or mortalities.

Post incident sampling confirmed minimal impacts to Total Suspended Solids (TSS) differences from upstream to downstream water quality results (tables 1 and 2, respectively), with the exception of immediately post-incident (33 mg/L). Subsequent TSS sampling continued for 5 days post-incident, with similar results (table 4) confirming low impact.

Acute toxicity sampling downstream of the slope failure for both *Daphnia magna* and *Oncorhynchus mykiss* confirmed 100% survival rate and, therefore, no acutely toxic effects as a result of the incident (table 5).

After the incident occurred, the assessment concluded the area was stable and the results of the post-incident sampling confirmed that no significant impacts were observed as a result. Therefore, the area was left in situ and monitored to minimize further impacts to the creek. Fish salvage activities related to the upcoming FWR construction works ensured the affected area was removed of fish on July 20th. Remaining material to be removed will be completed through the construction of the FWR which has commenced.

Post Event Sampling

- Bank Walks (800 m)
 - No stranding or mortalities identified

- Upstream SWQ Sample (Table 1)

Client Sample ID		LS-US
Date Sampled		24-Jun-2025
Time Sampled		14:09
ALS Sample ID		VA25B5533-002
Analyte	Units	Sub-Matrix: Surface Water
Physical Tests (Matrix: Water)		
Conductivity	µS/cm	51.8
Acidity (as CaCO ₃)	mg/L	2.1
Alkalinity, total (as CaCO ₃)	mg/L	26.7
Hardness (as CaCO ₃), dissolved	mg/L	21.6
Hardness (as CaCO ₃), from total Ca/Mg	mg/L	23.6
Solids, total dissolved [TDS]	mg/L	82
Solids, total suspended [TSS]	mg/L	14.8
pH	pH units	7.35

- Downstream SWQ Sample (Table 2)

Client Sample ID		LS-DS
Date Sampled		24-Jun-2025
Time Sampled		14:22
ALS Sample ID		VA25B5533-003
Analyte	Units	Sub-Matrix: Surface Water
Physical Tests (Matrix: Water)		
Conductivity	µS/cm	50.3
Acidity (as CaCO ₃)	mg/L	2.4
Alkalinity, total (as CaCO ₃)	mg/L	23.5
Hardness (as CaCO ₃), dissolved	mg/L	21.3
Hardness (as CaCO ₃), from total Ca/Mg	mg/L	23.6
Solids, total dissolved [TDS]	mg/L	83
Solids, total suspended [TSS]	mg/L	33.0
pH	pH units	7.24

- SWQ Sample at DC-05 (approximately 800 m downstream) (Table 3)

Client Sample ID		DC-05
Date Sampled		24-Jun-2025
Time Sampled		14:39
ALS Sample ID		VA25B5751-001
Analyte	Units	Sub-Matrix: Surface Water
Physical Tests (Matrix: Water)		
Conductivity	µS/cm	53.4
Acidity (as CaCO ₃)	mg/L	2.4
Alkalinity, total (as CaCO ₃)	mg/L	22.6
Hardness (as CaCO ₃), dissolved	mg/L	21.3
Hardness (as CaCO ₃), from total Ca/Mg	mg/L	24.2
Solids, total dissolved [TDS]	mg/L	64
Solids, total suspended [TSS]	mg/L	21.9
pH	pH units	7.42

- Follow Up TSS Monitoring (Table 4)

Location		DC-05	LS-DS	LS-US	DC-05	LS-DS	LS-US	DC-05	LS-DS	LS-US	DC-05	DC-05
SAMPLE_DATE		6/25/2025	6/25/2025	6/25/2025	6/26/2025	6/26/2025	6/26/2025	6/27/2025	6/27/2025	6/27/2025	6/28/2025	6/29/2025
SAMPLETIME		15:42	15:06	15:00	11:20	11:00	11:05	8:14	9:14	9:18	8:30	15:49
TSS	mg/L	11	7.4	12.2	11.3	14.1	9.9	13.9	14.1	17.7	16.6	7.9

- Acute Toxicity (Table 5)

Location		LS-DS
SAMPLE_DATE		6/26/2025
SAMPLETIME		11:00
Daphnia Magna	%	100
Rainbow Trout	%	100



Blackwater
Mine

30 Day Follow up Report

Please do not hesitate to contact the undersigned if there are any further questions.

Kind regards,

Mark Warbanski

Mark Warbanski
Environment Manager
Blackwater Gold Mine

Photo 1. Location of event (indicated in red)

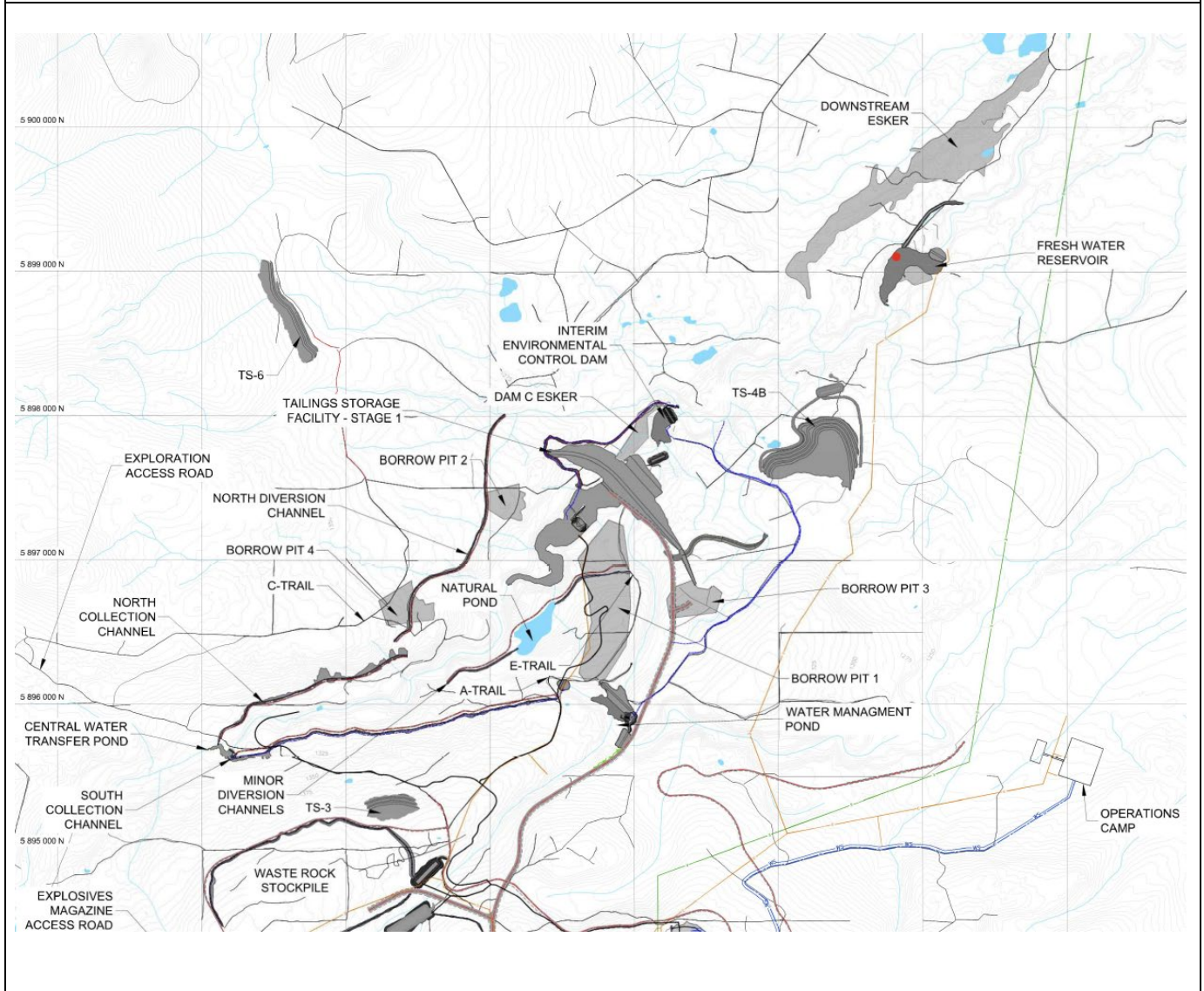


Photo 2. Aerial overview of slope failure impacting Davidson Creek post-incident.



Photo 3. Ground photo depicting water circumventing the failure location and returning to Davidson Creek downstream.



Photo 4. Downstream ground photo of Davidson Creek confirming wetted stream width maintained post-incident.



Photo 5. Downstream ground photo of Davidson Creek confirming wetted stream width maintained post-incident.



Initial Spill Report					
Name & Company:	Steven Hayward – Artemis Gold Inc.				
Date & Time Observed:	July 3, 2025 13:30				
Fluid Spilled:	Processing Plant Slurry	Fluid Quantity (L)	Approx. 50,000		
Location & Description of Spill Area	BWG Processing Plant CIL Tank Farm and Containment Bund				
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes	☐ No
Equipment/Source of Spill:	Hose failure on portable diesel pump				
Circumstances/Cause of Spill:	Diesel pump was transferring slurry from one tank to another when the outflow hose line failed resulting in spilled material reporting to the ground.				
Spill Response Actions Taken:	Pump was immediately shut down, supervisor and environment department were notified. Released material was contained with a dirt bund and clean up was coordinated with a hydro-vac truck. Contaminated material clean up and disposal is currently ongoing.				
Contaminated Material Disposal Methods:	Hydro-vac truck material was disposed on in the BWG Tailings Storage Facility.				
Reportable Spills					
Responsible Persons:	Stephen Morris – Artemis Gold Inc.				
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	252629	
Date & Time Reported:	July 3, 2025 17:45				
Government Agencies Notified:	Ministry of Environment				
Government or First Nation Agencies At Spill Site:	N/A				

Update to Minister/End-of-Spill Report Form

Environmental Emergency Program
SpillReports@gov.bc.ca

This report template can be completed to satisfy the requirements of either the End-of-Spill Report or the Update to Minister Report. Please specify which report you are completing in section I of this form. If any of the fields of this form are not applicable to the spill for which this form is being completed, indicate 'N/A' in the field; reports with incomplete fields will be sent back to the responsible person.

End-of-Spill Report: Section 6 of the Spill Reporting Regulation outlines the requirements for the End-of-Spill Report. Responsible persons must submit a written End-of-Spill Report to the Ministry of Environment and Climate Change Strategy within 30 days following the emergency response completion date of a spill as outlined in section 6 (1) of the Spill Reporting Regulation. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if either of the following two conditions are present:

1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

Complete this form and submit it by email to SpillReports@gov.bc.ca. For additional information, please visit the British Columbia [Environmental Emergency Program Report a Spill webpage](#).

Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report

Name of company representative: Marco Haust

Company name: Artemis Gold Inc.

Email: mhaust@artemisgoldinc.com

Address: 101-139 1st Street East
Vanderhoof, BC, V0J 3A0

Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

Initial Spill Report					
Name & Company:	Adam Scott, BWG				
Date & Time Observed:	8-July-2025, 19:30				
Fluid Spilled:	Diesel	Fluid Quantity (L)	350		
Location & Description of Spill Area	WMP Booster 1				
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes	☐ No
Equipment/Source of Spill:	Fuel hose failure				
Circumstances/Cause of Spill:	Operator of 1 Ton fuel truck was filling booster pump 1. After refueling, the truck was moved with nozzle still in place at booster pump 1. Fuel hose detached and spill to ground occurred				
Spill Response Actions Taken:	Shut off pump, placed spill tray where leak was from container of truck, placed spill pads in positions that would prevent spreading further. Excavator cleaned up contaminated material.				
Contaminated Material Disposal Methods:	Contaminated soil excavated and placed onto tarp until contaminated bins arrived. Contaminated material to be placed into bins and shipped off site for 3 rd party disposal				
Reportable Spills					
Responsible Persons:	Alan Rath				
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	252683	
Date & Time Reported:	9-July-2025, 08:30				
Government Agencies Notified:	Ministry of Environment				
Government or First Nation Agencies At Spill Site:	N/A				

Update to Minister/End-of-Spill Report Form

Environmental Emergency Program
SpillReports@gov.bc.ca

This report template can be completed to satisfy the requirements of either the End-of-Spill Report or the Update to Minister Report. Please specify which report you are completing in section I of this form. If any of the fields of this form are not applicable to the spill for which this form is being completed, indicate 'N/A' in the field; reports with incomplete fields will be sent back to the responsible person.

End-of-Spill Report: Section 6 of the Spill Reporting Regulation outlines the requirements for the End-of-Spill Report. Responsible persons must submit a written End-of-Spill Report to the Ministry of Environment and Climate Change Strategy within 30 days following the emergency response completion date of a spill as outlined in section 6 (1) of the Spill Reporting Regulation. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if either of the following two conditions are present:

1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

Complete this form and submit it by email to SpillReports@gov.bc.ca. For additional information, please visit the British Columbia [Environmental Emergency Program Report a Spill webpage](#).

Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report

Name of company representative: Marco Haust

Company name: Artemis Gold Inc.

Email: mhaust@artemisgoldinc.com

Address: 101-139 1st Street East
Vanderhoof, BC, V0J 3A0

Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location:	Street	
	City	Postal Code

or

DLS or BCNTS (if applicable):	Site ID number (if applicable):
-------------------------------	---------------------------------

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

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Reset Form

DGIR 252683 Attachments



Photos 1: Spill Photo



Photo 2: Spill Photo



Photo 3: Spill Photo



Photo 4: Spill Cleanup Ongoing



Photo 5: Contaminated Material Pile



Photo 6: Spill Clean Up



Photo 7: Spill Clean Up



Photo 8: Drone Photo of Spill Location at WMP Booster 1

Initial Spill Report				
Name & Company:	Jerome Synard Blackwater Gold			
Date & Time Observed:	7/25/2025 7:30AM			
Fluid Spilled:	Tailings Supernatant Water	Fluid Quantity (L)	3000L	
Location & Description of Spill Area	Booster Pump 2 (Reclaim Line) next to A-trail 10U 375243 5895663			
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes ☐ No
Equipment/Source of Spill:	Booster Pump 2 (Reclaim Line)			
Circumstances/Cause of Spill:	During scheduled work to install new HDPE piping workers were instructed to have the pipe drained prior to the maintenance taking place. When work began to install the new flange where the new HDPE pipe would be tied into the current pipe, the head pressure from the drain pushed a gasket out of its seat causing a leak.			
Spill Response Actions Taken:	Spill source was stopped using valves upstream of the leak. Environment notified. Environment took soil samples at affected area. Cleanup initiated and completed. Post-Cleanup soil sample collected.			
Contaminated Material Disposal Methods:	Contaminated material was removed and disposed of in the TSF dump area.			
Reportable Spills				
Responsible Persons:	Mark Warbanski			
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	252905
Date & Time Reported:	7/26/2025 8:40AM			
Government Agencies Notified:	BC Spill hotline			

Government or First Nation Agencies At Spill Site:	None
--	------

Update to Minister/End-of-Spill Report Form

Environmental Emergency Program
SpillReports@gov.bc.ca

This report template can be completed to satisfy the requirements of either the End-of-Spill Report or the Update to Minister Report. Please specify which report you are completing in section I of this form. If any of the fields of this form are not applicable to the spill for which this form is being completed, indicate 'N/A' in the field; reports with incomplete fields will be sent back to the responsible person.

End-of-Spill Report: Section 6 of the Spill Reporting Regulation outlines the requirements for the End-of-Spill Report. Responsible persons must submit a written End-of-Spill Report to the Ministry of Environment and Climate Change Strategy within 30 days following the emergency response completion date of a spill as outlined in section 6 (1) of the Spill Reporting Regulation. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if either of the following two conditions are present:

1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

Complete this form and submit it by email to SpillReports@gov.bc.ca. For additional information, please visit the British Columbia [Environmental Emergency Program Report a Spill webpage](#).

Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report

Name of company representative: Marco Haust

Company name: Artemis Gold Inc.

Email: mhaust@artemisgoldinc.com

Address: 101-139 1st Street East
Vanderhoof, BC, V0J 3A0

Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

Initial Spill Report				
Name & Company:	Adam Scott Blackwater Gold			
Date & Time Observed:	11/26/2025 10:09AM			
Fluid Spilled:	Caustic Soda	Fluid Quantity (L)	Approx. 600L	
Location & Description of Spill Area	BWG Warehouse 10U 376107 5894241			
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes ☐ No
Equipment/Source of Spill:	Caustic soda tote			
Circumstances/Cause of Spill:	Operator was putting totes of caustic soda away into storage sea can and punctured tote in second row with fork of telehandler			
Spill Response Actions Taken:	Spill source was stopped by tilting the punctured section so remaining liquid would not spill out Emergency Response Team notified. Environment notified. Emergency response team responded for safety concerns. Sorbent pads and absorbent organic compound placed on spilt material Berm built around spilt area to contain spill			
Contaminated Material Disposal Methods:	Ongoing			
Reportable Spills				
Responsible Persons:	Steve Conelley			
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	254559
Date & Time Reported:	7/26/2025 12:19PM			
Government Agencies Notified:	Ministry of Environment			
Government or First Nation Agencies At Spill Site:	None			



BW Gold Ltd.
Suite 2600 Three Bentall Centre
595 Burrard Street
PO BOX 49314
Vancouver, BC, V7X 1L3

Dear sir or madam:

As per Blackwater Gold's Accidents and Malfunctions Management Plan, the information below acts as the 30 follow up report to the "Initial Spill Report – November 26th, 2025" submitted on November 27th, 2025.

On November 26, 2025, an operator was placing totes of caustic soda into a storage sea can and punctured a tote in the second row with forks of the telehandler, resulting in a spill amount of 500L to ground. The affected location (10U 376107 5894241) (Image 7) was at the BWG warehouse laydown within the contained plant site footprint.

Source of the spill was stopped by tilting the punctured section up so remaining liquid would not spill out. A portion of the released spill was contained within the sea-can built in secondary containment, and a tertiary berm was constructed around the spill area on construction aggregate ground to further contain the remaining release. Spill response included deploying chemical sorbent pads and absorbent organic compound on spilt material and a vac-truck deployed to remove pooled liquid for disposal in the tailings storage facility. Contaminated material was then excavated with heavy machinery into lined bags and transferred to a lined hazardous containment area for temporary holding. This material was then disposed of through the plant site crusher and processing mill.

There were no adverse environmental effects resulting from this incident with no flora, fauna or watercourses being affected. This incident location on Blackwater Gold's plant site is surrounded by a containment system consisting of collection channels and the plant side sediment control pond. This water is not released to the environment and is pumped into the mill for reuse in processing.

Incident investigation resulted in corrective actions being identified and actioned including:

- Procurement of forklift collars to limit protrusion on other end of tote when handling totes.
- Procurement of materials to raise floor of sea can storage, increasing containment capacity.
- Procurement of materials to install external drain camlock and allow easier access for maintenance of secondary containment.
- Training audit for chemical handling of forklift staff.
- Phase 1A construction package has included installation of caustic soda bulk tank resulting in overall less chemical tote handling.



Blackwater
Mine

30 Day Follow up Report

Please do not hesitate to contact the undersigned if there are any further questions.

Kind regards,

Mark Warbanski

Mark Warbanski
Environment Manager
Blackwater Gold Mine



Image 1: Spill location with telehandler forks holding tote to prevent further spillage



Image 2: Spill location close up



Image 3: Temporary berm constructed to provide tertiary containment for the spill.



Image 4: Clean up of caustic soda within sea-canister with containment.



Image 5: Image of contaminated pile ready to be bagged and collected



Image 6: Lined bags containing contaminated material prior to transfer to hazardous containment area for holding.



Image 7: Map of Caustic Soda Spill

Initial Spill Report				
Name & Company:	Adam Scott Artemis Gold Inc.			
Date & Time Observed:	November 27, 2025 04:45am			
Fluid Spilled:	Hydraulic Fluid	Fluid Quantity (L)	430	
Location & Description of Spill Area	1560 Bench West 53.169870° , -124.870020°			
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes ☐ No
Equipment/Source of Spill:	Hydraulic Leak for the Swing Circuit of SH3601			
Circumstances/Cause of Spill:	Mechanical failure. A hydraulic leak occurred in the swing circuit of the SH3601			
Spill Response Actions Taken:	Truck was shut down, Dispatch was informed. Maintenance was dispatched out to stop the leak. Spill tray placed under area of leak. Deployed absorbent pads around area Lube truck evacuated all surface hydrocarbon had pooled 988 loader collected all soiled material and loaded into 773 HT			
Contaminated Material Disposal Methods:	Loaded onto 773 HT and brought to PAG waste storage area.			
Reportable Spills				
Responsible Persons:	KC Whitney, Artemis Gold Inc.			
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	254581
Date & Time Reported:	November 27, 2025 16:49			
Government Agencies Notified:	Ministry of Environment			
Government or First Nation Agencies At Spill Site:	N/A			

Update to Minister/End-of-Spill Report Form

This report template can be completed to satisfy the requirements of either the End-of-Spill Report or the Update to Minister Report. Please specify which report you are completing in section I of this form. If any of the fields of this form are not applicable to the spill for which this form is being completed, indicate 'N/A' in the field; reports with incomplete fields will be sent back to the responsible person.

End-of-Spill Report: Section 6 of the Spill Reporting Regulation outlines the requirements for the End-of-Spill Report. Responsible persons must submit a written End-of-Spill Report to the Ministry of Environment and Climate Change Strategy within 30 days following the emergency response completion date of a spill as outlined in section 6 (1) of the Spill Reporting Regulation. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if either of the following two conditions are present:

1. The spill entered, or was likely to enter, a body of water as defined in the Spill Reporting Regulation
2. The quantity of the substance spilled was, or was likely to be, equal to or greater than the listed quantity for the listed substance as outlined in the Spill Reporting Regulation

Update to Minister Report: Section 5 of the Spill Reporting Regulation outlines the requirements for the Update to Minister Report. Responsible persons must submit a written report to the Ministry of Environment and Climate Change Strategy as soon as practicable if any of the following three conditions are present:

1. On request of the Minister
2. At least once every 30 days after the date that the spill began
3. At any time that the responsible person has reason to believe that information previously reported in the Initial Report has become inaccurate or incomplete

Complete this form and submit it by email to SpillReports@gov.bc.ca. For additional information, please visit the British Columbia [Environmental Emergency Program Report a Spill webpage](#).

Dangerous Goods Incident Report (DGIR) number:

Section I: Type of report

Sections 5 and 6 of Spill Reporting Regulation

This form is completed to satisfy the requirements of the:

☐ Update to Minister Report

☐ End-of-Spill Report

Section II: Contact information

Section 6 (2) (a) of the Spill Reporting Regulation

Details for person filling out the report

Name of company representative: Marco Haust

Company name: Artemis Gold Inc.

Email: mhaust@artemisgoldinc.com

Address: 101-139 1st Street East
Vanderhoof, BC, V0J 3A0

Telephone number: (778) 916-7314

Details for responsible person Same as above ☐	Name of company representative: Steven Hayward
	Company name: Artemis Gold Inc.
	Email: shayward@artemisgoldinc.com
	Address: 101-139 1st Street East Vanderhoof, BC, V0J 3A0
	Telephone number: (778) 916-6248
Details for owner of the substance spilled Same as above ☐	Name of company representative: Ben Doxtator
	Company name: Orica Canada
	Email: ben.doxtator@orica.com
	Address: 800 Mission Flats Road Kamloops, BC, V2C 1A9
	Telephone number: (672) 983-3876

Section III: Timing of the spill

Section 6 (2) (b) of the Spill Reporting Regulation

Date of spill: 2025-01-17	Time of spill: 13:30	Duration of the spill (days): 1
Date reported: 2025-01-18	Emergency response completion date ¹ : 2025-01-17	

Section IV: Site description

Section 6 (2) (c) (d) of the Spill Reporting Regulation

Provide a description of the spill site and the sites affected by the spill. The description of the spill site may include a description of the receiving environment, the proximity to a nearby city/town/roadway, the type of vegetation in the area, how densely populated the area is, accessibility to spill site, nearby waterways, and any other defining characteristics of the area.

Spill site was the Ammonium Nitrate Emulsion (ANE) transfer area, in the Orica Facility at Blackwater Mine. Material affected was construction aggregate used to build the laydown. There is no vegetation in the area and no flora or fauna were affected by the spill. The nearest waterway is Creek 704, roughly 200m East of the spill site. The watercourse is non fish bearing and serves to fill a water management pond. The water is not released downstream.

Latitude: Degrees 53 Minutes 10 Seconds 35.7168

Longitude: Degrees -124 Minutes 54 Seconds 31.4424

or

Site civic address or location: Street City Postal Code

or

DLS or BCNTS (if applicable): Site ID number (if applicable):

¹ For the definition of the emergency response completion date, please refer to [B.C. Reg. 187/2017 Spill Reporting Regulation](#)

Section V: Description of the source, type, and quantity of the spill**Section 6 (2) (e) (f) of the Spill Reporting Regulation**

Description of the source of the spill (pipeline, rail, truck, facility, etc.):

Mobile mixing unit tank was left unattended and overflowed while transferring Ammonium Nitrate Emulsion.

Type of substance spilled (common name): Ammonium Nitrate Emulsion (ANE)

United Nations (UN) number of substance spilled (if applicable): 3375

Item number from the table in the Schedule in the Spill Reporting Regulation: Item 1, TDG Class 2.9

Quantity (in litres or kilograms) of the substance spilled – if the quantity is unknown, provide a reasonable estimate and explain why the quantity is unknown and cannot be determined: 340 kg

Section VI: Description of the circumstances, cause, and impacts of the spill**Section 6 (2) (g) (i) (ii) (iii) of the Spill Reporting Regulation**

Provide a description of the activity during which the spill occurred (transportation, transfer of cargo, fuelling, cleaning, maintenance, etc.):

Spill occurred during transfer of ANE from storage into mobile mixing unit (MMU).

Provide a description of the incident leading to the spill (tank rupture, overfill, collision, rollover, derailment, fire, explosion, etc.):

MMU operator noticed MMU filling slower than usual, and left MMU to check/adjust pump speed and not watching the tank fill level. Tank overflowed as a result.

Provide a description of the underlying cause of the spill (human error, external conditions, organizational or management failure, etc.):

Organizational failure - No remote pump controls to ensure operator has direct physical control of pump. Procedure is

Section VII: Impacts to human health, the environment, and infrastructure**Section 6 (2) (g) (iv) (v) of the Spill Reporting Regulation**

Describe any adverse effects of the spill on human health (please state 'N/A' if there were no adverse effects on human health): N/A

Number of people evacuated: N/A

Number of fatalities: N/A

Number of people injured: N/A

Describe any adverse impacts on infrastructure² (please state 'N/A' if there were no adverse impacts to infrastructure): N/A

Impacts to water

Was there an impact to a body of water? ☒ Yes ☐ No

² For the definition of *infrastructure*, refer to section 91.1 of the [Environmental Management Act 2003](#)

Description of impact:	
Describe the body of water (stream, aquifer, fish habitat, naturally formed body of water, ditch, lake, etc.):	
Name of body of water:	
Impacts to the environment	
Was there an impact on flora (vegetation)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of the impact on flora (oiled, removed, etc.):	
Was there an impact on fauna (animals)? ☐ YES ☐ NO	If yes, list the common and species names:
Provide a description of impact on fauna (include injured, dead, etc.):	
Was there an impact on aquatic and/or terrestrial habitats? ☐ YES ☐ NO	If yes, list the type of habitat (riparian, breeding ground, etc.):
Provide a description of impact on aquatic and terrestrial habitats, including response actions taken to restore any of the impacts listed:	

Section VIII: Spill response actions**Section 6 (2) (h) of the Spill Reporting Regulation**

Action taken to comply with section 91.2 of the <i>Environmental Management Act 2003</i>	Who took the action (company, person, contractor, etc.)	Date that the action was taken (click the arrow or enter the date using the format YYYY-MM-DD)
Pump was shut off and spill response initiated. Emulsion was loaded into bags which were placed in a tote. Affected ground was excavated and also placed into bags.	Orica Canada	2025-01-17
Emulsion and contaminated material will be disposed of by including in scheduled blasts at Blackwater Mine.	Orica Canada	2025-01-22

Section IX: Waste disposal (please state 'N/A' if no waste was produced)**Section 6 (2) (i) of the Spill Reporting Regulation**

List the type of waste	Method of disposal	Location of disposal
Contaminated material	Blasting	Blackwater Mine Ore Body

Section X: Attached reports, maps, and photographs**Section 6 (2) (j) (k) of the Spill Reporting Regulation**

Report of results of sampling, testing, monitoring, and/or assessing carried out during spill response actions (including reports from Qualified Professionals), if applicable	Copy attached ☐
Map of the incident site and areas surrounding the incident site (required)	Copy attached ☒
Photographs of the spill (required)	Copy attached ☒

Section XI: Agencies on scene or notified**Section 6 (2) (l) (m) of the Spill Reporting Regulation**

List the names of all agencies that were at the incident site:
No provincial or federal agencies were on site.

List the names of other persons or agencies that were advised about the spill:

N/A

Section XII: Additional comments

Orica Canada and Blackwater Gold completed an investigation and determined the below action items were necessary to prevent similar incidents in the future.

1. Install remote start/stop controls to use from top of MMU.
2. Install an indicator light to indicate pump is in operation.
3. Update work procedure to include communicate if using two operators or if not remote is available.
4. Post new pump procedures at pumping station.
5. Review revised procedure with all operators.
6. Management & SHES to follow up and ensure all critical actions are completed and verified.

Section XIII: Verification of information provided

I confirm that the above information is true and complete.

Name of person completing form:

Marco Haust

Date completed (YYYY-MM-DD)

2025-01-22

Name of responsible person (person or company):

Steven Hayward

Date completed (YYYY-MM-DD)

2025-01-22

Section XIV: Approval - For internal use only

Reviewed by:

Date completed (YYYY-MM-DD)

Save

Reset Form

DGIR 254581 Attachments

Photos:



Photo 1: Immediate Spill photo



Photo 2: Immediate Spill photo



Photo 3: After image of cleaned up spill area (in daylight)



Photo 4: After image of cleaned up spill area (in daylight)



Photo 5: Contaminated material pile prior to removal



Photo 6: Hydraulic hose failure



Photo 7: Spill location map

Initial Spill Report				
Name & Company:	Matthew Davis Blackwater Gold			
Date & Time Observed:	12/06/2025 10:15AM			
Fluid Spilled:	Caustic Soda	Fluid Quantity (L)	Approx. 200L	
Location & Description of Spill Area	BWG Warehouse/ RSC5 Reagent Seacan 10U 376134 5894248			
Spill to:	☒ Ground	☐ Water	Photos Taken:	☒ Yes ☐ No
Equipment/Source of Spill:	Caustic soda tote			
Circumstances/Cause of Spill:	Operator was placing tote of caustic soda in reagents seacan and punctured a tote behind the one he was placing with the tip of his zoom boom fork that was protruding past the tote that he was placing.			
Spill Response Actions Taken:	Spill source was stopped by tilting the punctured section so remaining liquid would not spill out Emergency Response Team notified. Environment notified. Emergency response team responded for safety concerns. Sorbent socks placed around the area to contain the spill. Vac truck removed liquid caustic soda from the secondary containment that the tote was stored in as well as the puddle of liquid caustic soda that went to ground.			
Contaminated Material Disposal Methods:	Ongoing			
Reportable Spills				
Responsible Persons:	Greg Morgan Monty Lewis			
Reported to Spill Hotline	☒ Yes	☐ No	DGIR #	254688
Date & Time Reported:	12/6/2025 5:00PM			
Government Agencies Notified:	Ministry of Environment			
Government or First Nation Agencies At Spill Site:	None			

BW Gold Ltd.
Suite 2600 Three Bentall Centre
595 Burrard Street
PO BOX 49314
Vancouver, BC, V7X 1L3

Dear sir or madam:

As per Blackwater Gold's Accidents and Malfunctions Management Plan, the information below acts as the 30 follow up report to the "Initial Spill Report - December 6, 2025 - DGIR 254688" submitted on December 7th, 2025.

On December 6th at approximately 10:15 am, an operator was placing tote of caustic soda in reagents seacan and punctured a tote behind the one he was placing with the tip of his zoom boom fork that was protruding past the tote that he was placing, resulting in a spill to ground. Initially estimated at 200 L. Following initial clean up and containment, it was noticed that the caustic soda had breached the initial containment area, resulting in an update to the estimated quantity to a total of 500 L. This was not initially accounted for owing to snow-covered ground. The affected area was on the south side of the BWG warehouse contained on the Plant Site footprint.

The spill source was stopped by tilting the tote so that the remaining liquid would not spill out. The caustic from the tote was spilled initially into a secondary containment portion of the seacan that the tote was in but then overflowed to ground. Spill response included placing sorbent socks around the ground affected area and a vac-truck was deployed to remove the liquid from the secondary containment as well as the pooled liquid on the ground outside of the seacan. The contaminated material from the vac-truck was taken to the mill and processed there. The liquid that remained had breached the initial containment area and was excavated with heavy machinery as well as the initial spill area within the containment. The excavated material was put into a wiggle wagon and was disposed of through the plant site crusher and processing mill.

There were no adverse environmental effects resulting from this incident with no flora, fauna or watercourses being affected. This incident location on Blackwater Gold's plant site is surrounded by a containment system consisting of collection channels and the plant side sediment control pond. This water is not released to the environment and is pumped into the mill for reuse in processing.

Incident investigation resulted in corrective actions being identified and actioned including:

- Procurement of forklift collars to limit protrusion on other end of tote when handling totes.
- Procurement of materials to raise floor of sea can storage, increasing containment capacity.
- Procurement of materials to install external drain camlock and allow easier access for maintenance of secondary containment.
- Training audit for chemical handling of forklift staff.
- Phase 1A construction package has included installation of caustic soda bulk tank resulting in overall less chemical tote handling.



Blackwater
Mine

30 Day Follow up Report

Please do not hesitate to contact the undersigned if there are any further questions.

Kind regards,

Mark Warbanski

Mark Warbanski
Environment Manager
Blackwater Gold Mine

DGIR 254688 Attachments



Photo 1: Spill Photo (12/6/2025)



Photo 2: Spill Photo (12/6/2025)



Photo 3: Spill Photo (12/6/2025)



Photo 4: Cleanup (Vac Truck) photo (12/6/2025)



Photo 5: Cleanup (Vac Truck) photo (12/6/2025)



Photo 6: Cleanup (Vac Truck) photo (12/6/2025)



Photo 7: Spill photo (12/7/2025)



Photo 8: Spill cleanup (12/9/2025)



Photo 9: Post Cleanup (12/11/2025)



Photo 10: Post cleanup (12/11/2025)



Photo 11: Post cleanup (12/11/2025)



Photo 12: Post cleanup (12/11/2025)



Photo 13: Spill location