ATTACHMENT B WATER MANAGEMENT PLAN

GOOSE MINE

WATER MANAGEMENT PLAN
V.6.0

DATE
June 2026



DOCUMENT HISTORY

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6	June 2026	N/A	Updated to reflect changes in operations in WRSAs and stockpiles, removal of TSF WRSA, updated geochemical criteria for some deposits, and minor adjustments to roles and responsibilities; submitted to the NWB.

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ACRONYMS AND ABBREVIATIONS

AEMP	Aquatic Effects Management Plan
AN	Ammonium Nitrate
ANFO	Ammonium Nitrate Fuel Oil
ARD	acid rock drainage
B2Gold Nunavut	B2Gold Back River Corp.
CCME	Canadian Council of Ministers of the Environment
DFO	Department of Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
FEIS	Final Environmental Impact Statement
LOM	lLfe of Mine
masl	metres above sea level
ML	Metal Leaching
MLA	Marine Laydown Area
MDMER	Metal and Diamond Mining Effluent Regulations
Mm^3	million cubic metres
WRMP	Waste Rock Management Plan
NH_3	Ammonia
NIRB	Nunavut Impact Review Board
NPAG	Non-Potentially Acid Generating
NWB	Nunavut Water Board
PAG	Potentially Acid Generating
Project	Goose Project
Sabina	Sabina Gold & Silver Corp. (previous Licensee)
SOP	Standard Operating Procedure
STP	Sewage Treatment Plant
SSWQO	Site-Specific Water Quality Objectives
SWMP	Saline Water Management Plan
SWP	Saline Water Pond
tpd	tonnes per day

TF	Tailings Facility
TSS	Total Suspended Solids
WIR	Winter Ice Road
WL	Type A Water Licence (2AM-BRP1831 Amendment No. 1)
WMP	Water Management Plan or Plan
WRSA	Waste Rock Storage Area
WTP	Water Treatment Plant

1. INTRODUCTION

The Goose Project (Project) is a gold mine owned by B2Gold Back River Corp. (B2Gold Nunavut) within the West Kitikmeot region of southwestern Nunavut. It is situated approximately 400 kilometres (km) southwest of Cambridge Bay, 95 km southeast of the southern end of Bathurst Inlet, and 520 km northeast of Yellowknife, Northwest Territories (Figure 1.1-1). The Project is located predominantly within the Queen Maud Gulf Watershed (Nunavut Water Regulations, Schedule 4).

The Project is comprised of two main areas with an interconnecting approximately 160 km long winter ice road (WIR): Goose Mine (Figure A-01) and the Marine Laydown Area (MLA), which is situated along the western shore of southern Bathurst Inlet. The majority of annual resupply will be completed using the MLA and the WIR interconnecting these sites seasonally when needed.

The Water Management Plan (WMP or Plan) outlines the procedures necessary to manage the quality and quantity of water interacting with Project components throughout the Construction, Operations, Closure and Post-Closure phases of the Project.

The focus of the Plan is to control the inventory of mine water stored on site, and to enhance the separation of saline, contact, and non-contact water. Water management at the Goose Mine entails multiple, codependent components, which include water storage facilities and water conveyance facilities.

The WMP plan is a living document to be updated upon significant changes in related regulatory requirements, engineering design, management reviews, incident investigations, changes to facility operation or maintenance, and environmental monitoring results, best practice updates or other Project -specific protocols once Construction starts through to Project closure activities. Any updates will be filed with the Annual Report submitted under the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part B, Item 12, and Schedule B).

This update of the WMP focuses on the Goose Mine and on the operations, closure and post-closure phases of the Project. The Construction Phase is completed; information about activities that occurred during the Construction Phase are provided separately, as part of the annual reporting. No updates are required for the MLA. This update is provided to reflect changes in operations with changes in WRSAs and stockpiles, removal of TSF WRSA, updated geochemical criteria for some deposits, and minor adjustments to roles and responsibilities.

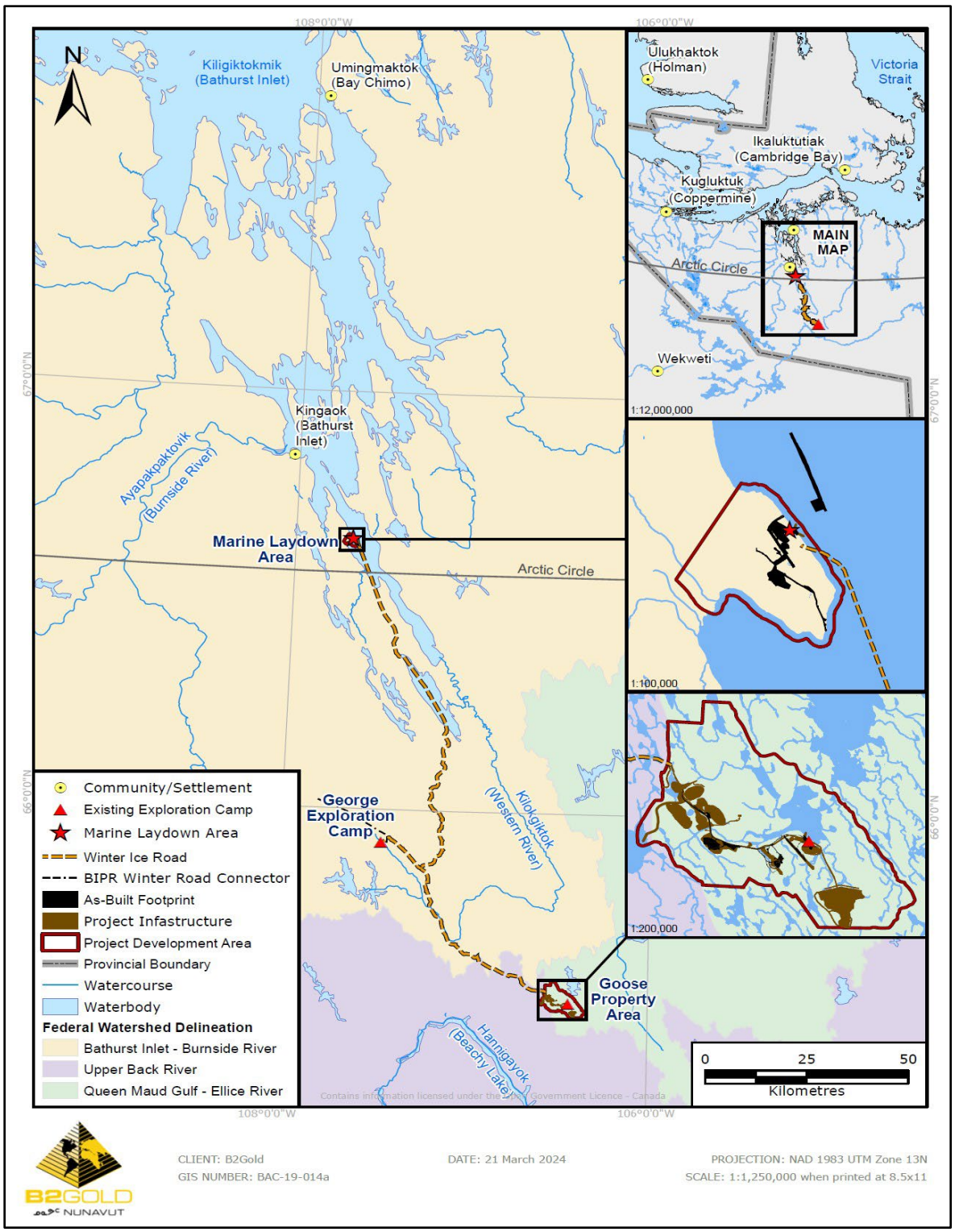


Figure 1.1-1 Goose Project Overview

2. SCOPE AND OBJECTIVES

The WMP is the key document that forms part of B2Gold Nunavut's overall Water Management Program for the Project. The Plan has been written to meet the requirements of the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part B, Item 13m and Item 13q).

This plan is divided into the following components:

- Applicable Legislation and Guidelines (Section 3);
- Roles and Responsibilities (Section 4);
- Planning and Implementation (Section 5);
- Water Modelling and Design Criteria (Section 6);
- Water Management (Section 7);
- Water Management Phases (Section 8);
- Environmental Protection Measures (Section 9);
- Monitoring Program (Section 10);
- Environmental Reporting (Section 11); and
- Adaptive Management (Section 12).

This Plan describes the procedures necessary to manage the quality and quantity of water interacting with Project components throughout the Construction, Operations, Closure, and Post-Closure phases of the mine. The Construction Phase is completed. A summary of the main activities that occurred during the Construction Phase are included in the WMP; additional information about the activities that occurred during the Construction Phase are provided separately, as part of the annual reporting.

The key water management objectives for the Project include:

- Minimizing the impact of mining activities on the aquatic environment surrounding the mining area to the greatest reasonable extent;
- Managing contact, non-contact, and saline water separately in order to minimize freshwater withdrawal from Goose Lake and Big Lake;
  - Non-contact water is directed away or around the Project site whenever possible;
  - Collecting and treating contact water as required to meet Site-Specific Water Quality Objectives (SSWQOs) in the receiving environment;
  - Saline water is kept separate from contact water;
- Ensuring settlement of suspended solids prior to discharge to the environment to meet SSWQOs;
- Monitoring and controlling water flows to reduce risk of erosion;
- Maintaining water management features in good working order;
- Documenting all monitoring and maintenance activities associates to water management structures
- Using BMPs, recognizing the unique constraints of each Project element;
- Providing a reliable water supply to the Process Plant; and

- Facilitating mining operations by managing inflows that occur as a result of groundwater or direct precipitation.

The WMP provides a description of the proposed strategies to achieve the objectives, including:

- A summary of the physical setting at the mine site;
- A description of mine development;
- A summary of water treatment and water supply locations and requirements throughout the life of mine (LOM), including sewage disposal facilities;
- Water quantity thresholds and water quality objectives and discharge criteria;
- A summary of water management infrastructure design;
- A description of the water management at the mine site during Construction, Operations, and Closure;
- A summary of the Water and Load Balance model;
- A summary of environmental protection measures;
- A description of the mine site water quality monitoring program; and
- An overview of mitigation and adaptive management.

The Plan is structured to help ensure that the Project is built as proposed; predicted adverse environmental effects are promptly mitigated; the applied mitigation measures are successful; and relevant regulatory requirements, commitments, laws and regulations are met. It outlines procedures for the reassessment, improvement, or reorientation of the Plan if determined at any point in the Project's Phases that it no longer meets the initial purpose or objective.

Results of monitoring identified in this Plan will be publicly reported and may feed into other ongoing regional initiatives or programs with relevant government organizations, or regional authorities.

2.1 RELATED PLANS OR STUDIES

The WMP should be read in conjunction with the following key Plans, which have been approved for implementation by the Nunavut Water Board (NWB) in accordance with the requirements of the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part B, Item 13, , and Item 14):

- Road Management Plan;
- Saline Water Management Plan;
- Borrow Pit and Quarry Management Plan;
- Ore Storage Management Plan;
- Waste Rock Management Plan;
- Tailings Management Plan;
- Landfill and Waste Management Plan;
- Landfarm Management Plan;
- Environmental Management and Protection Plan;

- Aquatic Effects Management Plan;
- Fish Offsetting Plan;
- Quality Assurance/Quality Control Plan; and
- Interim Closure and Reclamation Plan.

The following reports and studies have also informed the development of the WMP:

- Geochemical Characterization Report (Sabina 2017, Appendix E-3);
- Tailings Management System Design Report (Sabina 2017, Appendix F-4);
- Hydrogeological Characterization and Modelling (Sabina 2017, Appendix F-5);
- Geotechnical Design Parameters Report (Sabina 2017, Appendix F-2);
- Hydrology Report (Sabina 2015, Appendix V2-7B); and
- Hydrology Update Memo (SRK 2021).

3. REGULATORY REQUIREMENTS AND COMMITMENTS

The WMP has been prepared to comply with existing regulations and follow the applicable guidelines provided by the federal government and the government of Nunavut.

Specific legislation, regulations, and guidelines related to water management in Canada, and specifically within Nunavut, that B2Gold Nunavut will have to comply with are also summarized in Table 3-1.

The Project is also bound by the requirements of the Back River Project Certificate, No. 007, the Type A Water Licence, 2AM-BRP1831, and various permits, including the land use permits issued by the Kitikmeot Inuit Association for Inuit Owned Land.

The Plan development also considered the Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories issued by the MVLWB and AANDC (MVLWB/INAC/GNWT 2017).

Table 3-1. Applicable Legislation to Water Management in Nunavut

Acts	Regulations	Guidelines
Federal		
Canadian Environmental Protection Act (CEPA; 1999)		
Nunavut Waters and Nunavut Surface Rights Tribunal Act (2002)	Nunavut Water Regulations (2013)	
Territorial Lands Act (1985)	Territorial Land Use Regulations (CRC, c.1524) Northwest Territories and Nunavut Mining Regulations (CRC, c.1516)	Implications of Global Warming and the Precautionary Principle in Northern Mine Design and Closure (BGC 2003)
Fisheries Act (R.S.C., 1985, c. F-14)	Metal and Diamond Mining Effluent Regulations (SOR/2002-222)	Fisheries and Fish Habitat Protection Policy Statement (Department of Fisheries and Oceans Canada (DFO) 2019a) Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the *Fisheries Act* (DFO 2019b) DFO Measures to Protect Fish and Fish Habitat (DFO 2019c), including those for the Timing Window to Conduct Projects In or Around Water, Sediment Control, and other applicable measures (DFO Standards and Codes of Practice (DFO 2020), including those for End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater (also see DFO 1995), Culvert Maintenance, Temporary Stream Crossings, and other applicable standards Fisheries Productivity Investment Policy: A Proponent Guide to Offsetting (2013) Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut (DFO 2010)

Acts	Regulations	Guidelines
		Freshwater Intake End-of-Pipe Fish Screen Guideline (DFO 1995) Method for Determining Available Winter Water Volumes for Small-Scale Projects (April 27, 2020, MVLWB)
Territorial – Nunavut		
Nunavut *Environmental Protection Act* (1988)	Spill Contingency Planning and Reporting Regulations (R-068-93)	Government of Nunavut (GN) Environmental Guidelines where applicable (various):https://www.gov.nu.ca/environment/information/documents/195%2C184
Public Health Act (2016); Amended 2018	Public Water Supply Regulations (RRNWT. 1999, c.P-23) Public Sewerage Systems Regulations (RRNWT. 1999, c.P-22)	
Mine Health and Safety Act (SNWT (Nu) 1994, c.25)	Mine Health and Safety Regulations (R-125-95)	

4. ROLES AND RESPONSIBILITIES

The General Manager:

- Has ultimate responsibility for the site and success of the Plan;
- Approves all relevant policies and documents, auditing, action planning, and the verification process;
- Ensures safe operation, maintenance, and monitoring of water facilities; and
- Provides the resources needed for adequate implementation of WMP.

The Operation, geotechnical, EOR, or Engineering Manager:

- Conducts or directs periodic and documented inspections of embankments, water storage facilities (e.g., tailings storage facility or TSF), water treatment facility, dam inspections, lake dewatering activities, saline water storage, pit flooding, contact water management activities;
- Provides oversight and technical support of engineering matters and responsibilities;
- Conducts or directs periodic and documented inspections of embankment, water seepage and drainage systems;
- Ensures the influx of water into a mine is well understood and is regularly managed by standard operating procedures (SOPs) in operating mine;
- Reviews inspection results and provide recommendations for engineering improvements as needed;
- Holds the professional responsibility for the water management facility design; and
- Conducts dam safety inspection, dam safety reviews.

The Environmental Manager is:

- Responsible for the implementation of this Plan
- Ensures compliance with all permit requirements, regulations, policies, guidelines, including environmental concerns, internal and external reporting;
- Provides expertise for all decisions regarding the protection of the environment;
- Ensure appropriate monitoring and inspections are performed as required.

5. PLANNING AND IMPLEMENTATION

Water is an essential component of any mine. Understanding the existing physical setting and the overall mine development plan are essential components for the development of an effective WMP for the Project.

5.1 PHYSICAL SETTING

5.1.1 TOPOGRAPHY

The topography of the region is dominated by undulating landscapes of low relief that present in a sequence of smooth, non-linear rises and hollows, and elongated rises and valleys that repeat in a wavelike pattern. Slopes are generally uniform and range between 0 and 5%. Terrain elevation ranges between 300 and 700 metres above sea level (masl) in the region.

Uplands are typically covered by veneers of morainal materials deposited on Precambrian, sedimentary, metamorphic, or intrusive rocks. The thickness of overburden, defined as unconsolidated organic or mineral material, is generally small; thickness is greatest in areas of plains or gentle slopes where it can range from 1 to 37 m (average of 10.8 m). A number of distinct landforms also exist throughout the region, including small and medium sized kettle lakes, eskers, moraines, and boulder fields.

5.1.2 SEISMICITY

The Goose Project is located in an area of low seismic risk. The peak ground acceleration (PGA) for the area was estimated using seismic hazard calculator from the National Building Code of Canada's website (NRCC 2014a). A PGA value of 0.036g was accounted for in the design, which corresponds to the 1:2,475 year seismic event.

5.1.3 PERMAFROST AND GROUNDWATER

The Goose Mine is in the continuous permafrost region of the Canadian Arctic. While permafrost may extend more than 400 metres below the ground surface (mbgs), it is expected that the underground development will extend below the regional permafrost into unfrozen rock and soil. In addition, Llama Open Pit and Llama Underground will occur underneath lakes associated with open talik. Of the proposed developments, groundwater inflow during Operations is expected at Llama Open Pit, and the Llama, Umwelt, Goose Main, and Echo undergrounds. The other developments (i.e., Umwelt, Echo, and Goose Main open pits) are expected to be fully within permafrost and not intersect unfrozen groundwater. Groundwater may flow through the active layer (i.e., the top 1 to 3 m of overburden) during unfrozen months; however, the volume of flow is likely insignificant in comparison to surface water runoff.

As part of the Goose Project, a groundwater model was completed to predict potential groundwater inflows during mining at the Goose Mine; this model was employed in both the Final Environmental Impact Statement (FEIS) (Sabina 2015) and the Type A Water Licence Application (Sabina 2017). The last groundwater model update to predict revised groundwater inflows was completed in 2022 as part of the 2022 Modification Package (WSP Golder, 2022). For the purpose of the update of the WMP presented

herein, the predictions of groundwater inflows included in WSP Golder (2022) were scaled to reflect the updated mine schedule and depth of mine openings (Appendix C). It was also conservatively assumed that saline groundwater inflows to the underground workings will commence with the start of predevelopment activities. A summary of the estimated annual groundwater inflows is summarized in Table 5.1-1 for the developments extending into unfrozen rock.

Table 5.1-1. Goose Mine Groundwater Inflows

Mine Year*	Predicted Groundwater Inflow (m^3/day)				
	Umwelt Underground	Llama Open Pit	Llama Underground	Echo Underground	Goose Main Underground
Y1	0	n/a	n/a	n/a	n/a
Y2	130	75	n/a	n/a	n/a
Y3	160	<50	n/a	n/a	n/a
Y4	160	<50	0	n/a	n/a
Y5	170	<50	120	n/a	n/a
Y6	170	<50	110	n/a	n/a
Y7	160		160	n/a	n/a
Y8	140		160	n/a	10
Y9	130		170	<50	50
Y10	130		160	<50	<50
Y11	130		160	<50	<50
Y12			160	<50	<50
Y13				<50	<50

Source: Scenario 1 in Appendix C
**Relationship between Mine Years and Calendar Years is provided in Table 5.2-1*

Groundwater inflows predicted by the groundwater model and the scaling presented in Appendix C considered the uncertainty in the assumed hydraulic properties for the bedrock based on the field investigation program results. The Scenario 1 of the groundwater inflows was used as the base case for the Water and Load Balance Model (Appendix C). A sensitivity analysis of the Water and Load Balance Model was completed considering Scenario 2 groundwater inflows. The model sensitivity results showed that the proposed saline water management strategy would remain suitable for the Project. B2Gold Nunavut recognizes that there is a chance that groundwater flows in the mines may be dominated by specific fractures or features that are intercepted. This uncertainty exists for all mining projects and is never completely alleviated until structural geology and hydrogeology data is regularly collected from mining operations. The influx of water into a mine is a normal and well understood phenomenon and is regularly managed by SOPs in operating mines.

B2Gold Nunavut is aware of the uncertainty related to fault zones and will safely and appropriately manage groundwater inflows. Actions may include use of surface and underground exploration information to identify enhanced permeability that may be intercepted, advancing cover and probe drilling (i.e., exploration drainage holes), and interpretation of groundwater pressure and inflow data when high permeability formations are encountered.

5.1.4 CLIMATE AND HYDROMETRIC CHARACTERISTICS

Ongoing baseline meteorological and hydrometric programs have been initiated for the Back River Property since 2004. Detailed climate and hydrometric characteristics are presented in the Hydrology Report and the Meteorological Baseline Report (Sabina 2015, Appendix V27B and V4-3A; updated by SRK 2021).

The meteorological analysis for the Project relied on regional characterization using precipitation data from Environment and Climate Change Canada (ECCC), as Project-specific meteorological data did not present winter precipitation measurements. The analysis estimated an undercatch-adjusted mean annual precipitation of 427 mm and a 24-hour probable maximum precipitation of 285 mm (SRK 2021) for the Goose Mine.

Available site data was correlated to the corresponding monthly temperature data at the Lupin Meteorological Services of Canada station using a linear regression analysis. The resulting synthetic temperature record has an average annual temperature of -10°C. The minimum and maximum average monthly temperatures of -29°C and 11°C occur in January and July, respectively. Channel freeze-up generally occurs in late October or early November, and ice break-up generally occurs in May or early June (Sabina 2015, Appendix V4-3A).

Regional wind speed data are not available near the Project area, so mean monthly values were derived from the measured Goose Mine record. The mean annual wind speed on site is approximately 4.4 m/s, with the wind direction exhibiting strong seasonality. The maximum recorded wind gust during the monitoring period was measured at 30.7 m/s or 111 km/h (Sabina 2015, Appendix V4-3A).

The annual long-term lake evaporation (including sublimation) in the region is about 324 mm (Sabina 2015G); the strongest control on evaporation is net radiation. Annual actual evapotranspiration from the tundra is estimated to be approximately 199 mm.

Hydrometric data are currently being collected at 25 stations in the immediate Project area. Of these stations, the Propeller Lake inflow (i.e., PL-H2) and outflow (i.e., PL-H1) stations were deemed to be the most complete and representative for the Goose Mine. The 2011 monitoring year had the longest continuous record, including spring freshet and late summer flows, and was therefore used in the development of long-term synthetic flow series for the Goose Mine area (SRK 2021).

A regional analysis was conducted using 11 hydrometric stations from the Water Survey of Canada to determine regional hydrologic trends. The Baillie River near the Mouth Water Survey of Canada station (10RA002) was found to be the most comparable regional station to the 2011 local hydrometric station records (i.e., PL-H1 and PL-H2). The 25 years of flow data from Baillie River were corrected to the site, generating a continuous flow record for the Goose Mine. The resultant long-term mean annual runoff for the Project area is 149 mm (SRK 2021).

Table 5.1-2 presents the runoff and total precipitation distributions, evaporation, and air temperature characteristics of the Goose Mine. Table 5.1-3 presents the estimated average and extreme values of annual precipitation and runoff for various return periods at the mine site based on frequency analyses.

Table 5.1-2. Summary of Mean Hydrologic Inputs

Month	Runoff Distribution (%) [a]	Precipitation Distribution (%) [a]	Evaporation (b)		Air Temperature (°C) [b]
			Distribution (%)	Mean (mm)	
January	0.0	4.7	0.0	0	-28.7
February	0.0	4.1	0.0	0	-26.6
March	0.0	5.9	0.0	0.1	-25.1
April	0.0	6.2	1.8	5.9	-15.6
May	4.0	6.4	8.0	25.8	-5.1
June	50.5	9.8	29.8	96.4	5.4
July	19.0	12.5	33.1	107.0	11.4
August	8.7	18.2	20.3	65.8	9.3
September	11.9	11.4	6.9	22.4	2.3
October	5.5	9.7	0.1	0.4	-7.3
November	0.4	6.3	0.0	0	-18.4
December	0.0	4.8	0.0	0	-25.4
Annual	100.0	100.0	100.0	323.8	-10.3

(a) Source: SRK 2021 (precipitation and evaporation adjusted to fix rounding errors); (b) Source: Sabina 2020

Table 5.1-3. Summary of Frequency Analysis for Annual Runoff and Precipitation

Hydrological Condition	Return Period	Annual Runoff (mm) [a]	Annual Precipitation (mm) [a] [b]
Wet	200	269	653
	100	258	628
	50	245	601
	20	227	561
	10	210	527
	5	190	486
Average	-	149	427
Dry	5	112	341
	10	92	306
	20	75	278
	50	56	247
	100	44	227
	200	32	209

(a) SRK 2021; (b) An undercatch factor of 1.61 was applied to account for undercatch errors and precipitation measurements

5.1.4.1 CLIMATE CHANGE

Climate change projections over the Goose Project life were developed in SRK 2021. While most surface water management infrastructure will have a short lifespan and be breached as soon as their effective use has been fulfilled, the WRSAs and pits will remain in perpetuity.

The long-term mean air temperature, precipitation, and windspeed are expected to change over the lifespan of the Goose Project. The change relative to the baseline scenario is summarized in Table 5.1-4.

Table 5.1-4. Climate Change Projections

Period	Change with Respect to Baseline [a]		
	Mean Annual Air Temperature	Total Annual Precipitation	Wind Speed
2020s (2011 – 2040)	+2°C	+6%	+2%
2050s (2041 – 2070)	+3.7°C	+11%	+3%
2080s (2071 – 2100)	+5.3°C	+16%	+5%

(a) Source: SRK 2021 and SRK 2015b

5.1.4.2 HYDROLOGY

5.1.4.3 WATERBODY DESCRIPTION

The Goose Project is predominantly located within the Queen Maud Gulf Watershed with a small portion in the Back River Watershed (Nunavut Water Regulations, Schedule 4). The Goose Project is composed of two main areas, the Goose Mine area and the MLA. The WIR connects the two main areas in winter. The majority of proposed infrastructure at the Goose Mine area is within the Queen Maud Gulf Watershed, which flows northwest and enters the ocean on the west side of Bathurst Inlet. The Back River Watershed is located south of the Goose Mine and flows east eventually entering the Arctic Ocean south of Gjoa Haven. The MLA is a narrow strip of land that drains directly to the west side Bathurst Inlet. A list of all waterbodies within the Potential Development Area can be found in Final Environmental Impact Statement (FEIS) Volume 6, Chapter 3 (Sabina 2015).

The Goose Mine is divided by several smaller drainage areas each contributing to the larger, previously described watersheds. These drainage areas are shown on Figure A-02.

5.1.4.4 HYDROLOGICAL PROCESSES

The Goose Project lies within the continuous permafrost zone of the continental Canadian Arctic. The physiography of the region is dominated by vegetated tundra hillslopes with lakes and scattered wetlands. The presence of permafrost is hydrologically influential, as it has very low hydraulic conductivity, and thus acts as a barrier to deep groundwater recharge. This physical restriction tends to increase surface water runoff and decrease infiltration.

Compared to unfrozen regions, permafrost watersheds tend to have higher peak flows and lower baseflows (Kane 1997). Streamflow in the continuous permafrost zone is governed by the Arctic nival regime, where runoff is dominated by high, snowmelt-driven flows in spring (i.e., freshet). Following

freshet, streamflow declines throughout the summer and early fall, with the exception of rare and episodic rainfall-generated runoff (Church 1974).

Channel freeze-up typically occurs between late October and early November. In smaller drainage basins, stream channels typically freeze to their bottom, with zero flow occurring in winter. In larger catchments and larger lake outlets, depth, flow energy, and water turbulence may be sufficient to maintain streamflow and prevent downstream reaches from freezing completely.

Ice begins to form in October and is generally present on lakes until July. Ice depths are typically 1.5 to 2 m and reach maximum depth in February (Fish Offsetting Plan; Sabina 2019a). Shallow water bodies, including most streams in the Goose Project area, generally freeze to bottom over winter.

The maximum daily snowmelt rate was determined to be 28 mm/day (Sabina 2015, Appendix V2-7B). Snowmelt occurs in the month of May and June. The open water season typically starts in July and ends in September; however, there are variations in the length of the open water season year to year (Rescan 2014).

Return period unit peak flows were calculated using the index flood method, and a precipitation-based hydrology model with Soil Conservation Service unit hydrographs and curve numbers. Curve numbers were calibrated for each return period using two smaller regional gauging stations from the Ekati Diamond Mine (Sabina 2015, Appendix V2-7B).

5.2 MINE DEVELOPMENT PLAN

The total mine life of the Project from Construction to the end of Closure is estimated to be approximately 23 years, of which the 3 years of the Construction Phase have been completed. The mine life was divided into four phases as detailed in Table 5.2-1, that provides the mine schedule in both Mine Years and Calendar Years. Mine Years are used throughout the WMP to describe schedule of various events, for consistency with previous versions of the WMP.

Table 5.2-1. Mine Phase

Phase	Description	Start	End	Comment
1	Construction[a]	Y-3, (2022) Q1	Y1, (2025) Q2	*Site construction completed.*
2	Operations – Echo Tailings Facility (TF)	Y1 (2025), Q2	Y5 (2029), Q1	*Milling has begun in June 2025 (Y1); mining continues; tailings deposition in Echo TF*
	Operations – Umwelt TF	Y5 (2029), Q1	Y11 (2035), Q4	*Milling and mining continues; tailings deposition in* Umwelt *TF*
	Operations – Llama TF	Y11 (2035), Q4	Y13 (2037), Q3	*Milling continues; tailings deposition in Llama TF*
3	Closure	Y14 (2038), Q1[b]	Y20 (2044), Q4	*Removal of site infrastructure; pit flooding; continued water treatment*
4	Post-Closure	Y21 (2045), Q1	+	*Site closed; performance monitoring*

(a) Mine Year sequence does not include Year 0; (b) Some closure activities may be initiated in Y13, Q4

The Construction Phase (at both Goose Mine and MLA) have been completed over approximately three years, and included pit excavation and construction of water management structures, as well as pads and roads. Major mine development infrastructure was constructed at both the Goose Mine and the MLA. The design of water management conveyance structures is described in detail in Section 6. For detailed activity descriptions of water management, refer to Section 8.

The major infrastructure at the Goose Mine will include the following:

- Goose Plant Site (Goose Camp Accommodations and Process Plant);
- Ore Stockpile;
- Open pits and underground mine workings (i.e., Echo, Umwelt, Llama, and Goose Main open pits and undergrounds);
- Tailings management facilities – In pit deposition (i.e., Former Echo Open Pit transitioned to Echo Tailings Facility or TF, former Umwelt Open Pit transitioned to Umwelt TF, and former Llama Open Pit transitioned to Llama TF);
- Permanent Waste Rock Storage Areas (i.e., Umwelt WRSA, Llama WRSA, Echo / Goose Main WRSA, Umwelt Overflow WRSA);
- Temporary Waste Rock Storage Stockpiles (i.e. Underground PAG Temporary Stockpile, Temporary NPAG Stockpile)
- Goose Property All-weather Airstrip;
- Saline Water Pond (SWP) (i.e., Umwelt Lake, once dewatered);
- Primary contact water storage pond (i.e., Primary Pond);
- Goose Main Reservoir (i.e., Goose Main Pit as meromictic lake);
- Event ponds (i.e., Llama WRSA Pond, Echo / Goose Main WRSA Pond, Plant Site Pond, Ore Stockpile Pond);
- Freshwater intake systems;
- Landfarm; and
- Haul and service roads.

The infrastructure at the MLA includes the following:

- Industrial area including camp and storage areas;
- Hazardous waste management area and landfarm;
- Desalination plant and associated water management infrastructure;
- Construction laydown area; and
- Fuel storage and offloading pad.

Four deposits; namely Echo, Umwelt, Llama, and Goose Main, are planned to be mined by both open pit and underground methods. The mining schedule for each deposit is described in Table 5.2-2, with some preproduction activities (e.g., open pit pre-stripping, underground ramp pre-development) occurring before these dates. A total of approximately 18.8 Mt of ore is planned to be mined, at an average milling rate of approximately 1,700 tonnes per day (tpd) in Year 1, increasing to 2,900 tpd in Year 2, 3,700 tpd in

Year 3 and 4,000 tpd starting in Year 4 and to the end of the Operations Phase (Year 13). Open pit mining has begun two years prior to Process Plant commissioning to generate an ore stockpile to feed the Process Plant. The Process Plant will then operate for the approximate 13 years of Operations. The schedule for each open pit and underground mine is provided in Table 5.2-2. Predevelopment activities for the underground mines will commence ahead of the schedule shown in Table 5.2-2.

Table 5.2-2. Summary of Mine Schedule

Mine Operation	Start	End
Open Pit Development		
Echo Open Pit	Started during Construction phase	Y1, Q2
Umwelt Open Pit	Started during Construction phase	Y4, Q1
Llama Open Pit	Y2, Q4	Y6, Q1
Goose Main Open Pit	Y5, Q1	Y9, Q2
Underground Development		
Umwelt Underground Mine	Started during Construction phase	Y11, Q4
Llama Underground Mine[(a)]	Y6, Q2	Y12, Q3
Goose Main Underground Mine[(a)]	Y10, Q2	Y13, Q3
Echo Underground Mine[(a)]	Y10, Q3	Y13, Q2

(a) Start time refers to beginning of mining; predevelopment activities starts generally 1-2 years before start of mining for each underground mine

The Closure Phase will occur over approximately seven years (i.e., Year 14 to Year 20). The majority of the mine workings and water management structures will be decommissioned throughout Closure. The Project will subsequently enter Post-Closure, which will consist mostly of monitoring and adaptive management.

The development sequence for mining and water management activities is summarized in Table 5.2-3, with activity initiations and completions listed, noting that activities continuing until completions are noted. The Construction Phase was completed in Year 1 and is included in Table 5.2-3 for reference only. The activities for Operations, Closure and Post-Closure Phase are also shown in Figures A-03 through A-05. Table 5.2.4 presents the Project phases and stages, along with tailings and waste rock disposal scheduling, and key water management activities for each of the deposits. For detailed descriptions of water management activities, refer to Section 8.

Table 5.2-3. Mine Development Sequence

Mine Year	Mine Development Sequence and Key Activities
-3 to -1	***Phase 1: Construction (completed)*** • *Water intake infrastructure has been constructed at Goose Lake to meet the freshwater demands for domestic, construction, operation, and associated uses, including mining and milling activities.*

Table 5.2-3. Mine Development Sequence

Mine Year	Mine Development Sequence and Key Activities
	• *Construction of Goose Plant Site, Camp area and all-weather roads/crossings and pads.* • *The Plant Site Pond/Ore Stockpile Pond have been constructed at the Goose Plant Site.* • *Construction of Primary Pond.* • *Pre-stripping of Echo Open Pit and Umwelt Open Pit.* • *Echo Open Pit mining. Waste rock has been placed in Echo WRSA; contact water runoff from Echo WRSA has been collected locally, treated and discharged if necessary to the environment.* • *Contact water in the Ore Stockpile Pond is pumped to the Primary Pond (when available).* • *Umwelt Open Pit mining has been initiated, and inflows have been pumped to the Primary Pond. Waste rock has been placed in Umwelt WRSA; contact water runoff from Umwelt WRSA has been collected in Primary Pond.* • *Umwelt Underground mining has been initiated.* • *Contact water from the Plant Site has been collected in the area of Plant Site Pond, then released to the environment.*
1	***Phase 2: Operations – Echo TF (Figure A03 for End of Operations Layout)*** • *Approximately 50% Llama Lake has been dewatered to Goose Lake directly (Goose Neck Channel) or pumped to Primary Pond to support initiation of mine operations.* • *Approximately 50% of Umwelt Lake has been dewatered to Goose Lake to allow for construction of the Saline Water Pond (SWP); water has been conveyed to Goose Lake or pumped to Primary Pond to support initiation of mine operation.* • *Mining of Echo Open Pit has been completed.* • *Waste rock placement in Echo WRSA has been completed.* • *Milling operation in the Process Plant begun (June of Year 1).* • *The former Echo Open Pit has transitioned into Echo Tailings Facility (Echo TF), an in-pit tailings facility.* • *Withdrawal from the Primary Pond to supply process plant.* • *Contact water from the Echo WRSA has been conveyed to Echo TF.* • *Primary Pond has been collecting contact water across the Goose Mine, including flows collected in the Ore Stockpile Pond, runoff from Umwelt WRSA, and inflows to Umwelt Open Pit.* • *Runoff from the Plant Site has been collected in the Plant Site Pond, which has been released to the tundra without treatment; if water has been found not suitable for discharge it has been pumped to Primary Pond.* • *Water from Goose Lake (through the intake structure) has been used to meet the freshwater demands for domestic, construction, operation, and associated uses, including mining and milling activities, as needed.*
2	**Phase 2: Operations - Echo TF (Figure A03 for End of Operations Layout)** • Dewatering of Llama Lake will be completed. The majority of the water in Llama Lake will be discharged to Goose Lake after treatment to reduce TSS concentrations; a relatively small portion of the water in the lake will be stored in Umwelt Lake. • Dewatering of Umwelt Lake will be completed. The majority of the water in Umwelt Lake will be discharged to Goose Lake after treatment to reduce TSS concentrations; a relatively small portion of the water in the lake will be kept in the lake. • Mining of Llama Open Pit begins. • Engineered berms are proposed to be constructed around the rim of Echo Open Pit to expand storage capacity for tailings (information regarding these engineered berms will be provided through a subsequent application package) • Waste rock placement in Llama WRSA begins, but only in the area immediately upstream of the pit (Area LD2 in Figure A-2). • NPAG waste rock placement in the Temporary NPAG Stockpile begins. Water from the Temporary NPAG Stockpile is discharged to the environment (if water quality is suitable), or (if water quality is not suitable for discharge) collected locally and pumped to Primary Pond. • Contact water runoff from Llama WRSA is collected at the Llama Open Pit collection berm and pumped to Primary Pond.

Table 5.2-3. Mine Development Sequence

Mine Year	Mine Development Sequence and Key Activities
	• Construction of the Stage 1 SWP engineered dam is completed. The SWP now occupies the former footprint of Umwelt Lake and Round Lake. • Umwelt Underground groundwater inflows are managed locally, or pumped to Umwelt Lake (after lake dewatering is complete). • Winter season reclaim from Echo TF begins; summer season supply to Process Plant from Primary Pond continues.
3	**Phase 2: Operations - Echo TF (Figure A03 for End of Operations Layout)** • Waste rock placement in Umwelt WRSA is completed. • Waste rock placement in Umwelt Overflow WRSA begins • Construction of the Stage 2 SWP engineered dam is completed. • Saline groundwater inflows in Umwelt Underground and Llama Open Pit are pumped to the SWP.
4	**Phase 2: Operations – Echo TF (Figure A03 for End of Operations Layout)** • Mining of Umwelt Open Pit is completed. • Predevelopment activities for Llama Underground begins • Waste rock placement in Umwelt Overflow WRSA is completed. • Placement of PAG waste rock material in the Temporary Underground PAG Stockpile begins • Umwelt Open Pit transitions to Umwelt TF and starts to fill with site contact water within its catchment, for storage and use as reclaim in the Process Plant. • Excess water from the closure of Echo TF is pumped to Umwelt TF. • Construction of non-contact water diversion berm (i.e., Goose Main Pit Diversion Berm) south of Goose Main Pit to divert water away from the pit and into Goose Lake is completed. • Construction of Echo/Goose Main WRSA Pond. • Saline water collected in the SWP starts to be sent to a reverse osmosis (RO) unit for treatment, with brine effluent deposited back in the SWP and treated water pumped to Umwelt TF. • Construction of Llama WRSA containment dams (i.e., Llama WRSA Containment Dam East and West), which create the Llama WRSA Pond.
5	**Phase 2: Operations – Umwelt TF (Figure A03 for End of Operations Layout)** • Mining of Goose Main Open Pit begins. • Waste rock placement in Echo/Goose Main WRSA begins, including closure cover of Echo TF. • Tailings deposition transitions from Echo TF to Umwelt TF. • Mill reclaim water during the non-open water season source transitions from Echo TF to Umwelt TF. • Contact water from the Echo/Goose Main WRSA is collected in Echo/Goose Main WRSA Pond and pumped to the Primary Pond. • Contact water from the Goose Open Pit is pumped to Umwelt TF along with excess water from the Primary Pond. • Contact water collected in the Llama WRSA pond is pumped to Primary Pond.
6	**Phase 2: Operations – Umwelt TF (Figure A03 for End of Operations Layout)** • Mining of Llama Open Pit is completed. • Mining of Llama Underground begins • Waste rock placement in Llama WRSA is completed. • Waste rock placement in the Temporary NPAG Stockpile is complete; material in the stockpiles will be removed for use as construction material throughout the remainder of the Operations phase. • Llama Open Pit transitions to Llama TF and starts to fill with site contact water within its catchment, including contact water from Llama WRSA. If needed to manage water level in SWP, saline water encountered in the underground mines and stored in SWP could also be pumped to Llama TF.

Table 5.2-3. Mine Development Sequence

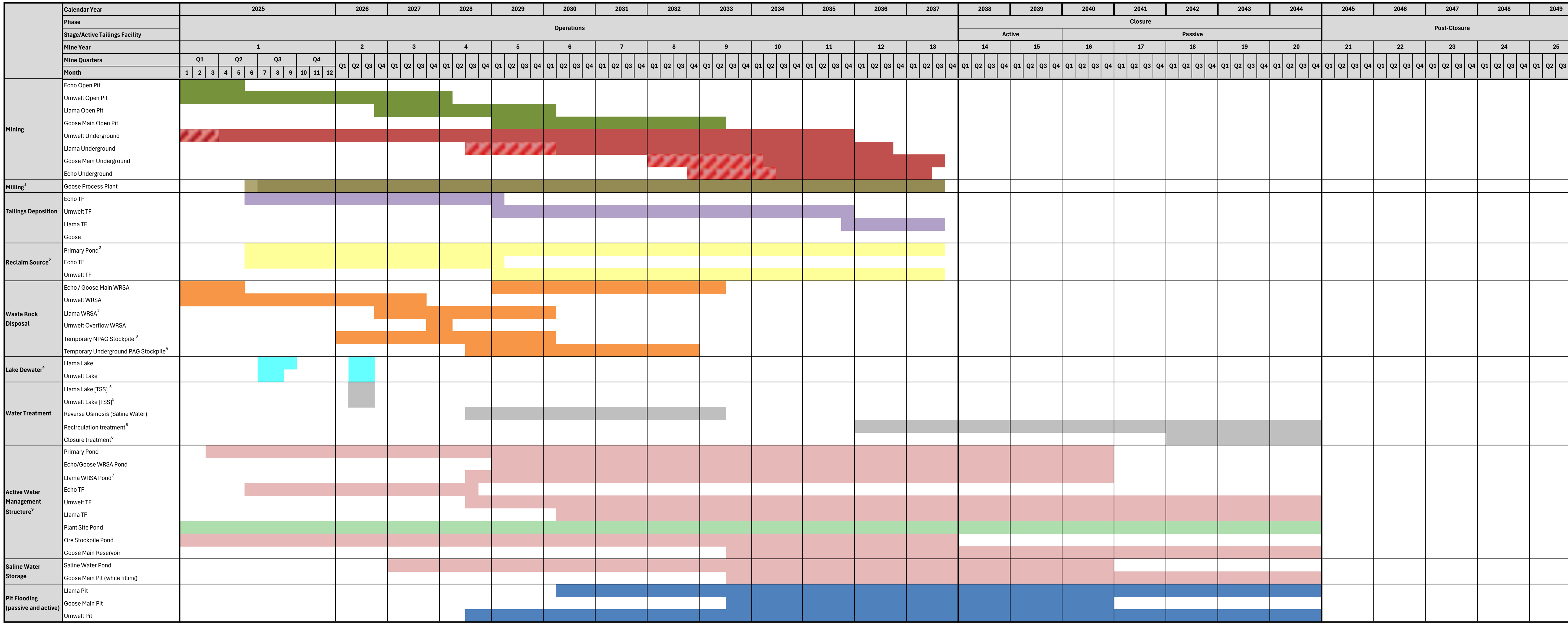
Mine Year	Mine Development Sequence and Key Activities
7	**Phase 2: Operations – Umwelt TF (Figure A03 for End of Operations Layout)** • Activities continue as per Year 6.
8	**Phase 2: Operations – Umwelt TF (Figure A03 for End of Operations Layout)** • Predevelopment activities for Goose Main Underground and Echo Underground begin. • Waste rock deposition in the Temporary Underground PAG Stockpile is completed. Material in the stockpile will be removed for use as backfill of the underground mines throughout the remainder of the Operations phase
9	**Phase 2: Operations – Umwelt TF (Figure A03 for End of Operations Layout)** • Mining in Goose Main Open Pit is completed. • Waste rock placement in Echo/Goose Main WRSA is completed. • RO treatment ceases and water level in SWP is kept low through pumping to Goose Main Reservoir to provide contingency storage for saline water, as required. • Goose Main Reservoir begins to fill and becomes available to receive saline water. • Freshwater from Goose Lake or Big Lake may be pumped to Goose Main Reservoir to supporting the closure filling. • Saline groundwater encountered in Goose Underground, Umwelt Underground, Llama Underground and in SWP is pumped to Goose Main Reservoir. • SWP is pumped empty, and all saline sediments are removed and placed in Goose Main Reservoir.
10	**Phase 2: Operations – Umwelt TF (Figure A03 for End of Operations Layout)** • Mining of Goose Main Underground and Echo Underground begins. • Saline groundwater from Goose Main Underground and Echo Underground is pumped to the Goose Main Reservoir.
11	**Phase 2: Operations – Umwelt/Llama TF (Figure A03 for End of Operations Layout)** • Mining of Umwelt Underground is completed. • Umwelt Underground is also available for permanent storage of saline water, as required. • Tailings deposition transitions from Umwelt TF to Llama TF.
12	**Phase 2: Operations – Llama TF (Figure A03 for End of Operations Layout)** • Mining of Llama Underground is completed, and Llama Underground becomes available for permanent storage of saline water, as required. • Recirculation treatment of Umwelt TF begins. • Freshwater from Goose Lake or Big Lake may be pumped to Umwelt TF to supporting the closure filling.
13	**Phase 2: Operations – Llama TF (Figure A03 for End of Operations Layout)** • Mining of Goose Main Underground and Echo Underground is completed. • Tailings deposition in Llama TF is completed. • Milling operation in the Process Plant is completed and reclaim water is no longer needed. • Ore Stockpile Pond is decommissioned. • Closure activities may be initiated in Y13 Q4.
14-17	**Phase 3: Closure (Figure A04 for End of Closure Layout)** • Primary Pond discharges by gravity to the SWP (then called Umwelt Treatment Pond). • The Llama containment dams are breached, and Llama WRSA runoff flows by gravity to Llama TF. • Freshwater from Goose Lake or Big Lake is pumped to Umwelt TF, Llama TF and Goose Main Reservoir, as needed. • Recirculation treatment of Llama TF begins. • Llama TF is full and passively discharges to Umwelt Treatment Pond • Water in the Umwelt Treatment Pond is treated prior to discharge to the Environment (PN04). • Echo WRSA Pond is diverted to PN08. • Water from Rascal diversion berm is diverted to expedite filling of Goose Main Reservoir, as required.

Table 5.2-3. Mine Development Sequence

Mine Year	Mine Development Sequence and Key Activities
	• Freshwater from Goose Lake or Big Lake pumped to Goose Reservoir is stopped (Year 17). Goose Reservoir is full and passively discharges to the environment (PN05). • Goose reservoir outflows are treated, as required, before discharge to the environment
18-20	**Phase 3: Closure (Figure A04 for End of Closure Layout)** • Recirculation treatment is complete in Umwelt and Llama TF. • Umwelt TF is full and discharge by gravity to Umwelt Treatment Pond. • Water in the Umwelt Treatment Pond is treated prior to discharge to the Environment (PN04). • All remaining water management structures are decommissioned.
21+	**Phase 4: Post-Closure (Figure A05 for Post-Closure Layout)** • Treatment stops • Final decommissioning, including water treatment plants • Monitoring to ensure compliance with regulatory requirements

Note: In Italic activities completed at the time of preparation of this WMP

Table 5.2-4. Project Phases and Stages



NOTES

1. Milling ranged between 300 tpd and 2,300 tpd in Y1 (2025); milling is forecasted to continue incresasing in Year 2, reaching 4,000 tpd in Year 3 and for the remaining of the operations phase.
2. Llama TF considered as a contingency source of reclaim water.
3. Primary Pond is main source of contact water for the mill, supplemented in winter seasons by reclaim water from Echo TF and Umwelt TF.
4. Approximately 50% of both Llama Lake and Umwelt Lake was dewatered in Y1 (2025). Remaining volume in the lakes will be dewatered in Year 2, with approximately 80% of remaining water in Llama Lake and 50% in Umwelt Lake assumed to discharged to Goose Lake after TSS treatment with remaining water to be stored in Umwelt lake (Saline Water Pond).
5. Total Suspended Solids.
6. Water treatment plant to reduce loadings in Goose Main Reservoir and Umwelt Treatment Pond, as needed.
7. Until Y4, Q2 Llama waste rock material will be placed only within catchment LD2, with runoff intercepted by the berms around the Llama Pit and pumped to Primary Pond.
8. Temporary stockpiles expected to be removed. Will be removed during the operations phase for either used as construction material (Temporary NPAG Stockpile) or backfill of the undergound mines (Temporary Underground NPAG Stockpile).
9. Site contact water pond are expected to be mostly decommisioned within the first 3 years of closure. Llama WRSA Pond will likely be decommisioned during the operations phase.

COLOUR LEGEND

- Mining - Pits
- Mining - Underground
- Process Plant - Full Production
- Process Plant - Ramp-up and ramp-down
- Water Reclaim - For Mill
- Tailings Deposition
- Waste Rock Placement
- Lake Dewatering
- Water Treatment
- Contact water ponds
- Discharge to the tundra
- Passive filling
- Underground mine predevelopment

5.2.1 MINE WASTE MANAGEMENT SUMMARY

This subsection provides a summary of the mine waste management plans. Detailed plans regarding the management of tailings, overburden, and waste rock are presented in the Tailings Management Plan or TMP and the Waste Rock Management Plan or WRMP (2AM-BRP1831 Amendment No. 1 Part F, Item 1).

Table 5.2-5 presents a summary of the estimated tonnages of waste materials that will be produced by the Project. The table also indicates the quantities of waste materials that will be deposited in each waste storage facility, or if the material will be used for another purpose. There are four WRSAs: Umwelt WRSA, Llama WRSA, Echo / Goose Main WRSA and Umwelt Overflow WRSA. The Echo WRSA is located near the Echo Open Pit, and it is renamed the Echo/Goose Main WRSA once mining of Goose Main Open Pit begins and waste rock from this open pit is placed near in the WRSA near the Echo Open Pit.

Two stockpiles will also be constructed near the Primary Pond. The Temporary NPAG Stockpile will be used to temporarily store NPAG waste rock material, that will later be used as construction material throughout the Goose Mine. The Temporary Underground PAG Stockpile will be used to temporarily store PAG waste rock material from Llama Underground; this material will be later removed and used for backfilling Llama Underground.

Overburden and waste rock material removed during mining of Echo Pit was placed in Echo Overburden Stockpile and Echo WRSA, respectively. Details on the material tonnages and volumes removed can be found in the annual reporting.

Table 5.2-5. Mine Waste Summary

Waste Type	Estimated Quantities (Mt)		Source Area and Destination
Overburden	5.3	0.1	Removed from the Umwelt Open Pit and stored in Umwelt Overburden Stockpile.
		1.3	Removed from the Llama Open Pit and stored in the Llama Overburden Stockpile.
		3.9	Removed from the Goose Main Open Pit and stored in a stockpile location to be confirmed.
Waste Rock	100.3	23.2 2.8	Removed from the Umwelt Open Pit and stored in Umwelt WRSA. Removed from the Umwelt Open Pit and stored in Umwelt Overflow WRSA.
		29.2	Removed from the Llama Open Pit and stored in the Llama WRSA.
		45.1	Removed from the Goose Main Open Pit and stored in the Echo / Goose Main WRSA.
Tailings	18.8	4.5	Stored in the Echo TF.
		9.9	Stored in the Umwelt TF.
		4.4	Stored in the Llama TF.

5.2.2 OVERBURDEN MANAGEMENT

Overburden will be removed from the surface footprint of the four open pits (quantities as shown in Table 5.2-5) and placed in dedicated stockpiles separately at the Goose Mine or co-disposed with waste rock in the WRSAs. Depending on the physical characteristics of the overburden material, a portion may be used for the construction of site infrastructure, kept for future revegetation studies/efforts, or used for WRSA cover material. Refer to the WRMP (2AM-BRP1831 Amendment No. 1 Part F, Item 1) for more details on overburden.

5.2.3 WASTE ROCK MANAGEMENT

A summary of the location and surface areas of each WRSA is included in Table 5.2-6. Details regarding approximate final waste rock material quantities and source locations are shown in Table 5.2-5. Refer to the WRMP (2AM-BRP1831 Amendment No. 1 Part F, Item 1) for more details on waste rock.

Table 5.2-6. Waste Rock Storage Area Summary Information

Facility	Approximate Location	Surface Area (ha)
Llama WRSA	North of the Llama Open Pit	59
Umwelt WRSA	East of the Umwelt Open Pit	38
Umwelt Overflow WRSA	Northwest of the Umwelt Open Pit	13
Echo WRSA	Southeast of the Echo Open Pit	28
Echo/Goose Main WRSA	Previously Echo WRSA, covering Echo Open Pit	63

5.2.4 TAILINGS MANAGEMENT

Approximately 18.8 Mt of tailings will be produced over the 13-year of Operations Phase. All tailings will be deposited as slurry within open pits to create TFs. Initially, tailings will be deposited in the Echo Open Pit (then called Echo TF), then transition to Umwelt Open Pit and Llama Open Pit once mining operations have ceased in each location (called Umwelt TF and Llama TF, respectively). The Operations Phase is described in three informal stages according to the tailings storage and water management plans, as follows:

- Echo TF – For the first four years of Operations (i.e., Years 1 to 5), the mined-out Echo Open Pit will be used for tailings deposition;
- Umwelt TF – From Years 5 to 11, the mined-out Umwelt Open Pit will be used for tailings deposition; and
- Llama TF – From Year 11 onward, tailings will be disposed in the mined-out Llama Open Pit.

The Echo TF will be covered with waste rock material once tailings deposition is complete. Water covers with a minimum water depth of 5 m will be used for closure of the Umwelt TF and Llama TF.

Refer to the Tailings Management Plan (2AM-BRP1831 Amendment No. 1 Part F, Item 1) for further tailings management details.

5.2.5 ORE MANAGEMENT

There will be one main Ore Stockpile at the Goose Mine located southeast of the Process Plant, and additional temporary stockpiles at the underground laydown's areas (Figure A-01). The Ore Stockpile will contain three sub-stockpiles: low-grade, mid-grade, and high-grade ore. Ore will be processed during the Operations Phase only, and runoff from the Ore Stockpile will be collected in the Ore Stockpile Pond and managed as site contact water. Refer to the Ore Storage Management Plan (2AM-BRP1831 Amendment No. 1 Part F, Item 1) for more details.

6. WATER MODELLING AND DESIGN CRITERIA

The focus of water management is to control the inventory of mine water stored on site, and to enhance the separation of saline, contact, and non-contact water. Water management at the Goose Mine entails multiple, codependent components, which include water storage facilities and water conveyance facilities. Water is stored using ponds (short-term storage) and reservoirs (long-term storage). Ponds are structures with a finite operational life and will be fully decommissioned at Closure once no longer required.

The ponds on site are a combination of event water ponds and short-term (i.e., few years) non-event water ponds. Event ponds are sized with retention capacity for specific design storms and are normally empty or will hold only a nominal amount of water. The non-event ponds on site consist of the SWP for saline water, and the Primary Pond for contact water; these ponds have defined storage capacity. The SWP will remain operational as a storage facility until the transfer of saline water to Goose Main Reservoir is completed. The Primary Pond will assist with the Process Plant start-up as a water source, capture contact water, and provide reclaim water to the Process Plant during Operations phase.

Long-term (i.e., permanent) water storage facilities are denoted as reservoirs, and include the three pit lakes (i.e., Llama, Umwelt, and Goose Main). Note the three pits are also considered tailings facilities as Llama TF and Umwelt TF will permanently hold tailings as well as act as long-term water storage, and Echo TF will permanently hold tailings.

Sumps in each of the open pits will be used to collect water during active mining, which may later be conveyed to an alternative reservoir via pipeline in accordance with the WMP.

Diversions are engineered structures that maintain separation between contact and non-contact water. These structures are constructed for the Operations phases of the Goose Project and are completely decommissioned during Closure.

6.1 WATER AND LOAD BALANCE

The Water and Load Balance model (the Model) was used as a tool to analyze water management options and confirm that the selected water management strategy meets the water management objectives during the life of the Project (the Water and Load Balance Report is attached as Appendix C).

The Model results showed that there is sufficient capacity on site to store tailings, contact water, and saline water for the Project life. The volume of water collected was also confirmed to be adequate to support the water demands for the Process Plant when supplemented by freshwater from Goose Lake and Big Lake while staying within their maximum consumption limits. Water treatment is expected to be required during the operations phase (not at mine start up) to manage saline water inventory before final repository location (Goose Main Reservoir) becomes available. With the support of treatment during late Operations and Closure, concentrations in discharge from the mine site to Goose Lake are predicted to be below Metal and Diamond Mining Effluent Regulations discharge limits.

The Model for the Project was developed using the GoldSim© software package (version 14) (GoldSim Technology Group 2024). The model was run on a daily time step for Year 1 to Year 41 of the Project. This run length was chosen as it allows the model to run until conditions in the pits and predictions nodes approach steady-state conditions. The model was used to:

- Support sizing of the non-event ponds and reservoirs;
- Confirm availability of reclaim water to supply process plant throughout the Operations phase;
- Confirm Goose Mine freshwater requirements are met while remaining within the withdrawal limits from Goose Lake and Big Lake; and
- Identify water treatment requirements throughout the Operations and Closure phases to meet water quality guidelines downstream of the discharge points from the Goose mine.

The Water and Load Balance Report (Appendix C) includes a detailed description of the model assumptions, framework, inputs and results, and an overview of the model limitations and sensitivity analysis. This report also provides details on the main mine components relevant to the water quality predictions, including the mine plan, open pits, underground mines, WRSAs, Ore Stockpile, and water reservoirs. Flowsheets for each phase of the Project, including Operations and Closure, are presented in Appendix C. The flowsheets depict the water management strategy that will be implemented for the Project, cumulative volumes, and change in storage over the various phases of the mine life. For additional information, refer to the Water and Load Balance Report (Appendix C).

The Model will be reviewed periodically to reflect changes in operations and/or technology and results will be submitted for review with the Annual Report in accordance with the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part E, Item 16 and Part B, Item 2) as an appendix to the approved WMP.

6.2 HYDROTECHNICAL DESIGN CRITERIA

The hydrotechnical design criteria for the Project include a combination of best management practices (BMPs) and specified criteria based on engineering and operational judgement and/or constructability considerations. Four classes of design criteria were considered: Table 6.2-1 presents the hydrologic design criteria used to formulate peak flows; Table 6.2-2 presents the design criteria used for sizing of pond infrastructure; Table 6.2-3 presents containment dam and diversion berm design criteria, and Table 6.2-4 presents culvert design criteria.

Table 6.2-1. Hydrologic Design Criteria for Formulating Peak Flows

Item	Value	Unit	Source
SCS Curve Number (Waste Rock)	84	-	George (2008)
SCS Curve Number (Natural Ground)	72-89	-	Sabina (2015), Appendix V2-7B
SCS Curve Number (Pit Walls)	92	-	George (2008)
Critical Snowmelt Month	June	-	Sabina (2015), Appendix V2-7B
June Average Snowmelt Rate	28	mm/day	Sabina (2015), Appendix V2-7B
Rainfall Distribution	Type I	-	USDA (1986)
Minimum Time of Concentration	10	minutes	Engineering Judgement

SCS = Soil Conservation Service (currently Natural Resources Conservation Service)

Table 6.2-2. Pond (Event and Saline Water) Design Criteria

Item		Value	Unit	Source/Comments
Event Ponds	Event Return Period	10-100	Years	BMP. See Table 6.4-1
	Minimum Dewatering Requirement	2	days	Operational consideration
	Storage Requirement	24-hour total rainfall volume + snowmelt	m^3	BMP
	Minimum Freeboard	0.5	m	Engineering Judgement
SWP	Storage Volume	Stage 1: 1.1 Stage 2 2: 1.9 Stage 3: 3.7 (if needed)	Mm^3	95th percentile volume from Water and Load Balance Model (Sabina 2015, Appendix V2-7B; and Appendix C)
	Minimum Freeboard	1.0 – 1.3	m	SWP Freeboard Memo (Sabina 2017, Appendix A of Appendix F-1)

Table 6.2-3. Containment Dams (Event and Saline Water Ponds) and Diversion Berm Design Criteria

	Item	Value	Unit	Source/Comments
Diversion Berm Design[a]	Event Return Period	10-100	Yrs	BMP
	Conveyance Capacity	24-hour total rainfall volume + Snowmelt	m^3/s	BMP
	Manning's Roughness	0.035	-	For minor natural steam with stones and weeds (Chow 1994)
	Minimum Slope	0.005	m/m	BMP
	Upstream Side Slopes	2:1	(H:V)	Constructability consideration
	Downstream Side Slopes	1.5:1	(H:V)	Engineering judgement
	Berm Top Width - minimum	4	m	Constructability consideration
	Minimum Berm Height	2	m	Constructability consideration and for foundation permafrost preservation.
	Minimum Berm Freeboard	0.5	m	Engineering judgement and to allow for adequate time for maintenance if / as required

Event Pond Containment Dam Design	Minimum Dam Height	2	m	Constructability consideration
	Bedding Material Thickness around Geosynthetic Clay Liner (GCL)	0.5	m	Engineering judgement
	Liner Tie-Back Length (without liner anchor trench)	3	m	Engineering judgement
	Liner Tie-Back Length (with anchor trench)	1	m	Engineering judgement and based on pull out calculations
	Upstream Side Slope (Ponded Water Level >4m) - minimum	3:1	(H:V)	Constructability consideration
	Upstream Side Slope (Ponded Water Level <4m)	2:1	(H:V)	Constructability consideration
SWP Containment Dam Design	Downstream Side Slopes	2:1	(H:V)	Stability and permafrost requirement
	Bedding Material Thickness around GCL	0.5	m	Engineering judgement
	Dam Top Width	8	m	Constructability consideration
	Minimum Dam Height	2	m	Constructability consideration
	Upstream Side Slope	3:1	(H:V)	Constructability consideration
	Downstream Side Slope - minimum	2:1	(H:V)	Engineering Judgement
	Liner Tie-Back Length (without liner anchor trench)	3	m	Engineering judgement
	Liner Tie-Back Length (with anchor trench)	1	m	Engineering judgement and based on pull out calculations
	Key Trench Tie-in Depth - minimum	2.2	m	May be adjusted / deepened to 3m in areas where massive ice encountered in the foundation (Sabina 2017, Appendix C of Appendix F-1)

(a) The Llama Open Pit Collection Berm will have the same characteristics of the diversion berm; however, its function will be to intercept runoff and seepage from the Llama WRSA for immediate pumping to Primary Pond or Llama WRSA Pond (i.e. significant ponding is not expected to occur). As Llama Open Pit provides containment downstream of the collection berm, the Llama Open Pit collection berm will not be lined.

Table 6.2-4. Culvert Design Criteria

Item	Value	Unit	Source
Event Return Period	50 to 100 [(a)]	Years	BMP; SRK (2014)
Conveyance Capacity	24-hour total rainfall volume	m^3/s	BMP; SRK (2014)
Maximum Velocity during Average June flow for Fish Passage	1.5	m/s	SRK (2014)
Manning's Roughness for culverts with cobble stone base	0.040	-	Chow (1994)
Manning's Roughness for culverts without cobble stone base	0.024	-	Chow (1994)

(a) Event return period for culverts will be based on a location specific risk assessment. Wherever practical, a 100-year design event will be adopted (and will be required for high risk culvert locations) and a minimum 50-year design event will be used for all culverts.

6.3 HYDROLOGIC MODEL

Hydrologic modelling was completed to appropriately design and size the water management infrastructure, including ponds and pumps, and to verify that the diversion structures were sufficiently sized to manage the specified design storm events.

6.3.1 CATCHMENT DELINEATION

The Goose Mine was delineated into catchments associated with each open pit (or TF), WRSA, event pond, and diversion. Areas were also incorporated into the Model (Appendix C) to allow for developing predictive flow and water quality estimates.

Catchments were delineated in AutoCAD (AutoDesk) and Global Mapper™ (Blue Marble Geographics) using available LiDAR topography. Once delineated, the catchment characteristics, including average slope, total area, and head differential, were calculated in Global Mapper. Catchments are presented in Figure A-02, and in Table 6.3-2.

6.3.2 APPROACH

Instantaneous peak flows and volumes for design storm events were generated in HEC-HMS software (US Army Corps of Engineers) using the design criteria summarized in Table 6.2-1 along with catchment areas presented in Table 6.3-2. Peak flows derived for a rain-on-snow event were used to size the water management infrastructure, and the required storage volumes were determined based on the total snowmelt and rainfall accumulation over a 24-hour period. Resultant rainfall depths are summarized in Table 6.3-1.

6.3.3 RETURN PERIOD SELECTION

The return period was selected for each structure based on the qualitative level of risk associated with the potential overtopping or breaching of the structure, whether it was an event pond, open pit, or diversion. Three levels of risk were selected for the Project, with an associated return period (Table 6.3-1). The risk was determined using engineering judgement, taking into consideration the

human health and safety, environmental, reputational, and economic consequences of the specified failure events.

Table 6.3-1. Return Period Selection Criteria

Level of Risk	Type of Facility	Return Period	24-hour total rainfall volume + snowmelt [(a)] (mm)
Low	Non-contact water diversions Pit sumps	10	44.4
Medium	Contact water diversions Contact water event ponds with additional water infrastructure downstream Culverts on all-weather road away from primary infrastructure or not connected to other water management infrastructure systems	50	64.2
High	Contact water event ponds without downstream water infrastructure Culverts connected to water management infrastructure or near ponds, diversions or puts.	100	73.4

(a) From SRK Hydrology Report (Sabina (2015), Appendix V2-7B) and increased based on the regional climate change work.

Infrastructure which has the potential to overtop/breach and discharge to the downstream environment was assigned a “High Risk”. At the Goose Mine, this includes the Llama WRSA Pond, Ore Stockpile Pond, SWP, and Echo / Goose Main WRSA Pond. The Goose Mine infrastructure and corresponding risk level is listed in Table 6.3-2, as well as the associated catchment areas. The culverts are assigned a risk rating (typically at medium risk and above) based on their connection to other water management elements.

For any structure that is classified as a ‘dam’, the Canadian Dam Association (CDA 2013, 2014) standards must be applied and therefore override the return period selection criteria outlined in Table 6.3-1. Structures that classify as a dam includes the Llama WRSA Containment Dam (East and West), Ore Stockpile Containment Dam, SWP Containment Dam, the Primary Pond Containment Dam, and Echo/Goose Main Containment Dam.

TABLE 6.3-2. LEVEL OF RISK FOR EACH ITEM OF GOOSE INFRASTRUCTURE AND CONTRIBUTING CATCHMENT AREAS

INFRASTRUCTURE	CATCHMENT ID	CATCHMENT AREA (KM²)	LEVEL OF RISK	TYPE OF WATER	PUMPED INFLOW	PUMPED OUTFLOWS	EMBANKMENT	DOWNSTREAM WATER INFRASTRUCTURE
Umwelt Open Pit Sump	UP UP1 UCP2 UWD1	0.06 0.22 0.04 0.25	Low	Contact Water	None	Primary Pond	No	N/A
Primary Pond Containment Dam (Primary Pond)	PRMYPND UWD2 LWD1 UCP1 PD1	0.31 0.15 0.16 0.07 0.17	Medium	Contact Water	Echo WRSA Pond and Llama WRSA Pond	Process Plant	Yes	SWP and Umwelt Open Pit
Llama Diversion/Collection Berms	LD2 (collection berm) LL	0.69 0.27	Low	Contact Water Non-Contact Water	None	Primary Pond or Llama WRSA Pond None	Yes	Llama Lake Reservoir/Llama Open Pit
Llama WRSA Containment Dam West and East (Llama WRSA Pond)	LCP LWD2 LD1	0.15 0.10 0.13	High	Contact Water	None	Primary Pond	Yes	Llama Lake Reservoir/Llama Open Pit
Llama Open Pit Sump	LP LP1	0.15 0.18	Low	Saline Water	None	Saline Water Pond	No	SWP
Ore Stockpile Pond Containment Dam (Ore Stockpile Pond)	OP OD1	0.02 0.12	High	Contact Water	None	Echo TF or Umwelt TF	Yes	None
SWP Containment Dam (SWP)	SWP1	1.64	High	Saline Water	Llama Open Pit and Underground	Water Treatment	Yes	None

TABLE 6.3-2. LEVEL OF RISK FOR EACH ITEM OF GOOSE INFRASTRUCTURE AND CONTRIBUTING CATCHMENT AREAS

INFRASTRUCTURE	CATCHMENT ID	CATCHMENT AREA (KM²)	LEVEL OF RISK	TYPE OF WATER	PUMPED INFLOW	PUMPED OUTFLOWS	EMBANKMENT	DOWNSTREAM WATER INFRASTRUCTURE
Echo Open Pit Sump	EP ECWR1	0.10 0.38	Medium	Contact Water	None	Echo WRSA Pond	None	Echo WRSA Pond
Goose Main Containment Dam (Echo/Goose Main WRSA Pond)	ECPND ECP1 ECWR1	0.21 0.09 0.38	High	Contact Water	None	Umwelt TF	None	None
Echo Diversion Berm	ECUS	0.64	Medium	Non-Contact Water	None	None	None	Echo Open Pit and Echo / Goose Main WRSA Pond
Goose Main Open Pit Sump	GP1	0.31	Low	Contact Water	None	Umwelt TF	None	None
Goose Main Diversion Berm	GOOSE2 GOOSE3	0.47 2.80	Low	Non-contact Water	None	None	None	Goose Main Open Pit

6.3.4 INTERPRETATION OF RESULTS

The resultant peak instantaneous flows and 24-hour storage volumes were used to size water management infrastructure. Peak flows were used to size culverts and diversion structures, and total storm volumes were used to size water management event ponds and pumping rates.

Since all diversions are constructed as berms as opposed to excavations into existing ground, the minimum berm height defines the conveyance configuration. In all cases, the 2 m minimum berm height (Table 6.2-3) was greater than the design flow depth and freeboard, and therefore governed the design requirements.

6.4 POND AND PUMP SIZING

Table 6.4-1 summarizes the pond capacities and associated pumping rate requirements for the Goose Property. The location of each of the ponds is illustrated on Figure A-01. A summary of the pond capacity and pumping rate are shown in Table 6.4-1. B2Gold Nunavut is committed to providing detailed design to NWB at least 60 days prior to construction in accordance with the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part D, Item 2).

Table 6.4-1. Goose Property Pond Capacity and Pumping Rate Summary

Description	Design Return Period	Required Capacity (m^3)	Available Capacity (m^3)[(a)]	% Full	Dewatering Duration (days)	Pumping Rate (m^3/s)
Umwelt Open Pit Sump	10	18,000	N/A	N/A	2	0.10
Primary Pond	50	109,500	414,000	26%	23	0.06
Llama WRSA Pond[(b)]	100	20,000	26,000	77%	2	0.11
Llama Open Pit Sump	10	12,000	N/A	N/A	2	0.07
Ore Stockpile Pond	100	25,000	40,000	63%	2	0.15
SWP[(c)]	N/A	1,700,000	1,900,000	90%	N/A	0.15
Echo Open Pit Sump	50	5,000	N/A	N/A	2	0.03
Echo / Goose Main WRSA Pond[(b)]	100	48,000	65,100	74%	10	0.06
Goose Main Open Pit Sump	10	20,000	N/A	N/A	2	0.11

(a) Pit sump actual capacities are defined by the open pit design, and as a result are always larger than the required capacity.
(b) Final storage capacity and pumping rate for each structure will be provided together with the detailed design.
(c) Pond size and dewatering rate from SWP are based on water balance results. Pond size is based on the 95th percentile maximum ponded water volume and dewatering is assumed to occur over two open water seasons. (SRK 2020) Value for Stage 2 of SWP is provided; design of SWP is on-going and will be designed to satisfy its required capacity.

The approved event ponds were sized for the 24-hour storm design criteria (Table 6.3-1) and conservatively assume dewatering pumps are not operating over the storm duration. The pumping rate for each pond was set to allow dewatering the pond in 2 days (Table 6.2-2) to allow for quick re-establishment of storage capacity after large storm event. The dewatering duration was increased beyond the 2 days only for the ponds that have an available capacity significantly larger than the minimum required capacity. This additional available capacity will allow for managing storm events that may occur during the longer pond dewatering period. From a practical operational perspective, the maximum design pumping rate was set at 0.15 m^3/s.

As described in the design criteria outlined in Table 6.2-2, all collection ponds will be sized with sufficient freeboard contingency to provide both operational flexibility and accommodate large flows. Further refinements to the design will be completed during detailed engineering and will be captured in an updated version of this plan prior to construction.

6.5 CULVERT SIZING

There are five proposed culvert crossing locations at the Goose Mine: one crossing through the airstrip and four crossings through the all-weather roads. Two types of culverts are considered for the all-weather roads and airstrip:

- Non-fish-bearing crossings; and
- Fish-bearing crossings.

The non-fish-bearing crossings will consist of corrugated steel pipe and are currently designed with a diameter of either 1.2 m or 2.5 m, depending on the associated design flow. The fish-bearing crossings will be sized to keep maximum water velocities below 1.5 m/s for the average June flow such that they do not present a velocity barrier to migrating Arctic Grayling. In addition, all culverts, will meet the 0.3 m criteria for maximum water depth above the top of culvert. The fish-bearing culverts will be embedded at depth and a thin layer of streambed material will be placed to promote fish passage and habitat suitability. The design characteristics for the culverts are presented in Table 6.5-1; Figure A-01 shows the culvert locations in plan view. Typical details of the culverts are unchanged from previous version of the WMP.

Some of the culverts have been installed during the construction phase, with design details provided ahead of construction. For the culverts still to be installed, B2Gold Nunavut will provide the detailed engineering drawings and report 60 days in advance of construction, pursuant to the requirements of the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part D, Item 2). B2Gold Nunavut notes that fish-bearing crossings are subject to appropriate Department of Fisheries and Oceans Canada (DFO) processes.

Refer to Section 9.4 for additional information on environmental protection measures related to culvert installations and stream crossing or diversions.

Table 6.5-1. Goose Mine Culvert Characteristics – Design Storm

Culvert Description		Goose Culvert	Gander Pond Culvert	Goose Airstrip Culvert	Echo Culvert	Goose Neck Culvert
Culvert ID		C1	C2	C3	C4	C5
Characteristics	Slope (%)	1.0	3.6	1.0	1.5	3.5
	Diameter (m)	2.5	2.5	2.5	1.2	2.5
	Culvert Shape	Circ.	Circ.	Circ.	Circ.	Circ.
	Number of Barrels	2	2	2	1	1
	Culvert Material	CSP	CSP	CSP	CSP	CSP
	Embedment	0	0.4	0	0	0
100 Year Event	Total Discharge	19.27	9.64	18.82	1.99	10.47
	Culvert Inlet	100	100	100	100	100
	Headwater	102.27	101.89	102.23	101.4	102.39
	Water Depth	0	0	0	0.26	0
	Invert Control	2.27	1.49	2.23	1.32	2.39
	Outlet Control	1.31	0	0.23	1.46	1.01
	Normal Depth (m)	1.18	0.98	1.17	1.20	1.06
	Critical Depth (m)	1.41	1.21	1.4	0.77	1.10
	Outlet Depth (m)	1.20	0.99	1.18	0.77	1.47
	Tail Water Depth	0.82	0.54	0.83	0.06	0.12
	Outlet Velocity	4.14	4.21	4.12	2.58	5.03
	Tail Water	2.34	1/.8	2.27	0.64	0.49

6.6 DIVERSION BERMS AND CONTAINMENT DAMS

Two types of berms will be constructed to support water management across the Project area:

- Unlined non-contact water diversion and collection berms; and
- Lined contact water containment dams and berms

All diversion and collection (only one north of Llama Open Pit) berms will be constructed directly onto the tundra surface with NPAG run of mine or run of quarry material that contains sufficient fines to contain and convey water.

All containment dams and berms will also be constructed with run of mine or run of quarry material; in addition, all lined structures will contain a geosynthetic clay liner (GCL) that will be tied into the active permafrost layer if the operational head is less than 4 m, and into permafrost if the operational head is greater than 4 m. Additional design criteria are summarized in Table 6.2-3. Table 6.6-1 summarizes the containment and diversion structures, in terms of their purpose and whether or not they require a liner. All diversion and containment structures will consider the design criteria presented in Table 6.2-3. Typical details of the diversion berms and containment dams are unchanged from previous version of the WMP.

Further refinements to the designs will be completed during detailed engineering and will be captured in an updated version of this plan prior to construction.

Table 6.6-1. Diversion and Containment Structure Summary

Structure	Lining Details	Notes
Llama Open Pit Diversion/Collection Berms	Unlined	Divert (or partially diverts) upstream non-contact runoff. Minimize non-contact water volumes entering Llama Open Pit and assists with general water management at the pit. The Llama Open Pit collection berm will intercept runoff from Llama WRSA for pumping to Primary Pond of Llama WRSA Pond
Llama WRSA Containment Dams (West/East)	Lined	Contains runoff from Llama WRSA into Llama WRSA Pond.
Primary Pond Containment Dam	Lined	Contains contact water in the Primary Pond to the east, alignment along haul road. Designed to Canadian Dam Association (CDA 2013, 2014) standards.
SWP Containment Dam	Lined	South section of dam containing saline water, around former Umwelt Lake footprint / outlet of former Umwelt Lake. Will be designed to Canadian Dam Association (CDA 2013, 2014) standards.
Ore Stockpile Pond Containment Dam	Lined	Contains contact water from the Ore Stockpile. Designed to Canadian Dam Association (CDA 2013, 2014) standards.
Echo Diversion Berm	Unlined	Diverts (or partially diverts) non-contact runoff away from the Echo / Goose Main WRSA.
Echo/Goose Main Containment Dam	Lined	Contains runoff from Echo / Goose Main WRSA into Echo / Goose Main WRSA Pond. Will be designed to Canadian Dam Association (CDA 2013, 2014) standards.
Goose Main Diversion Berm	Unlined	Diverts non-contact runoff around Goose Main Open Pit.
Rascal Berm	Unlined	Redirects flow in the Rascal Lake catchment away from the Goose Main Open Pit and into Gander Pond catchment.

As described in the Geotechnical Design Parameters Report (Sabina 2017, Appendix F-2), permafrost soils are sensitive to damage if they are altered in any way. Therefore, excavation into permafrost soils will be avoided as much as practical. The diversions and containment structure designs are presented in the WMP Figures (Figure A-01). If diversion structures result in water flowing and/or ponding over previously dry areas, it is possible that permafrost degradation may result due to the additional heat source imparted from the water. If the underlying soils are ice-rich, the subsequent differential settlement resulting from ice melting may be notable. This differential settlement may result in increased localized ponding that might affect the natural drainage. These potential occurrences will be monitored, and if permafrost degradation is observed, clean overburden soil or NPAG material will be placed to manage and stabilize the settlement.

7. WATER MANAGEMENT

Many water management considerations and design criteria apply throughout the LOM. Sections 5 and 6 outline those considerations; this section provides details on the specific plans that occur during different phases of the mine life.

7.1 WATER CLASSIFICATION

Site water at Goose Mine is categorized into three types:

- **Contact water:** surface water that is impacted by / contacts mine workings (runoff over waste rock, ore stockpiles, open pits, tailings, etc.);
- **Non-contact water:** surface water that is not impacted by / does not contact mine workings; and
- **Saline water:** groundwater that flows into open pit and underground workings.

Each type of water is managed separately throughout each Project phase, to the extent practicable. Contact water is contained within event ponds and tailings management facilities and is conveyed on site via berms and pumped pipelines. Non-contact water is diverted off site through berms and culverts.

Saline water is pumped out of the underground workings, as well as Llama Open Pit, and temporarily stored in the SWP (previously Umwelt Lake), with Llama TF (when available) as a contingency storage location. The final repository for saline water generated at the Goose Mine will be Goose Main Open Pit (then called Goose Main Reservoir) once mining is complete. B2Gold Nunavut commits to continue looking for alternative strategies/locations for temporary storage of saline water, before pumping it to the Goose Main Reservoir, including the exhausted underground working.

The MLA does not require any pond or diversion infrastructure for water management purposes and remains in the same condition for both the Construction and Operations phases. A desalination plant produces domestic and industrial water, and greywater will be discharged to the tundra.

7.2 WATER MANAGEMENT OBJECTIVES

The key water management objectives for the Project include:

- Minimizing the impact of mining activities on the aquatic environment surrounding the mining area to the greatest reasonable extent;
- Managing contact, non-contact, and saline water separately in order to minimize freshwater withdrawal from Goose Lake and Big Lake;
  - Non-contact water is directed away or around the Project site whenever possible;
  - Collecting and treating contact water as required to meet Site-Specific Water Quality Objectives (SSWQOs) in the receiving environment;
  - Saline water is kept separate from contact water;
- Provided settlement of suspended solids prior to discharge to the environment to meet SSWQOs;
- Monitoring and controlling water flows to reduce risk of erosion;

- Maintaining water management features in good working order;
- Documenting all monitoring and maintenance activities associates to water management structures
- Using BMPs, recognizing the unique constraints of each Project element;
- Providing a reliable water supply to the Process Plant; and
- Facilitating mining operations by managing inflows that occur as a result of groundwater or direct precipitation.

7.3 WATER SUPPLY

Water intake structures will be constructed in Goose Lake and Big Lake to supply domestic, industrial, and process make-up water.

The selected locations for these intakes are deep and close to shore. The structures will consist of PVC pipe installed on a rockfill base within the lake to keep the pipe above the lake bottom and the intakes will be screened. The proposed freshwater intake structure locations are presented in Figure A-01 (typical intake design is unchanged from previous version of the WMP). Rock armouring will protect the pipeline from ice scour. Water intakes will be equipped with screens to prevent the entrainment or impingement of fish in accordance with current DFO requirements.

High-density polyethylene pipelines will convey freshwater from the intakes at Goose and Big lakes to dedicated pumphouses for the Process Plant, Goose Camp, and other operational uses. A potable treatment plant will be constructed at the end of the domestic supply pipeline.

The water intake structures are temporary as they will only be used throughout the LOM. The water intake structures in Goose Lake are completed and have been used in Year 1 to support initiation of mine operations. The water intake structures at Big Lake will be constructed in Year 3, if needed.

Construction of these intakes will involve in-water works. To limit disruption to aquatic resources, the following practices will be implemented:

- Only NPAG armour rock that is free of sediment will be placed in the water during construction to minimize acid generation and turbidity;
- Work will be isolated using silt curtains;
- Work will be carried out during calm water periods to minimize any turbidity effects due to the re-suspension of sediment; and
- Total suspended solids and turbidity levels will be monitored throughout construction and work will be delayed if TSS levels and turbidity become too high.

In-water blasting is not planned for the construction of the water intakes.

At Closure, all pumphouses will be drained, decommissioned, and landfilled. All pipelines will be cut at the shoreline, decommissioned, and landfilled. The pipelines extending into the water, along with the surrounding rock armour and rock bases, will be left in place and capped at the substrate so not as to disturb the in-water environment. Additional design details will be provided in future updates to this plan. For additional information, refer to the Fish Offsetting Plan (Sabina 2019a) Section 4.0 and 5.2.1.1.

The intake locations and consumption rates during the various Project phases are summarized in Table 7.3-1.

Table 7.3-1. Water Supply Locations and Volumes

Water Source	Total Water Use as per Type A Water Licence[(a)] [m^3/yr]
Total Water Use: Goose Lake	608,700
Total Water Use: Big Lake	273,750
Total Water Use: MLA	110,000
Total Water Use: Dewatering	1,400,000
Total Water Use: Winter Ice Road	2,025 m^3/km

(a)2AM BRP1831 Amendment No. 1 Part E Item 3, Item 4, and Item 5.

During the life of the Project, water consumption requirements from Goose Lake include 1,500 m^3/day of freshwater year-round and an additional 400 m^3/day during the open water season for a total of 1,900 m^3/day (Table 7.3-1). For Big Lake, water consumption requirements include 750 m^3/day of freshwater year-round for the life of the Project. Water from both of these sources will be utilized for domestic, construction, operation, and associated uses, including mining and milling (2AM-BRP1831 Amendment No. 1 Part E, Item 3). No water use is required for hydrostatic testing of Goose Mine and MLA fuel tanks at the respective fuel storage areas. Tanks will be commissioned using non-destructive examination techniques (e.g., tank x-ray, vacuum testing of tank floors, and air testing of fittings); this testing will be completed in accordance with API650 (API 2013).

Llama Lake and Umwelt Lake have been partially dewatered in Year 1. Dewatering will be completed in the open water season of Year 2. Additional information on lake dewatering is provided in Section 8.2.1. Some of the volume of the Year 1 dewatering was used to water start-up requirements for the Goose Mine.

Tailings production rate and tailings characteristics are provided in Table 7.3-2. Based on the milling parameters (Table 7.3-2), the tailings slurry will result in 3,580 m^3/day and 5,730 m^3/day of water and 1,790 m^3/day and 2,860 m^3/day of solids for a 2,500 tpd and 4,000 tpd production rate, respectively. The volume of water entrained in the tailings voids is a function of the void ratio and tailings dry density, which is approximately 980 m^3/day and 1,570 m^3/day for a 2,500 tpd and 4,000 tpd production rate, respectively.

Supernatant water included in the tailings slurry will be directed towards the active tailings management facility and eventually used as reclaim at a rate of 1,410 m^3/day for a 2,500 tpd production rate and 2,260 m^3/day for a 4,000 tpd production rate. Freshwater required for milling production is 486 m^3/d for all production rates.

All water will be withdrawn, distributed, and directed via pumped pipelines.

Table 7.3-2. Milling Rates and Parameters

Parameter	Value
Average Production Rate	2,500 – 4,000 tpd
Specific Gravity of Tailings	3.1 tonne/m^3
Tailings Dry Density	1.4 tonne/m^3
Void Ratio[(a)]	1.2
Slurry Percent Solids – Year 1	46%
Slurry Percent Solids – Year 2 to end of Operations	58%
Ore Moisture Content	3%

(a) The void rate was calculated based on material properties.

7.4 WATER TREATMENT

Water treatment is required throughout the mine life for various water uses and constituent reductions. The following sections describe the various types of water treatment.

7.4.1 MARINE LAYDOWN AREA DESALINATION PLANT

Freshwater requirements at the MLA are met using a desalination plant, drawing ocean water from Bathurst Inlet. The plant operates using RO or similar process and discharges brine to Bathurst Inlet as a product of the desalination process.

Discharge of brine water from the desalination plant will meet the Canadian Council of Ministers of the Environment (CCME) salinity guideline for the protection of marine life and will not cause the salinity of the receiving environment to fluctuate by more than 10% of the natural expected salinity (CCME 2015). The desalination plant is designed with a maximum intake flow rate of 33 m^3/h and a maximum discharge rate of 30 m^3/h; therefore, only a small portion of intake water will be desalinated. Assuming the freshwater plant product has a salinity of zero, the discharge from the plant is predicted to be no more than 10% more saline, and therefore within the CCME salinity guideline at the point of ocean discharge. The discharged effluent is expected to mix in the receiving environment and is not expected to be detectable beyond the outfall. Consumption rates at the MLA during the various Project phases are summarized in Table 7.3-1.

7.4.2 GOOSE MINE WATER TREATMENT PLANT

Treatment to reduce TSS concentration will be required at Goose Mine during the final dewatering of Llama Lake and Umwelt Lake. Year-round recirculation treatment of the Umwelt and Llama TFs will also be required during the Operations and Closure phases, until discharge criteria have been met. In addition, a WTP (reverse osmosis plant) will be required between Year 4 and Year 9 of Operations to treat saline water collected in the SWP. If possible, the same WTP will be used during each phase of the Project, and upgraded as required; otherwise, additional WTPs will be installed at the Goose Mine to meet water treatment requirements.

During Year 2, the dewatering of Llama Lake and Umwelt Lake will be completed. It is assumed that approximately 80% of the water left in Llama Lake (40% of the total original lake volume) and 50 % of the water left in Umwelt Lake (40% of the total original lake volume) will require to be treated for TSS before discharging to the Goose Lake. If TSS is higher than expected, a greater percentage of water will be treated. Any treatment sludge generated will be disposed of in Umwelt WRSA or the SWP.

Treatment is inactive during Operations until mining of the Umwelt Open Pit is complete in Year 4; at this time saline water from the SWP is treated with an RO as of a treatment rate of 5,000 m^3/day, with brine effluent deposited back in the SWP and treated effluent pumped to the Umwelt TF. This treatment is expected to continue until Year 9 when Goose Main Open Pit becomes available to receive water. Seasonal treatment only (summer months only) is expected to be sufficient to manage water levels in SWP, except potentially in the first year of treatment when greater volume of water is in SWP. However, need for year-round treatment will be further investigated ahead of completing the design of the treatment plant.

In Year 12, recirculation treatment of tailings water contained in the Umwelt TF begin. Recirculation treatment of tailings water contained in Llama TF begins in Year 15. The primary constituents to be removed in treatment from the tailings facilities are metals, phosphorus, nitrogen species (nitrite, nitrate, total ammonia and cyanide), and suspended solids. Recirculation water treatment in Llama TF and Umwelt TF will continue into Closure until discharge limits have been achieved. The treatment is proposed to be year-round at a flow rate of approximately 5,000 m^3/day from both Umwelt and Llama TFs, for a total of 10,000 m^3/day, to achieve Metal and Diamond Mining Effluent Regulations (MDMER) limits at PN04 when pit flooding occurs. Treated effluent will be recirculated back into Umwelt and Llama TFs to aid in pit flooding. In the years when no treatment occurs, all mine effluent will be stored in the active tailings management facility and used as reclaim water (from Umwelt TF only) for the Process Plant, as required.

During the Closure Phase, overflow water from the Llama and Umwelt reservoirs will also be treated (if needed) before arrival at PN04, via the Umwelt Treatment Pond, to achieve MDMER limits at this location. This overflow is seasonal and will see the greatest flow rates during freshet. The primary constituents to be removed in treatment include metals major ions and nitrogen species (nitrite, nitrate, total ammonia and cyanide).

Treatment for the Goose Main Reservoir before discharge to Goose Lake (via PN05), if needed, will begin during closure (estimated in Year 17) and continue until the start of Post-Closure. Treatment is currently not predicted to be necessary to meet MDMER limits at PN05. Treatment within in Goose Main Reservoir, with treated water being sent back to the Goose Main Reservoir, can also be considered to improve water quality in this reservoir prior to reaching its capacity, if required.

The WTPs will be modular, can be relocated, and combined as necessary to achieve the appropriate water treatment at different phases of the Project. Table 7.4-1 summarizes the water treatment activities at Goose Mine throughout the LOM.

Table 7.4-1. Water Treatment Goose Mine

Source	Discharge Location	Period Start	Period End	Flow Rate (m3/d)	Parameter	Comment	Approximate Treated Volume (m^3)
Llama Lake	Goose Lake (via Umwelt Lake)	Yr2, Q2	Yr2, Q3	10,800	TSS	80% of remaining lake volume after Y1 dewatering, open water season	452,000[(a)]
Umwelt Lake	Goose Lake	Yr2, Q2	Yr2, Q3	10,800	TSS	50% of remaining lake volume after Y1 dewatering, open water season	60,000[(a)]
SWP	Umwelt TF	Yr4, Q3	Yr9, Q2	Variable (0 – 5,000)	Total Dissolved Solids	Brine effluent to SWP, treated effluent pumped to Umwelt TF	3,075,000[(b)]
Umwelt and Llama TF	Umwelt and/or Llama TF	Yr12, Q1	Yr20, Q4	10,000	Metals (Arsenic, chromium, copper, iron, selenium), and nitrogen species	Recirculation of treated water back into Umwelt and Llama TF, year-round	26,458,000[(b)]
Umwelt Treatment Pond	Goose Lake (via PN-4)	Yr18	Yr20	Variable (0 – 65,000)	Ammonia and arsenic	Treatment of water collected in Umwelt Treatment Pond	1,554,000[(b)]
Goose Main Reservoir	Goose Lake (via PN05)	Yr 18	Yr20	5,000	Metals, phosphorus, nitrogen species	Not predicted to be required	0[(c)]

Note: Flow rates for water treatment plant to be further refined at detailed design stage.

(a) Based on volume remaining in the lake after initial dewatering that occurred in Year 1; actual total volume to be treated may be different based on inflows/outflows that will occur between the two stages of dewatering

(b) Volume estimation based on the average climate scenario, total volume to be treated may be different based on climate conditions.

(c) Adaptive mitigation strategy only; treatment is not expected to be required.

7.4.3 SEWAGE TREATMENT AND DISPOSAL

7.4.3.1 GOOSE MINE SEWAGE TREATMENT AND DISPOSAL

Sewage at the Goose Mine will be treated using a package Sewage Treatment Plant (STP), such as a Membrane Bioreactor or similar. The STP will be located in the Goose Plant Site area (Figure A-01), and during the Construction phase and Closure phase (i.e., when all tailings management facilities are not available), treated sewage effluent will be discharged to the tundra west south-west of the Goose Plant Site. This treated effluent will be land discharged to maximize attenuation distance prior to entering an outflow watercourse from Fox Lake and ultimately entering Goose Lake. Off-specification treated sewage during upset conditions will be discharged to the closest collection pond. Any discharges of sewage effluent from the collection pond will need to meet the applicable discharge criteria. In-pond treatment by coagulation can be applied if required as a contingency. Refer to the Landfill and Waste Management Plan (2AM-BRP1831 Amendment No. 1 Part F, Item 1) for details on STP treated effluent volumes.

In Operations, effluent will be discharged to the active tailings management facility. During Post-Closure, the Goose Mine Camp will convert to Pacto or incinerating toilets and effluent discharge will not be necessary. If STP effluent meets discharge requirements during Operations, B2Gold Nunavut may choose to discharge on land consistent with Construction phase STP effluent management. See the Landfill and Waste Management Plan (2AM-BRP1831 Amendment No. 1 Part F, Item 1) for information on sludge disposal.

7.4.3.2 MARINE LAYDOWN AREA SEWAGE MANAGEMENT

In February 2026, B2Gold Nunavut has submitted a notice of modification to NWB under Part G of 2AM-BRP1831 (B2Gold Nunavut, 23 February 2026) for replacing the existing MLA Pacto toilet-based system with conventional toilet facilities and a STP, similar to that currently in use at the Goose Mine. The NWB has approved this modification through the Motion No. 2026-A1-006, dated April, 2026 as required by Part G, Item 2 of the 2AM-BRP1831 License. The system will also be capable of receiving and effectively treating the MLA's greywater, providing centralised treatment of domestic wastewater generated by the MLA camp and accommodation facilities.

7.4.4 POTABLE WATER TREATMENT

Public water supply of potable water is regulated under the *Public Health Act* and Public Water Supply Regulations administered by the Government of Nunavut. B2Gold Nunavut may use chlorination, ozone treatment, and/or UV to ensure potability of water. Regular test work of water quality will be conducted to ensure potable water meets Canadian drinking water standards. B2Gold Nunavut will meet all regulatory requirements around the management of potable water.

7.5 EFFLUENT CRITERIA

The effluent criteria applicable to the Project are outlined in the Type A Water Licence (2AM-BRP1831 Amendment No. 1) and the MDMER. These regulatory instruments outline the locations, parameters, timing and frequencies at which various effluent discharges must be sampled and reported. This sampling includes sampling of runoff, seepage, dewatering, discharges to land, greywater and treated

sewage effluent, as well as all other discharges to the receiving environment. The MDMER requirements become applicable upon triggering of the MDMER.

At least 120 days prior to the discharges of effluent from monitoring program stations BRP-58a to BRP-58xx (TBD) directed to Goose Lake, B2Gold Nunavut will file an Effluent Discharge Plan in accordance with the Type A Water licence (2AM-BRP1831 Amendment No. 1 Part F, Item 16).

7.6 WINTER ICE ROAD

Overland winter access to the Project is possible between approximately December through May each season. Annually, in early December, preparation for the WIR linking the MLA to the Goose Mine will be undertaken. Once the WIR is ready for traffic, the equipment, materials, fuel, and supplies staged at the MLA will be transported by trucks over the WIR to the Goose Mine. It is expected that the transfers will occur annually between approximately January and April.

7.6.1 WINTER ICE ROAD CONSTRUCTION AND USE

WIR construction will adhere to the following guidelines based on DFO Operational Statements:

- Use existing trails or WIRs wherever possible as access routes to limit unnecessary clearing of additional vegetation and prevent soil compaction;
- Construct approaches and crossings perpendicular to the watercourse wherever possible;
- Construct ice bridge and snow fill approaches using clean, compacted snow and ice to a sufficient depth to protect the banks of the lake, river, or stream;
- Install sediment and erosion control measures before starting work to prevent the entry of sediment into the watercourse. Inspect the installed control measures regularly during the course of construction and decommissioning activities and make all necessary repairs if damage occurs;
- Operate machinery on land or on ice, and in a manner that minimizes disturbance to the banks of the lake, river, or stream;
- Ensure that the intakes are sized and adequately screened to prevent debris blockage and fish mortality;
- Crossings do not impede water flow at any time of the year;
- When the crossing season is over and where it is safe to do so, create a v-notch in the centre of the ice bridge to allow it to melt from the centre, and to also prevent blocking fish passage, channel erosion and flooding. Compacted snow should be removed from snow fills prior to the spring freshet;
- Stabilize any waste materials removed from the work site to prevent them from entering the lake, river, or stream. This could include covering spoil piles with biodegradable mats or tarps; and
- The site should be stabilized using effective sediment and erosion control measures. In areas with permafrost, care should be exercised to ensure these measures do not cause thawing or frost heave.

Water withdrawal for the construction of WIRs will also adhere to the following DFO guidelines taken from the *Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the Northwest Territories and Nunavut* (DFO 2010):

- In one ice-covered season, total water withdrawal from a single waterbody is not to exceed 10% of the available water volume;
- In cases where there are multiple users withdrawing water from a single waterbody, the total combined withdrawal volume is not to exceed 10% of the available water volume; and
- Only waterbodies with a minimum unfrozen water thickness of 1.5 m under ice should be considered for water withdrawal.

Water for the WIR will be drawn from various sources along the WIR alignment. The supply locations and consumption rates will be provided at least 60 days prior to water withdrawal. Consistent with the Project terms and conditions Nunavut Impact Review Board (NIRB; 2017), B2Gold Nunavut will provide bathymetry, depth, and location of proposed water withdrawal sites, volumes to be extracted, anticipated water level decreases, and fish habitat features within each waterbody proposed to be used for winter water withdrawal in support of the annual construction of the WIRs. If additional waterbodies are required, B2Gold Nunavut will provide all required information on the additional proposed lakes prior to the use of the waterbodies.

In addition, B2Gold Nunavut will implement all applicable DFO BMPs to avoid and mitigate serious harm to fish as a result of the construction, operation, and decommissioning of WIRs, and from under ice water withdrawals. These BMPs include adequately screening the water intakes pipes to prevent impingement and entrainment of fish.

8. WATER MANAGEMENT PHASES

Water management throughout the mine life is described in a series of phases:

- Phase 1: Construction (Year -3 to Year -1);
- Phase 2: Operations (Year 1 to Year 13);
- Phase 3: Closure (Year 14 to Year 20); and
- Phase 4: Post-Closure (Year 21 +).

The Construction phase is completed. A brief description of the activities that occurred during the Construction phase is included in this section, with additional details presented under separate covers, as part of the annual reporting.

The Operations, Closure and Post-Closure phases are illustrated in Figures A-03 through A-05, as well as the flow diagrams attached to Appendix C. The Operations phase (Phase 2) is subdivided into three stages; each stage represents the duration of tailings deposition in each Tailings Facility (TF). The three stages are:

- Echo Open Pit (Echo TF) (Year 1, Q2 to Year 5, Q1);
- Umwelt Open Pit (Umwelt TF) (Year 5 Q1, to Year 11, Q4); and
- Llama Open Pit (Llama TF) (Year 11, Q4 to Year 13, Q3).

The following subsections describe the water management details of each phase.

8.1 PHASE 1: CONSTRUCTION

The Construction phase is completed. A summary of the key water management activities during Phase 1 are included in Table 8.1-1. Further details on the water management infrastructure and activities that occurred during the Construction phase are provided under a separate cover, as part of the annual reporting for the Project.

Table 8.1-1. Summary of Water Management Activities during Phase 1

Mine Year	Water Management Activities
-3 to -1	• Water intake infrastructure has been constructed at Goose Lake to meet the freshwater demands for domestic, construction, operation, and associated uses, including mining and milling activities. • Construction of Goose Plant Site, Camp area and all-weather roads/crossings and pads. • The Plant Site Pond/Ore Stockpile Pond have been constructed at the Goose Plant Site. • Construction of Primary Pond. • Pre-stripping of Echo Open Pit and Umwelt Open Pit. • Echo Open Pit mining. Waste rock has been placed in Echo WRSA; contact water runoff from Echo WRSA has been collected locally, treated and discharged if necessary to the environment. • Contact water in the Ore Stockpile Pond is pumped to the Primary Pond (when available). • Umwelt Open Pit mining has been initiated, and inflows have been pumped to the Primary Pond. Waste rock has been placed in Umwelt WRSA; contact water runoff from Umwelt WRSA has been collected in Primary Pond.

Table 8.1-1. Summary of Water Management Activities during Phase 1

Mine Year	Water Management Activities
	• Umwelt Underground decline and mining have been initiated. • Contact water from the Plant Site has been collected in the area of Plant Site Pond, then released to the environment.

8.2 PHASE 2: OPERATIONS

A summary of the key water management activities initiation and completion during Operations (Phase 2) are included in Table 8.2-1 to Table 8.2-3. The tables divide Operations into three stages, based on the active tailings management facility at the time. Further details of the water management infrastructure and activities are included in the subsections that follow and are depicted in Figure A-03 (end of Operations Phase layout), as well as the flow diagrams attached to Appendix C.

Table 8.2-1. Summary of Water Management Activities during Phase 2 – Echo TF (Year 1-Q2 to Year 5-Q1)

Mine Year	Water Management Activities
1	***Phase 2: Operations – Echo TF (Figure A03 for End of Operations Layout)*** • *Approximately 50% Llama Lake has been dewatered to Goose Lake directly (Goose Neck Channel) or pumped to Primary Pond to support initiation of mine operations.* • *Approximately 50% of Umwelt Lake has been dewatered to Goose Lake to allow for construction of the Saline Water Pond (SWP); water has been conveyed to Goose Lake or pumped to Primary Pond to support initiation of mine operation.* • *Mining of Echo Open Pit has been completed.* • *Waste rock placement in Echo WRSA has been completed.* • *Milling operation in the Process Plant begun (June of Year 1).* • *The former Echo Open Pit has transitioned into Echo Tailings Facility (Echo TF), an in-pit tailings facility.* • *Withdrawal from the Primary Pond to supply process plant.* • *Contact water from the Echo WRSA has been conveyed to Echo TF.* • *Primary Pond has been collecting contact water across the Goose Mine, including flows collected in the Ore Stockpile Pond, runoff from Umwelt WRSA, and inflows to Umwelt Open Pit.* • *Runoff from the Plant Site has been collected in the Plant Site Pond, which has been released to the tundra without treatment; if water has been found not suitable for discharge it has been pumped to Primary Pond.* • *Water from Goose Lake (through the intake structure) has been used to meet the freshwater demands for domestic, construction, operation, and associated uses, including mining and milling activities, as needed.*
2	• Dewatering of Llama Lake will be completed. The majority of the water in Llama Lake will be discharged to Goose Lake after treatment to reduce TSS concentrations; a relatively small portion of the water in the lake will be stored in Umwelt Lake. • Dewatering of Umwelt Lake will be completed. The majority of the water in Umwelt Lake will be discharged to Goose Lake after treatment to reduce TSS concentrations; a relatively small portion of the water in the lake will be kept in the lake. • Mining of Llama Open Pit begins.

Mine Year	Water Management Activities
	• Engineered berms are proposed to be constructed around the rim of Echo Open Pit to expand storage capacity for tailings (information regarding these engineered berms will be provided through a subsequent application package). • Waste rock placement in Llama WRSA begins, but only in the area immediately upstream of the pit (Area LD2 in Figure A-2). • NPAG waste rock placement in the Temporary NPAG Stockpile begins. Water from the Temporary NPAG Stockpile is discharged to the environment (if water quality is suitable), or (if water quality is not suitable for discharge) collected locally and pumped to Primary Pond. • Contact water runoff from Llama WRSA is collected at the Llama Open Pit collection berm and pumped to Primary Pond. • Construction of the Stage 1 SWP engineered dam is completed. The SWP now occupies the former footprint of Umwelt Lake and Round Lake. • Umwelt Underground groundwater inflows are managed locally, or pumped to Umwelt Lake (after lake dewatering is complete). • Winter season reclaim from Echo TF begins; summer season supply to Process Plant from Primary Pond continues.
3	• Waste rock placement in Umwelt WRSA is completed. • Waste rock placement in Umwelt Overflow WRSA begins. • Construction of the Stage 2 SWP engineered dam is completed. • Saline groundwater inflows in Umwelt Underground and Llama Open Pit are pumped to the SWP.
4	• Mining of Umwelt Open Pit is completed. • Predevelopment activities for Llama Underground begins • Waste rock placement in Umwelt Overflow WRSA is completed. • Placement of PAG waste rock material in the Temporary Underground PAG Stockpile begins • Umwelt Open Pit transitions to Umwelt TF and starts to fill with site contact water within its catchment, for storage and use as reclaim in the Process Plant. • Excess water from the closure of Echo TF is pumped to Umwelt TF. • Construction of non-contact water diversion berm (i.e., Goose Main Pit Diversion Berm) south of Goose Main Pit to divert water away from the pit and into Goose Lake is completed. • Construction of Echo/Goose Main WRSA Pond. • Saline water collected in the SWP starts to be sent to a reverse osmosis (RO) unit for treatment, with brine effluent deposited back in the SWP and treated water pumped to Umwelt TF. • Construction of Llama WRSA containment dams (i.e., Llama WRSA Containment Dam East and West), which create the Llama WRSA Pond.
5	• Mining of Goose Main Open Pit begins. • Waste rock placement in Echo/Goose Main WRSA begins, including closure cover of Echo TF. • Tailings deposition transitions from Echo TF to Umwelt TF. • Mill reclaim water during the non-open water season source transition from Echo TF to Umwelt TF. • Contact water from the Echo/Goose Main WRSA is collected in Echo/Goose Main WRSA Pond and pumped to the Primary Pond. • Contact water from the Goose Open Pit is pumped to Umwelt TF along with excess water from the Primary Pond. • Contact water collected in the Llama WRSA pond is pumped to Primary Pond.

Note: In Italic activities completed at the time of preparation of this WMP

Table 8.2-2. Summary of Water Management Activities during Phase 2 – Umwelt TF (Year 5-Q1 to Year 11-Q4)

Mine Year	Mine Development Sequence and Key Activities
5	• See Table 8.2-1; overlap year between Echo TF and Umwelt TF
6-7	• Mining of Llama Open Pit is completed. • Mining of Llama Underground begins • Waste rock placement in Llama WRSA is completed. • Waste rock placement in the Temporary NPAG Stockpile is complete; material in the stockpiles will be removed for use as construction material throughout the remainder of the Operations phase. • Llama Open Pit transitions to Llama TF and starts to fill with site contact water within its catchment, including contact water from Llama WRSA. If needed to manage water level in SWP, saline water encountered in the underground mines and stored in SWP could also be pumped to Llama TF.
8	• Predevelopment activities for Goose Main Underground and Echo Underground begin. • Waste rock deposition in the Temporary Underground PAG Stockpile is completed. Material in the stockpiles will be removed for use as backfill of the underground mines throughout the remainder of the Operations phase
9	• Mining in Goose Main Open Pit is completed. • Waste rock placement in Echo/Goose Main WRSA is completed. • RO treatment ceases and water level in SWP is kept low through pumping to Goose Main Reservoir to provide contingency storage for saline water, as required. • Goose Main Reservoir begins to fill and becomes available to receive saline water. • Freshwater from Goose Lake or Big Lake may be pumped to Goose Main Reservoir to supporting the closure filling. • Saline groundwater encountered in Goose Underground, Umwelt Underground, Llama Underground and in SWP is pumped to Goose Main Reservoir. • SWP is pumped empty, and all saline sediments are removed and placed in Goose Main Reservoir.
10	• Mining of Goose Main Underground and Echo Underground begins. • Saline groundwater from Goose Main Underground and Echo Underground is pumped to the Goose Main Reservoir.
11	• Mining of Umwelt Underground is completed. • Umwelt Underground is also available for permanent storage of saline water, as required. • Tailings deposition transitions from Umwelt TF to Llama TF.

Table 8.2-3. Summary of Water Management Activities during Phase 2 – Llama TF (Year 11-Q4 to 13 Q3)

Mine Year	Mine Development Sequence and Key Activities
11	• See Table 8.2-2; overlap year between Umwelt TF and Llama TF
12	• Mining of Llama Underground is completed, and Llama Underground becomes available for permanent storage of saline water, as required. • Recirculation treatment of Umwelt TF begins. • Freshwater from Goose Lake or Big Lake may be pumped to Umwelt TF to supporting the closure filling.
13	• Mining of Goose Main Underground and Echo Underground is completed. • Tailings deposition in Llama TF is completed. • Milling operation in the Process Plant is completed and reclaim water is no longer needed. • Ore Stockpile Pond is decommissioned. • Closure activities may be initiated in Y13 Q4.

8.2.1 LAKE DEWATERING

Llama Lake and Umwelt Lake will need to be dewatered to allow mining operations. The fish-out program has already been completed (see annual reporting for details). For additional information related to conservation and mitigation measures implemented during the fish-out program, refer to Section 9.3.

Llama Lake, which has a natural capacity of 1.13 Mm^3, will be dewatered to allow mining of the Llama Open Pit. Approximately 50% of Llama Lake volume has been dewatered during the summer months of Year 1. The majority of the volume was dewatered directly to Goose Lake, with a portion used to support initiation of mine operations and development of initial water cap in Echo TF. The remaining volume of Llama Lake will be dewatered in Year 2. It is anticipated that approximately 80% of the remaining volume in Llama Lake (40% of the original lake volume) will have TSS concentrations in excess of allowable discharge limits. A modular Water Treatment Plant (WTP) for suspended solids removal will be used to treat this portion of the remaining lake volume (Table 7.4-1). It has also been assumed that the bottom 20 % of the remaining water volume (10% of the original lake volume) will have TSS concentrations too high for the WTP to treat; this water and will be stored on site in Umwelt Lake, and then the SWP.

Once Llama Lake dewatering is complete, lake bottom sediments within the Llama Open Pit boundaries will be excavated and placed in the Umwelt WRSA footprint, as needed.

Umwelt Lake, which has a natural capacity of 0.24 Mm^3, will also need to be dewatered to allow construction of the SWP. Approximately 50% of Umwelt Lake volume has been dewatered during the summer months of Year 1. The majority of the volume was dewatered directly to Goose Lake, with a portion used to support initiation of mine operations and development of initial water cap in Echo TF. The remaining volume of Umwelt Lake will be dewatered in Year 2. It is anticipated that approximately 50% of the remaining volume in Llama Lake (25% of the original lake volume) will have TSS concentrations in excess of allowable discharge limits. A modular Water Treatment Plant (WTP) for suspended solids removal will be used to treat this portion of the remaining lake volume (Table 7.4-1). It has also been assumed that the bottom 50 % of the remaining water volume (25% of the original lake

volume) will have TSS concentrations too high for the WTP to treat; this water and will be kept in Umwelt Lake, and then the SWP.

Dewatering will continue to be undertaken in accordance with the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part E, Item 4 and Item 14).

8.2.2 SALINE WATER POND

Umwelt Lake will be dewatered to construct the Saline Water Pond (SWP). At the time of construction of SWP, water left in Umwelt Lake will be limited to the high TSS water from lake dewatering (if any). The SWP containment dams will be constructed in two stages. The Stage 1 SWP Containment Dam will be constructed in Year 2 (available to receive water in Q1 of Year 3) to a storage capacity (at maximum operating water elevation) of approximately 1.1 Mm^3; the Stage 2 SWP Containment Dam will be constructed in Year 3 (completion expected in Q1 of Year 4) to a storage capacity (at maximum operating water elevation) of approximately 1.9 Mm^3 at maximum operating water elevation). The design of the Stage 2 SWP Containment Dam will be refined during detailed engineering and B2Gold Nunavut will provide the detailed engineering drawings 60 days in advance of construction of this SWP stage. Some storage capacity for saline water may be available within Umwelt Lake before the completion of the Stage 1 Containment Dam, depending on the actual volume of high TSS water encountered during the dewatering of Llama and Umwelt lakes. Refer to Section 5.1.3 for more information on potential saline water inflows during mining at the Property.

Saline water from the Umwelt, Llama, Echo and Goose Main undergrounds, as well as the Llama Open Pit, will be collected and pumped to the SWP. Management of saline water will rely on SWP during the early years of Operations. Once the Umwelt Open Pit mining is complete and the pit is available to receive water and tailings in Year 4 Q3, saline water from the SWP will be treated by an RO unit, with brine effluent deposited back into the SWP and treated effluent pumped to the Umwelt TF. Once Goose Main Open Pit mining is complete, saline water at the Project will be transferred to the Goose Main Open Pit (then called Goose Main Reservoir) for permanent storage. In the event of insufficient storage within the SWP before the Goose Main Reservoir is available, saline water can be transferred to the Llama Open Pit once pit mining is completed Year 5, or Umwelt Underground, when the void spaces within the exhausted underground workings will be available.

B2Gold Nunavut has identified the following adaptive management strategies to reduce the total amount of water reporting to the SWP:

- Construction of diversion berms around the SWP to reduce the non-contact runoff from undisturbed ground reporting to SWP;
- Snow removal from the frozen surface of the SWP to reduce the amount of water reporting to SWP during freshet;
- Use of evaporators during summer months to remove a portion of the water in SWP;
- Continue exploring options to expand the SWP capacity and increase robustness of the saline water management strategy at the site (B2Gold Nunavut has initiated preliminary design of a Stage 3 SWP).

B2Gold Nunavut will continue evaluating these strategies and will implement them, as required, if higher than expected saline groundwater inflows are encountered.

To manage saline groundwater and minimize potential associated impacts, a Saline Water Management Plan (SWMP) is provided in Appendix C of the WMP.

8.2.3 OPEN PITS AND OTHER CONTACT WATER

During Operations, precipitation will accumulate in the open pits, which will be collected using sumps. From the sumps water will be pumped water across the Goose Mine site, eventually discharging to the Primary Pond (main location) and/or the active TF. From Primary Pond and the active TF, contact water will be used as reclaim water in the Process Plant. Under normal operating conditions, the Primary Pond and the active TF (except for Llama TF) will be the main source of reclaim water to the Process Plant during the open water season and winter season, respectively. Llama Open Pit is the exception as this pit is expected to have saline water inflows through the talik; this saline groundwater and meteoric inflows will be pumped to the SWP. Saline water is expected to be present throughout the Llama TF period, therefore Llama TF is not expected to be used to provide reclaim water.

After mining of open pits is complete, the open pits will be used for tailings and contact water storage. For the first approximately four years of Operations (i.e., Year 1 to Year 5 Q1), the mined-out Echo Open Pit will be used for tailings deposition. From Year 5 Q1 to Year 11 Q4, tailings deposition will occur in Umwelt TF. The Echo TF will then be covered with waste rock as part of the Echo/Goose Main WRSA development. From Year 11 Q4 onward, tailings will be disposed in the Llama TF. Umwelt TF will remain a source of reclaim water for the process plant until end of operations. Umwelt and Llama TF will fill up with water in the later stages of operations and closure.

Starting in Year 9 after mining of Goose Main Open Pit is complete, the volume of contact water generated at the Property not required for reclaim water will be pumped to Goose Main Reservoir for permanent storage and to support closure filling of the reservoir. Saline water will also be pumped to Goose Main Reservoir for permanent storge. Recirculation treatment of contact water contained in the Umwelt and Llama TFs is expected to begin in Year 12 and Year 15, respectively, to reduce contaminant concentrations ahead of the Closure and Post-Closure phases.

8.2.4 WATER TREATMENT

A water treatment plan (WTP) will be operational in the open water season at the Goose Property during the second stage of dewatering of Llama and Umwelt Lakes that will occur in Year 2. The purpose of water treatment during lake dewatering is the removal of TSS, as discussed in Section 8.2.1.

Water treatment is inactive during Operations until mining of the Umwelt Open Pit is completed in Year 4, at which point saline water from the SWP is treated with an RO unit, with treated effluent pumped to the Umwelt TF and brine effluent deposited back in the SWP. This treatment will allow for additional storage capacity for saline water in SWP for the remainder of the Operations Phase. Seasonal treatment only (summer months only) is expected to be sufficient to manage water levels in SWP, except potentially in the first year of treatment when greater volume of water is in SWP. However, need for year-round treatment will be further investigated ahead of completing the design of the treatment plant.

Starting in Year 12 and Year 15, respectively, the Umwelt TF and Llama TF water is recirculated though treatment year-round to reduce metals, nitrogen species, major ions and suspended solids loading in

these facilities. Recirculation treatment in Umwelt and Llama TF, based on a treatment rate of approximately 5,000 m^3/day for each pit, is expected to continue to end of Closure Phase.

8.2.5 UNDERGROUND FACILITIES

Average groundwater inflows into the underground workings during the Operations Phase have been estimated for Umwelt, Llama, Echo, and Goose Main undergrounds, as well as Llama Open Pit (See Section 5.1.3, Table 5.1-1). Saline groundwater inflows encountered over the LOM will be pumped to the SWP, or Goose Main Reservoir once available starting Year 9, to create a meromictic lake.

8.2.6 WASTE ROCK STORAGE AREAS

During the Operations Phase, drainage from the WRSAs at the Goose Mine will be monitored and pumped to Primary Pond or active TF (as described in Section 8.2.3), ultimately providing water for reclaim at the Process Plant. Shallow groundwater around the WRSAs prior to freeze back will ultimately report to the event ponds (sometimes via sumps), which are situated at the local topographic low points. The containment dams around each pond will be lined with geosynthetic materials (liners) which will be keyed into bedrock where possible. If bedrock is not practical, the liners will be keyed into the permafrost foundation.

8.2.7 ORE STOCKPILE

During Operations, drainage from the Ore Stockpile will be collected in the Ore Stockpile Pond, which will be pumped to the active TF or Primary Pond.

8.2.8 TAILINGS MANAGEMENT FACILITIES

The tailings management strategy is based on the principle of maximizing the use of open pits for tailings storage. Tailings will be stored in the mined-out Echo, Umwelt, and Llama open pits as soon as mining is completed, and the pits are available for tailings deposition (Table 8.2-4).

Tailings will be deposited in Echo TF until Year 5 Q1; after this time, Echo TF will be covered with waste rock as part of the Echo/Goose Main WRSA.

Umwelt and Llama TFs will be partially (60% and 26%, respectively) filled with tailings, with the remaining pit volume filled with contact water. Evaluation of the tailings amounts that will be deposited in Umwelt TF and Llama TF will be refined during detailed engineering, and these changes will be provided in future updates to the WMP. Umwelt TF will be the main source of reclaim water during the winter season for the Operations Phase after completion of Echo TF.

Starting in Year 9, contact water not being used as reclaim water will remain in Umwelt TF, Llama TF, or be pumped to Goose Main Reservoir to support filling of the pits. Tailings disposal will continue in Llama TF. Recirculation treatment will begin (if needed) for the Umwelt and Llama TFs in Year 12 and Year 15, respectively, for the remainder of Operations and into Closure.

Table 8.2-4. Back River Property Tailings Management System Storage Requirements

Location	Period (Quarter and Year)	Tailings (Mm^3)
Echo TF	Y1, Q2 to Y5, Q1	3.2
Umwelt TF	Y5, Q1 to Y11, Q4	7.0
Llama TF	Y11, Q4 to Y13, Q3	3.1
Total Project	Y1, Q2 to Y13, Q3	13.4

8.2.9 EXPLOSIVES MANUFACTURE AND STORAGE

Pre-packaged explosives delivered by air or WIR will be used early in Construction until an ammonium nitrate (AN) facility is constructed at the Goose Property. AN for fuel oil (ANFO) production will be delivered to the mine site in shipping containers.

An explosives truck wash facility will be constructed and operated at the AN Facility. Wash water from this facility may be high in ammonia, suspended solids, and/or metals. This wash water will be treated at the AN Facility in an evaporator. Alternatively, the truck wash water will be transported to a water management pond for treatment or discharge as appropriate.

The Goose Mine is planning to transition from ANFO to emulsion (Figure A-01 for location of proposed Emulsion Plant). Details about this transition will be provided in future updates of the WMP.

8.2.10 MARINE LAYDOWN AREA

Water management strategies at the MLA will continue as current during the Operations Phase (Year 1 to Year 13) (Figure A-03).

8.3 PHASE 3: CLOSURE

Operations end in Year 13 Q3 and Closure begins in Year 14, for a total duration of 7 years (i.e., ends Year 20). Some closure activities may begin in the last quarter of Year 13. Water management during the Closure Phase relates to ongoing camp operation, passive and active filling of open pits, runoff control from WRSAs, recirculation treatment within the Umwelt and Llama TFs, treatment of water in Umwelt Treatment Pond and potentially in Goose Main Reservoir. These activities will continue to be implemented until the contact water in the flooded open pits and runoff from the WRSAs meet -site-specific discharge limits and receiving water quality objectives. At that point, passive discharge to the environment will be possible. Water management infrastructure and activities are depicted in Figure A-04, as well as the flow diagrams attached to Appendix C.

Further details regarding the Closure and reclamation activities are presented in the Interim Closure and Reclamation Plan (2AM-BRP1831 Amendment No. 1 Part J, Item 1).

8.3.1 CULVERT CLOSURE

Culverts will be removed from all-weather roads and the natural drainage restored. Roads will otherwise remain intact to ensure preservation of permafrost and facilitate long-term site access for monitoring and inspection.

8.3.2 BERM CLOSURE

During the Closure period, the diversion and containment structures will be breached to restore natural drainage and allow runoff to naturally support filling of the open pits. A general layout of the water management infrastructure that will be breaching is provided in Figure A-04 and A-05. Preliminary details on conditions to support breaching of individual diversions and containment structures are provided in Table 8.3-1.

Berm closure is not expected to significantly impact the water quality of site runoff water. All runoff is expected to meet the site runoff quality standards as indicated in the Licence. Water quality monitoring will occur at strategic locations throughout Closure to identify whether water quality criteria are being met.

Breached diversion structures will remain in place during and beyond the Post-Closure Phase. Collection ponds will have been breached, liners removed and landfilled, and the breaches re-contoured and armoured (if necessary) to allow for passive runoff.

Table 8.3-1. Diversion and Containment Berm Breach Schedule

Mine Year	Water Management Structure	Closure Timeline	Closure Strategy
14-20	SWP Containment Dam and Berms	Closure	Decommissioned water collected in SWP (now Umwelt Treatment Pond) is suitable for direct discharge to the environment.
	Primary Pond Containment Dam	Closure	All Primary Pond flows conveyed to the restored Umwelt Lake (formerly SWP). Umwelt WRSA capped and freeze back promoted.
	Ore Stockpile Pond Containment Dam	Closure	Ore Stockpile Pond is dewatered after removal of the Ore Stockpile. Runoff from the area will report to Goose Lake.
	Llama WRSA Containment Dams and Llama Open Pit Diversion/Collection Berms	Closure	Drains Llama WRSA Pond into Llama TF when open pit mining is complete, and Closure begins. Allow Llama TF to flood. Llama WRSA capped and freeze back promoted.
	Echo / Goose Main WRSA Containment Dam and Echo Diversion Berm	Closure	Echo / Goose Main WRSA Pond is dewatered upon completion of mining operations. Runoff from the area will report to Goose Lake. Echo / Goose Main WRSA capped and freeze back promoted.
	Goose Main Diversion Berm and Rascal Berm	Closure	Breached upon completion of Operations, allowing Goose Main Reservoir to flood.

8.3.3 OPEN PIT CLOSURE

The open pits, with exception to Echo Open Pit which is covered with waste rock, will be filled with water from reporting catchments as well as active filling with freshwater from Goose Lake (as required), thereby allowing both contact and non-contact water to fill the pits. Pit water will be monitored to ensure it meets applicable discharge criteria and then be allowed to overtop into nearby watercourses.

The Water and Load Balance Report presented in Appendix C provides a summary of the average monthly water quality concentrations at the time of flooding and the average open water long-term steady state conditions at the downstream prediction nodes of the flooded open pits. These predictions are compared to MDMER discharge limits. With the support of recirculation treatment within the Umwelt and Llama TFs, treatment of the Umwelt Treatment Pond effluent and treatment in the Goose Main Reservoir, all parameters in each pit lake facility are expected to meet MDMER limits at the time of flooding, and long-term steady state conditions are expected to meet CCME guidelines or SSWQOs as appropriate. As required, water treatment will continue into the Closure Phase until water quality guidelines are met.

Llama Open Pit (or Llama Reservoir), which was already partially flooded by the operation of Llama TF, will be further flooded as all Llama diversion berms will be breached, as well as active filling with freshwater from Goose Lake as required. Runoff from the Llama WRSA will also be routed to Llama TF. The Llama TF will overtop under average hydrologic conditions within the Closure Phase and discharge into Goose Lake via Umwelt Lake (formerly the SWP). Recirculation treatment in Llama TF will continue year-round until water quality objectives are met.

Umwelt Open Pit (or Umwelt Reservoir), which was already partially flooded by the operation of Umwelt TF, will be allowed to continue to fill with catchment water, as well as active filling with freshwater from Goose Lake as required. Umwelt Reservoir will be breached at the north end and will overtop into Goose Lake via Umwelt Lake (formerly the SWP) within the Closure Phase under average hydrologic conditions.

Goose Main Open Pit (or Goose Main Reservoir), which was already partially flooded with supernatant water and saline water collected at the Goose Mine during Operations, will be allowed to fill with catchment water after berms are breached. Goose Main Reservoir will be breached at the east side and overtop into Goose Lake once water quality objectives have been met, which is expected to occur within the Closure Phase with the support of active filling with freshwater from Goose Lake under average hydrologic conditions. The freshwater cap above the saline water will promote formation of a meromictic lake.

Pit lake water quality monitoring will be conducted to ensure water meets discharge criteria prior to pit overtopping and passive discharge. In the unlikely event that the water in any of the pit lakes is not suitable for discharge, the pit lake water will be batch-treated to address remaining water quality impairments. B2Gold Nunavut intends to implement five years of post-closure water quality monitoring for each open pit to ensure that water quality objectives are met. If closure objectives have not been met in this five-year monitoring period, B2Gold Nunavut will extend monitoring beyond the stated 5-year Post-Closure monitoring period. Additional details of the above proposed monitoring are included in the ICRP (2AM-BRP1831 Amendment No. 1 Part J, Item 1).

As described in Section 8.2.6, Echo Open Pit will be filled with tailings and covered with waste rock as part of the Echo/Goose Main WRSA.

8.3.4 UNDERGROUND FACILITY CLOSURE

Saline groundwater encountered during Operations will be permanently stored in the Goose Main Reservoir. Vent raises and the underground portals will be capped with concrete and waste rock,

respectively. The underground mines will be backfilled with waste rock material and/or flooded with natural runoff/groundwater.

8.3.5 WASTE ROCK STORAGE AREA CLOSURE

During Operations, potentially acid generating (PAG) material in WRSAs will be progressively covered with NPAG material during the development of each facility. Progressive reclamation will consist of a 5-m cap of NPAG waste rock to promote the aggradation of permafrost into the WRSAs so that the PAG rock remains frozen. The majority of WRSA closure activities will occur during Operations, and minor NPAG covering activities will occur during the Closure Phase. Permafrost aggradation into the WRSAs will be monitored during placement and once the WRSAs are closed.

Once the WRSA runoff consistently meets the site-specific contact water discharge criteria following completion of WRSA operations, the WRSA ponds and diversion structures will be breached and removed, and the final post-closure discharge will be established. Five years of post-closure water quality monitoring from the WRSAs will take place to confirm water quality objectives are being met.

8.3.6 ORE STOCKPILE FACILITY CLOSURE

Milling of all remaining stockpiled material will be completed in Year 13. The Ore Stockpile Pond Containment Dam will be breached and runoff from the area will be restored to its natural drainage, directed towards Goose Lake. Five years of post-closure water quality monitoring will be conducted in the area to confirm runoff meets water quality objectives.

8.3.7 TAILINGS MANAGEMENT FACILITY CLOSURE

No tailings deposition or milling will occur during the Closure Phase. The final closure measures for each tailings facility (i.e., Echo TF, Umwelt TF, and Llama TF) are described in Section 8.3.3, Open Pit Closure.

8.3.8 SALINE WATER POND CLOSURE

During operations, the remaining contact water in SWP will be removed and pumped to Goose Main Open Reservoir. The top 1 to 2 m layer of sediments underlying the original footprint of Umwelt Lake is also planned to be excavated and placed into Goose Main Reservoir or Llama TF. It is expected that this removal may start as early as Year 9, when Goose Main Reservoir becomes available. If the removal will occur at opening of Goose Main Reservoir, the sediments will be place in Goose Main Reservoir. If the removal is delayed to later stages of operations or into closure the removed sediments will be placed in Llama TF. The excavation and storage of this sediment have been included into the Water and Load Balance model. The remaining chloride in the porewater of the sediments underlying the original footprint of Umwelt Lake is assumed to diffuse upwards into Umwelt Lake within the first year of flow being re-established.

The proposed depth of sediment excavation was determined by a chloride diffusion model that calculated the concentration of chloride in the porewater of the sediment underlying the SWP over time, based on the predicted chloride concentration in the SWP water itself (Sabina 2015, Appendix V2-7H). Should the chloride concentration at first 2 m of depth be higher than the long-term CCME guideline,

additional sediment underlying the original footprint of Umwelt Lake will be excavated and placed in Llama TF.

Water treatment is expected to be required in the Umwelt Treatment Pond when it receives water form Llama TF and umwelt TF. When water treatment in Umwelt Treatment Pond is no longer needed, the SWP Containment Dam will be breached allowing Umwelt Lake to re-establish. No further water management activities at the SWP will occur during Closure. Water quality monitoring will occur during Closure and first five-year period of Post-Closure to confirm water quality objectives are being met.

8.3.9 WATER TREATMENT CLOSURE

Once water treatment is completed at the Project, the WTPs and all associated pipelines will be dismantled, cleaned, and disposed of in the landfill. All WTP will be decommissioned once runoff water quality at designated control points has met the required closure criteria (i.e., Water Licence and MDMER discharge limits).

Recirculation water treatment will be required in Umwelt and Llama TFs, and water treatment before discharge is expected to be required in Umwelt Treatment Pond. Water treatment in Goose Main Reservoir is not expected to be required but will be implemented if required. All water treatment is expected to terminate by end of Closure phase. Should additional treatment be required to meet water quality objectives, B2Gold Nunavut would continue the water treatment into the Post-Closure Phase during the open water season in Umwelt TF and/or Llama TF, or from the Umwelt Treatment Pond and Goose Main Reservoir. Once objectives have been confirmed by water quality sampling, all pumping and piping infrastructure, as well as the WTP itself, will be dismantled and landfilled. Any sludge produced from water treatment during the Closure Phase will also be landfilled.

8.3.10 MARINE LAYDOWN AREA CLOSURE

Water management strategies at the MLA will remain consistent during the Closure Phase (Year 14 to Year 20).

The MLA will require minimal closure with the respect to water management as the site does not require ponds or other diversion infrastructure for water management purposes. Decommissioned roads and pads, which will be constructed using geochemically suitable material, will be designed to have runoff as dispersed sheet flow to minimize channelized flow.

Refer to the Interim Closure and Reclamation Plan (2AM-BRP1831 Amendment No. 1 Part J, Item 1) for discussion on other closure aspects of the MLA.

8.4 PHASE 4: POST-CLOSURE

Water management activities during the Post-Closure Phase at the Goose Property are presented in the flow diagrams in Appendix C and are depicted in Figure A-05. All water management structures are decommissioned during Closure. The Goose Airstrip Culvert crossing will be removed, and the Goose Airstrip will be decommissioned.

Water management strategies at the MLA will remain consistent during the Post-Closure Phase (Year 21+).

8.5 WATER MANAGEMENT – CARE AND MAINTENANCE

Temporary closure (also termed Care and Maintenance) is defined as the cessation of mining and processing operations for a finite period of time with the intention of resuming operations upon resolution of the cause of cessation (MVLWB/AANDC 2013). Care and Maintenance activities will depend on the phase at which cessation of operations takes place. For more details, refer to the Interim Closure and Reclamation Plan (2AM-BRP1831 Amendment No. 1 Part J, Item 1).

Monitoring will take place and continue as outlined in Section 10 at whatever phase cessation occurs. Key surface water infrastructure will be maintained through Care and Maintenance to ensure proper operation. Depending on the stage at which temporary closure occurs, the water level in the active tailings management facility at the time may need to be monitored as there will be a net buildup of water due to precipitation inflows and no water reclaim for processing. Should temporary closure occur for an extended period of time (i.e., two or more years), it may be necessary to begin pumping from the active tailings management facility and treating the excess water for discharge.

9. ENVIRONMENTAL PROTECTION MEASURES

9.1 GENERAL OBJECTIVES

The purpose of environmental protection measures for site water management is to eliminate or reduce Project effects on water quality.

The main objectives of B2Gold Nunavut's water management strategies are to:

- Minimize the amount of water that contacts mine ore and wastes, which ultimately reduces the volume of water requiring management;
- Appropriately manage all contact water and discharges to protect local aquatic resources; and
- Implement water conservation and recycling to maximize water reuse and minimize the use of natural waters.

Protection measures may include the planning and design of engineered structures, the application of control technologies, the implementation of BMPs, and specific requirements from regulatory authorizations. Monitoring of the protection measures and adaptive management are also an integral part of effective environmental protection measures.

Pending further direction from the NWB, B2Gold Nunavut is committed to maintain a WMP designed to meet the above main objectives. The WMP includes monitoring that demonstrates that contact water (runoff and shallow groundwater) from the ore storage and WRSAs is adequately captured and managed consistent with the WRMP (2AM-BRP1831 Amendment No. 1 Part F, Item 1).

9.2 WATER USAGE

The following protection measures will be applied to water usage:

- Freshwater intake and discharge pipelines will be designed to limit erosion and sedimentation, protect against freezing, and accommodate peak flows;
- Controlled construction of the engineered intake and discharge pipelines will ensure minimal changes in turbidity and resuspension of sediment;
- All material used in construction will be clean, free of sediment, and geochemically stable; and
- All intake and discharge pipelines will be screened in accordance with the *Freshwater Intake End-of-Pipe Fish Screen Guideline* (DFO 1995). The water withdrawal rate will be controlled such that fish do not become impinged on screens.

Water will be recycled to the maximum extent possible. The most significant water recycling activities will be within the tailings management facilities. The Echo TF, Umwelt TF, and Llama TF will store both tailings solids and supernatant water. The supernatant water will include contact water from the open pits and WRSAs. Water will be recycled and form the main source of reclaim water for the Process Plant.

9.3 CONSERVATION MEASURES

Long-term water usage has been closely evaluated; the focus has been on identifying maximum water use, while protecting fish and fish habitat. Short-term use will be required for various Project activities (e.g., WIR construction, dust suppression). Potential short-term water sources will be evaluated in advance to determine if these sources will be adequate for the activity in accordance with the DFO (2010) winter water withdrawal guidelines, including:

- Total water withdrawal from a single waterbody will not exceed 10% of the available water volume; and
- Only waterbodies with a minimum unfrozen water thickness of 1.5 m under ice will be considered for water withdrawal.

B2Gold Nunavut is committed to minimize and mitigate impacts to fisheries. For fish-bearing crossings, B2Gold Nunavut will implement all applicable DFO BMPs to avoid and mitigate serious harm to fish as the result of water crossing construction, operation, and decommissioning for all fish-bearing water crossings. These measures will include, but are not limited to, appropriate design of water crossings to facilitate fish passage at both high and low flows; timing windows that incorporate spawning, incubation, and hatch times for all species using watercourses; sediment and erosion control; protection of riparian vegetation; and other forms of bank stabilization.

B2Gold Nunavut will ensure that all Project infrastructure in watercourses is designed and constructed in such a manner that this infrastructure does not unduly prevent or limit the movement of water in -fish bearing streams and rivers, unless otherwise authorized by DFO. In addition, unless otherwise directed by DFO, B2Gold Nunavut's monitoring program for culverts on fish-bearing watercourses during the Construction, Operations, and Closure phases will include measures to ensure that barriers to fish passage do not form over time as a result of crossing damage due to ice blockage, flooding, or movement of debris; all of which may occur at freshet. Detailed design drawings and an updated monitoring program for culverts on fish-bearing watercourses will be produced prior to construction.

B2Gold Nunavut anticipates, and has confirmed with the DFO, that an update is necessary to the existing DFO Letter of Advice (18-HCAA-00971) to reflect planned in-water works related to the MLA Shoreline Pad Extension. B2Gold Nunavut will also prepare an application addressed to Transport Canada to ensure any in-water works will not substantially interfere with navigation as required under the *Navigation Protection Act* (Sabina 2020). A full as-built drawing will also be completed once the Shoreline Pad Extension has been constructed at the MLA.

B2Gold Nunavut will continue to engage DFO, the Kitikmeot Inuit Association, and other interested parties during the regulatory phase on the design, construction, and operation of adequate fish passage to permit migration of Arctic Grayling from Goose Lake to natural spawning and rearing habitat located in upper Rascal Stream East, which is located south of the Project airstrip. Any additional information required to ensure the design of the fish passage will be completed prior to significant construction activities at the Goose Property. Specifically, B2Gold Nunavut will provide annual monitoring updates regarding the Rascal Stream Fish Passage that enables parties to determine its effectiveness.

In alignment with dewatering activities in Llama and Umwelt lakes, a fish-out program was completed ahead of initiation of dewatering. The fish-out program followed the DFO's *General Fish-Out Protocol for*

Lakes and Impoundments in the Northwest Territories and Nunavut (Tyson et al. 2011). Additional details are provided in the annual reporting.

9.4 GENERAL SITE RUNOFF

Collected water, snowmelt, or runoff that meets the applicable water licence criteria will be discharged to land, and where possible at a minimum setback of 31 m from a waterbody. To protect the freshwater environment during construction and decommissioning activities, the Project will minimize runoff and the transport of material into freshwater by the following planning and design measures:

- WRSAs will be confined to the local watersheds where the deposits are located to the extent practicable to limit potential effects on water quality in local drainage areas;
- Infrastructure will be located, whenever feasible, on competent bedrock or appropriate base material that will limit permeability and the transport of potentially lower quality water into the active layer and ultimately to the freshwater environment;
- Footprint areas of Project components will be minimized to the extent practicable, such as locating infrastructure nearer to the central location of Project sites around the deposits; and
- The landscape will be reclaimed as soon as feasible to minimize erosion potential.

At select water crossings, pumping or siphoning may be employed to facilitate the transfer of water from one side of the structure to the other side. Pumping can also serve as a temporary solution during freshet or prior to a culvert installation.

9.4.1 SEDIMENT AND EROSION CONTROL MEASURES

Surface water will be managed within the Project footprint such that sediment-laden runoff is minimized, intercepted, and/or treated prior to entering downstream receiving waters or mine process facilities. Effective sediment control depends on the isolation of easily erodible, disturbed ground surfaces.

Measures will be implemented to reduce the quantity of runoff where the mobilization of sediments cannot be eliminated. Sediment-laden water will be captured and routed to sediment basins.

Sediment and erosion management and control during initial and ongoing construction activities may involve establishing contact water collection ditches/berms, constructing sediment ponds, limiting land disturbance to a practicable minimum, reducing water velocities across the ground through surface texturing and re-contouring, and progressively rehabilitating and stabilizing disturbed land surfaces to minimize erosion.

Exposed landscape surfaces will be protected by the installation of covering material such as riprap, aggregate, or rolled erosion control products. Runoff flow may be controlled by a combination of measures, including:

- Texturing/grading of slopes to slow runoff and reduce effective slope length;
- Synthetic permeable barriers and/or fibre rolls to reduce runoff velocities and retain sediments; and
- Check dams, gabions, and energy dissipation structures to reduce flow velocities in channels.

- Sediment levels in runoff will be minimized by intercepting sediment before it reaches the freshwater environment. In addition to measures aimed at controlling runoff flow, the quantity of transported material in runoff may be controlled by measures including:
- Preserving riparian zones that trap sediment and reduce flow velocities;
- Installing synthetic permeable barriers, fibre rolls, and/or silt fences as required;
- Installing check dams, gabions, and sediment basins to reduce flow velocities and encourage sediment deposition;
- Maintaining and repairing any machinery prior to use that has the potential to result in a fluid release or leak; and
- Locating fuel transfer and maintenance activities greater than 31 m from a watercourse or waterbody, except for approved activities near water.

B2Gold Nunavut will implement the following mitigation and management measures for erosion and sediment controls, as well as the following bank stabilization measures:

Mitigation by Erosion and Sediment Control

- The area of landscape disturbance will be minimized, and restoration will occur as soon as possible to minimize erosion potential.
- Silt fences will be used in areas of cuts and excavations, downslope from exposed or erodible areas, to prevent sedimentation of waterbodies.
- Effective erosion and sediment control measures will be installed before starting work to prevent sediment from entering the waterbody.
- Site isolation measures (e.g., silt boom or silt curtain) will be used to contain suspended sediment where in-water work is required.
- Regular inspection and maintenance of erosion and sediment control measures and structures will be conducted during construction.

Mitigation by Shoreline/Bank Re-vegetation and Stabilization

- Clearing of riparian vegetation will be kept to a minimum to avoid disturbance to the riparian vegetation and prevent soil compaction.
- If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, appropriately sized, clean rock will be installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
- Exposed landscape surfaces will be protected, where possible, by the installation of covering material like riprap, aggregate, or rolled erosion control products.
- Decommissioning of the roads will involve restoring natural drainages and stabilizing any slopes where there is potential for erosion; stabilization measures may require pulling back of side-cast fills on locally steep slopes or buttressing and/or re-contouring of steepened slopes using NPAG material.

A TSS-turbidity relationship will be developed, where needed, either from historical site data (if sufficient TSS-turbidity data are available to create a statistically supported relationship), experimentally, or during

construction activities (in which case, the use of Turbidity in place of TSS would only be possible once a relationship had been established; until that time, compliance would only be verifiable through TSS concentrations). The methodology to be used will depend on the activity site, the amount of historical data available, and the planned work. In all situations, regression analysis will be used to identify site-specific statically significant relationships (equations) relating turbidity to TSS to allow the derivation of TSS from in-field measurements of turbidity. TSS will be monitored during in-water construction against criteria presented in Section 7.5. Should monitoring indicate that TSS has surpassed 80% of these criteria, additional mitigation measures will be implemented (such as a temporary reduction in, or cessation of, the activity, or the use of additional mitigation).

9.4.2 SALINE WATER MANAGEMENT

The SWMP is included an Appendix B to the WMP and provides details related to the management of saline groundwater in compliance with the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part B, Item 13m).

The SWMP provides a description of saline water management for the Project, outlines the procedures required to manage the quantity and quality of saline groundwater interacting with Project components throughout the mine life, and characterization of saline water inflows into the underground mine workings. The SWMP also includes monitoring of thermal conditions, monitoring of saline water at the Goose Mine, mitigation measures designed to address the potential for higher-than-predicted volumes of saline water inflows into open pit and undergrounds, and potential water treatment and disposal methods.

In summary, the saline water management strategy consists of collecting saline water from Llama Open Pit and the underground mine workings, and temporarily storing this groundwater in a dedicated storage facility, the SWP. The saline water collected in the SWP is treated with an RO unit and then used for reclaim in the Process Plant. Once Goose Main Pit mining is completed, saline water encountered will be transferred to Goose Main Reservoir for permanent storage. In the event of insufficient storage in the SWP before transfer to Goose Main Reservoir, saline water can be transferred to the Llama TF once active in Year 6, or Umwelt Underground, when the void space within the underground will be available. Additional details can be found in Appendix B.

9.4.3 MINE WATER RUNOFF MANAGEMENT

Environmental protection measures will be implemented to manage mine water runoff, including:

- Collection of all mine water runoff through use of diversions, collection ditches/berms, and pipelines;
- Recycling of mine contact water to the extent possible at the Goose Mine;
- Treatment of mine contact water prior to discharge to the environment during Construction, Operations, and Closure;
- Land discharge of mine contact water where possible, rather than direct discharge to surface waters; and

- Passive discharge of mine contact water during the Post-Closure Phase, provided discharge criteria are met.

At the Goose Mine, these measures will be achieved by collecting all mine contact water from open pits, ore stockpiles, and WRSAs. Water collected will be recycled for use in the Process Plant. At Closure, pit lakes will be equipped with spillways (where required) and allowed to overtop and discharge to the environment once monitoring confirms discharge limits have been achieved. In the unlikely event that mine water runoff from pit lakes and WRSAs do not meet discharge criteria, runoff from these areas will be directed to a central location for further treatment.

Diversion structures will be required around Llama, Goose Main, and Echo open pits to divert non-contact water away from mining areas. This strategy will reduce the total amount of contact water generated by the Project. Mine water runoff management has been optimized based on the plans as outlined in Section 6 of the original application (Sabina 2017). The management strategies will continue to evolve and will be finalized during detailed design.

9.5 ACID ROCK DRAINAGE / METAL LEACHING

The WMP and the WRMP (2AM-BRP1831 Amendment No. 1 Part F, Item 1) will be periodically updated as new geochemical information becomes available. The management and mitigation measures will include protocols for identification of appropriate quarry and borrow pit material for construction to minimize potential effects related to acidic rock drainage (ARD) or metal leaching (ML).

Goose Mine workings and waste rock represent a moderate ARD/ML potential. Low to moderate bulk neutralization potential (NP) contents could result in acidic drainage after a lag time of 14 to 20 years. Interaction with the deposit material and air/water could result in runoff/drainage exhibiting concentrations of arsenic and copper greater than MDMER limits. This plan has been designed to minimize exposure time of the mine workings and waste rock to air/water wherever possible to ensure the exposure time is less than the expected lag time.

9.6 BORROW PIT AND QUARRY DEVELOPMENT

Plans to develop aggregate sources, as well as the identified environmental protection measures and monitoring plans, are described in the Borrow Pits and Quarry Management Plan (2AM-BRP1831 Amendment No. 1 Part D, Item 1). The following summarizes the environmental protection measures identified to minimize impacts to water during borrow area and quarry planning and development:

- Maintain a setback distance of 31 m from creeks and streams (2AM-BRP1831 Amendment No. 1 Part D, Item 16);
- Preserve vegetative buffers to limit impacts on water quality;
- Use berms and ditches to direct runoff away from the excavation;
- Slope rock quarry floors so that water is diverted to a sump within the quarry or adjacent to the quarry boundaries where it can be monitored prior to release;
- Sample accumulated water within water collection areas for TSS, oil and grease, and ammonia -nitrogen;

- Apply sediment and erosion control measures such as those described in Section 9.4.1;
- Use dust skirts on conveyors and apply dust suppression measures as identified in the Air Quality Monitoring and Management Plan (Sabina 2019b);
- Monitor for ground ice during excavation of borrow areas;
- Monitor and address any subsequent settlement from ground ice to maintain positive drainage and avoid the ponding of water (which can further exacerbate thawing); and
- Routinely inspect the effectiveness of water management structures.

B2Gold Nunavut will maintain an appropriate setback distance between Project quarries and fish-bearing or permanent waterbodies, or implement appropriate mitigation measures, as required to prevent ARD/ML into such waterbodies.

These environmental protection measures are described further in the Borrow Pits and Quarry Management Plan (2AM-BRP1831 Amendment No. 1 Part D, Item 1). Individual quarry development plans and SOPs will be prepared by the contractor before extraction activities commence.

9.7 DUST MANAGEMENT

Dust from ore stockpiles and WRSAs is not expected to be substantial; however, dust will be monitored and managed to the extent reasonable. Crushing and screening operations will be conducted with equipment designed to mitigate dust dispersion. In the unlikely event that an unacceptable amount of dust is generated from end-dumping or front-loading during stockpiling and transferring operations, additional dust mitigation measures will be applied as identified in the WRMP (2AM-BRP1831 Amendment No. 1 Part F, Item 1). A nominal amount of water has been requested for dust suppression if needed (Table 7.3-1).

9.8 AMMONIA MANAGEMENT PLAN

AN will be used in large quantities by the Project. ANFO is the main explosive mixture to be used for mining at the Project. Ammonium nitrate will be delivered by sealift in solid form in tote bags within seacans. These bags will be protected from the elements to prevent contact with water during transport and storage. The seacans will be placed on a laydown pad at the Goose AN Facility. Water from the AN Facility truck wash will be collected and treated in an evaporator or transported to a water management pond for treatment or discharge as appropriate.

Ammonia concentration predictions for all sources were incorporated in the Water and Load Balance model; these sources include blasting residues associated with waste rock, Process Plant/tailings contributions, and camp wastewater. Ammonia, nitrate, and nitrite concentrations as a result of blast residue were derived from methods described by Ferguson and Leask (1998). These methods calculate the annual release of total AN as nitrogen based on the powder factor, fraction of ammonium nitrate in ANFO, the fraction of nitrogen content in AN, and the residual nitrogen remaining. Additional details on the assumptions are presented in the Water and Load Balance Report (Appendix C).

Adherence to BMPs for AN storage and handling will reduce risk of AN spillage; however, AN and/or ANFO may be spilled during handling or during use in the open pit or underground areas. Spill locations

would generally be limited to single storage bags within the AN Facility or seacans in the storage pad areas. These areas will be inspected regularly according to operating procedures. Spill prevention and response actions will include the following:

- Establish and use SOPs for handling and working around storage areas;
- Ensure proper containers are used for the storage and transport of explosives and AN;
- Restrict access to authorized and trained personnel;
- Conduct regular inspections of storage areas, containers, and transport vehicles with frequency driven by activity levels;
- Clean up dry AN according to established to minimize likelihood of nitrates entering watercourses;
- Manage and limit contact of AN and ANFO with snow and water, with particular anticipation of spring thaw/freshet period; and
- Properly dispose of spill material and any impacted rock pad material, which could include placing this material within a blast pattern prior to initiation.

More detailed spill response procedures for AN and explosives will be provided with the explosive's supplier Emergency Response Assistance Plan. An Emergency Response Assistance Plan will be prepared by the explosive's supplier for the transportation of explosives to all storage sites for the Project as required by the Transportation of Dangerous Goods regulations. For detailed information related to spill response for potential explosives, refer to the Spill Contingency Plan (2AM-BRP1831 Amendment No. 1 Part H, Item 1).

For specific water quality monitoring related to ammonia management refer to Section 10

10. MONITORING PROGRAM

The three types of monitoring proposed for mine development are:

- Environmental Monitoring locations as per Type A Water Licence (2AM-BRP1831 Amendment No. 1 Schedule I); which further refines three forms of general monitoring into:
  - Regulated discharge monitoring (i.e., set by legislation or authorization requiring specific discharge/effluent criteria to be met for compliance);
  - Verification monitoring (i.e., internal operation management monitoring); and
  - General monitoring (i.e., NWB general monitoring requirements set in Type A Water Licence [2AM-BRP1831 Amendment No. 1 Schedule I]);
- Performance Measurement Monitoring; which tracks performance of mitigation measures implemented, identifies environmental changes in the receiving environment, and validates environmental effects predictions; and
- Design Support Monitoring; which is site-specific field monitoring required to support detailed engineering designs and confirm modelling assumptions.

All three types of monitoring will be used at the Project. The sum of all three types of monitoring will provide sufficiently robust data to support decisions in water management.

The proposed general water monitoring program station locations provided in the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Schedule I). Additional information supporting the general water monitoring plan can be found in the General and Aquatic Effects Monitoring Program documents accepted by the NWB under Part B, Item 14, which includes the Environmental Management and Protection Plan, Aquatic Effects Management Plan, and the Quality Assurance/Quality Control Plan.

The Aquatic Effects Management Plan is a comprehensive monitoring program that considers -Project related effects on the aquatic environment and is harmonized in consideration of MDMER requirements. Where appropriate, all monitoring will be undertaken using established methods and defined Quality Assurance/Quality Control Plan and in accordance with the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part I, Item I).

B2Gold Nunavut will also have in place an internal inspection plan to monitor activities and mine components that could adversely affect the use of water or the deposit of waste into water. B2Gold Nunavut's internal due diligence plan for inspections is provided in the Environmental Management and Protection Plan (2AM-BRP1831 Amendment No. 1 Part I, Item 1), and this due diligence plan will be completed for each mine component or activity, including all earthworks or facilities constructed for the use, storage, treatment, and/or disposal of water, and/or waste into water.

Further, B2Gold Nunavut's proposed monitoring program for culverts on fish-bearing watercourses during the Operations and Closure phases will include measures to ensure that barriers to fish passage do not form over time as a result of crossing damage due to ice blockage, flooding, or movement of debris.

In addition, B2Gold Nunavut has completed the commitment to collect additional baseline water quality data to characterize the lakes and streams within the freshwater aquatic environment prior to

Construction, and B2Gold Nunavut has used this data to update the Water and Load Balance model to account for potential seasonal variation (2AM-BRP1831 Amendment No. 1 Part E, Item 16).

Results collected under the general monitoring program outlined in the Licence will be included in the monthly and annual reports required by the Licence. Results will be compared to applicable Water Licence criteria. The MDMER-related results will be reported as required under the MDMER requirements

11. ENVIRONMENTAL REPORTING

Internal reporting structures will provide the framework so monitoring results can be reviewed, instances of non-compliance with the WMP can be identified, and subsequent corrective action can be undertaken in a timely manner. Items of non-compliance with applicable permits, licences, and authorizations will be reported to the respective agency as outlined in those authorizations.

External reporting of B2Gold Nunavut's monitoring results and performance against this management plan will be in accordance with the following permits, licenses, approvals, and authorizations requirements (Table 11-1).

Table 11-1. Reporting Requirements

Regulatory Instrument	Responsible Agency	Information to be Reported	Frequency	Compliance Inspections
Project Certificate	NIRB	Terms and conditions relevant to water management	Annually	A NIRB Monitoring Officer will inspect the site against the Project Certificate annually
Type A Water Licence	NWB	Water licence reporting requirements, including those identified in this plan	Monthly (General Monitoring requirements); Detailed results in Annual Report	A NWB inspector will inspect the site
Authorization for HADD of fish habitat under the Fisheries Act	DFO	Specified in the authorization – focused on protection of fish habitat	Annually	A DFO s officer may inspect the site periodically to determine compliance
MDMER	ECCC	Effluent quality and toxicology; sediment, benthics, fish population data	Monthly reporting of effluent quality and receiving water quality; annual reporting	
AEMP	NWB	To be determined – possibly inclusive of water and sediment quality and freshwater biota	As prescribed in the AEMP; Detailed results in Annual Report	The AEMP will be submitted to the NWB and reviewed by other relevant agencies including DFO and ECCC

12. ADAPTIVE MANAGEMENT

The mine design, including the water management design, has been carefully prepared taking into consideration the vast database of site characterization data gathered for the Project, coupled with rigorous engineering analysis. Where data was limited, conservative assumptions were consistently applied. Notwithstanding, a key element of monitoring as outlined in Section 10 is to verify that mitigation measures in relation to water management activities are being implemented and are achieving their intended outcomes. Adaptive management will be employed where mitigation is not achieving the intended result. Alternative mitigation measures may be identified at a later time and will be reflected in updates to this plan and related management plans.

Possible water management scenarios and the potential contingency strategies are outlined Table 12-1.

Table 12-1. Water Management Contingency Strategies

Possible Scenario	Contingency Strategy
While dewatering Llama and Umwelt lakes to Goose Lake, the concentration of TSS may be higher than the expected 50% volume requiring treatment before discharge.	Treat a greater percentage of the water from Llama and Umwelt lakes. Additional contingencies described below.
Seepage from any of the contact berms or other dams on site occurs.	Repairs to the berms/dams may be required. Alternatively, seepage collection berms may need to be constructed and return pumps may be required.
Saline inflows into the mine workings are greater than expected.	Additional storage locations will need to be identified, blending of saline water with other contact water may be investigated, or treatment to desalinate the water may be required. See SWMP Section 7 for additional details.
Waste rock leaches a greater concentration of metals or other constituents than expected.	Additional settlement time or water treatment may be required.
The results of water quality monitoring (WMP, Appendix B) or the Aquatic Effects Monitoring Program (AEMP) shows non-compliance.	Identify the issue (e.g., contact water not collected by contact berms, seepage through contact berms, ineffective treatment) and develop a strategy to improve treatment or reduce the release of mine water.

Checking and corrective action will occur during dewatering through the evaluation of continuous flow data and daily TSS and turbidity data. Results of the monitoring program will be reviewed by the Environmental Team, and water quantity and quality trends will be updated on a time scale relevant to the dewatering activity. If the dewatering activity will take two weeks or less, then data will be updated daily. If dewatering will take longer, then a more appropriate time scale may be used (e.g., every 3 days or weekly). This program will allow early detection of changes in water quality and implementation of corrective actions, if required. If trigger levels or thresholds are approached or exceeded, dewatering activities will be suspended

13. REFERENCES

1985. *Fisheries Act*. R.S.C., C. F-14.

1988. *Environmental Protection Act*. RSNWT (Nu) C.E-7.

2002. *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. S.C. C. 10

B2Gold Nunavut, 23 February 2026. Notice of modification under Part G of 2AM-BRP1831 and related Schedule A Update.

Canadian Dam Association, 2013. Dam Safety Guidelines 2007 (Revised 2013). Canadian Dam Association. Revised October 2013. www.cda.ca.

Canadian Dam Association, 2014. *Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams*. 2014 www.cda.ca.

CCME (Canadian Council of Ministers of the Environment). 1999 (with updates to 2017). *Canadian Environmental Quality Guidelines for the Protection of Aquatic Life – Summary Table*. Available at: http://st-ts.ccme.ca/.

CCME (Canadian Council of Ministers of the Environment). 2007. *A Protocol for the Derivation of Water Quality Guidelines*. Available at: http://ceqg-rcqe.ccme.ca/?config=ccme&thesite=ceqg&words=&image.x=6&image.y=14

CCME. 2013. *Canadian Environmental Quality Guidelines for the Protection of Freshwater Aquatic Life*. Available at: http://st-ts.ccme.ca/.

CCME. 2016. *Canadian Water Quality Guidelines for The Protection of Aquatic Life: Summary Table*. Canadian Council of Ministers of the Environment: Winnipeg, MB. http://st-ts.ccme.ca/en/index.html (accessed January 2016).

Chow, V.T. 1994. *Open Channel Hydraulics*. McGraw-Hill.

Church, M. 1974. *Hydrology and permafrost with reference to northern North America*. Proc. Workshop Seminar on Permafrost Hydrology, Can. Nat. Comm., IHD, Ottawa, pp. 7 - 20.

DFO (Fisheries and Oceans Canada). 1995. *Freshwater Intake End-of-Pipe Fish Screen Guideline*. Communications Directorate DFO: Ottawa.

DFO. 2010. *DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunav*ut. June 21, 2010.

DFO. 2019a. *Fish and Fish Habitat Protection Policy statement*. August 2019.

DFO. 2019b. *Policy for Applying measures to Offset adverse Effects on Fish and Fish Habitat Under the Fisheries Act*. December 2019.

DFO. 2019c. DFO Measures to Protect Fish and Fish Habitat, including those for the Timing Window to Conduct Projects In or Around Water, Sediment Control, and other applicable measures (see https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html)

DFO. 2020. *Standards and Codes of Practice, including those for End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater* (also see DFO 1995), Culvert Maintenance, Temporary Stream Crossings, and other applicable standards (as described at https://www.dfo-mpo.gc.ca/pnw-ppe/practice-practique-eng.html)

George, W.L. 2008. *Case Study: Site-wide water balance of the Pierina Gold Mine, Peru*. Vail, Colorado: Tailings and Mine Waste Conference

Government of Canada. 2002. *Metal Mining Effluent Regulations*. SOR/2002-222; current to November 18, 2012.

Ferguson, K.D. and Leask, S.M. 1988. *The export of Nutrients from Surface Coal Mines. Environment Canada, Conservation and Protection, Pacific and Yukon Region*. Regional Program Report 87-12.

Kane, D.L., Gieck, R.E., Hinzman, L.D. 1997. *Snowmelt Modeling at Small Alaskan Arctic Watershed*. Journal of Hydrologic Engineering. Vol. 2, No. 4, 204-210.

MVLWB/AANDC (Mackenzie Valley Land and Water Board & Aboriginal Affairs and Northern Development Canada). 2013. *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*.

MVLWB. 2020. *Method for Determining Available Winter Water Volumes for Small-Scale Projects*. April 27, 2020.

NIRB. 2017. *Revised Final Hearing Report Back River Gold Mine Project*. NIRB File No. 12MN036. July 2017.

NRCC (Natural Resources Canada). 2014a. *2010 National Building Code Seismic Hazard Calculation*. Website at http://www.earthquakescanada.nrcan.gc.ca/hazard-alea/interpolat/index_2010-eng.phpAccessed on October 14, 2014.

Rescan (Rescan Environmental Services Ltd.). 2014. *Back River Project: 2004 to 2014 Meteorology Baseline Report*. Prepared for: Sabina Gold & Silver by Rescan Environmental Services Ltd (an ERM Company). December 2014.

Sabina (Sabina Gold & Silver Corp.). 2015. *The Back River Project, Final Environmental Impact Statement*. Submitted to the Nunavut Impact Review Board. November 2015.

Sabina. 2017. *Revised Type A Water Licence Application for Sabina Gold & Silver Corp. Back River Project*. Submitted to the Nunavut Water Board. October 4, 2017.

Sabina. 2018. *Back River Project Marine Monitoring Plan*. Version 1.1. May 2018.

Sabina. 2019a. *Back River Project Fish Offsetting Plan*. Version 3. Prepared by Golder Associates Ltd. June 2019.

Sabina. 2019b. *Back River Project Air Quality Monitoring and Management Plan*. Version 2. July 2019.

Sabina. 2020. *Back River Project Modification Package*. Version 2. October 2020.

SRK Consulting (Canada) Inc. 2014. *Rascal Realignment Hydraulic Model.* Prepared for Sabina Gold & Silver Corp. October 2014.

SRK. 2015a. *Back River Project – Hydrology Report.* Prepared for Sabina Gold & Silver Corp. by SRK Consulting (Canada) Inc. April 2015.

SRK. 2015b. *Back River Project – Water and Load Balance Report.* Prepared for Sabina Gold & Silver Corp. by SRK Consulting (Canada) Inc. September 2015.

SRK. 2015c. *Climate Change Integration into Engineering Design for the Back River Project*. Prepared for: Sabina Gold & Silver Corp. by SRK Consulting (Canada) Inc. October 2015.

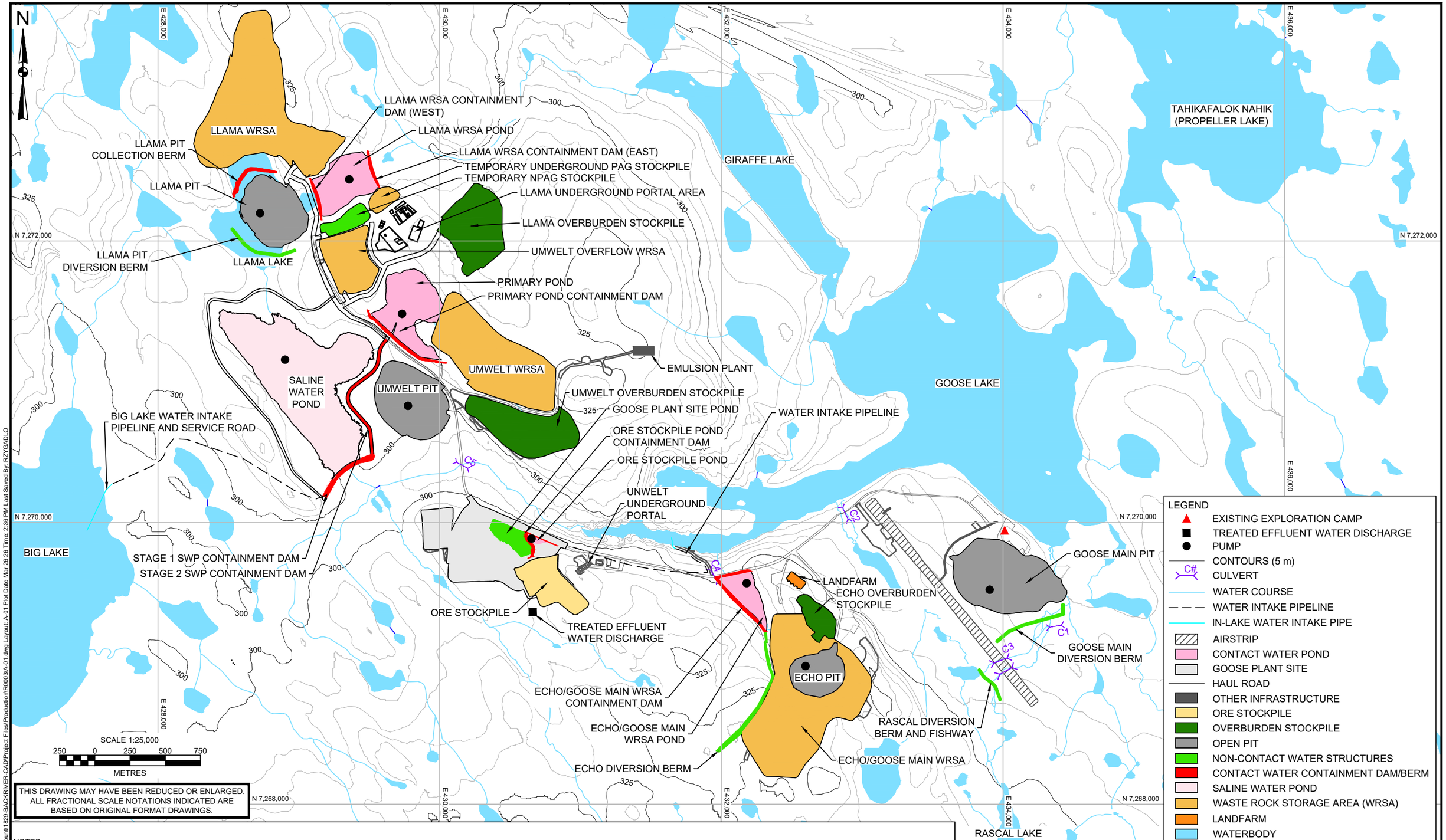
SRK. 2015d. *Back River Project: Climate Change Projections for Use in Engineering Design*. Report prepared for Sabina Gold and Silver Corp., Project No. 1CS020.008, November 2015.

SRK. 2020. *Back River Project: Water and Load Balance Report*. Prepared for Sabina Gold & Silver Corp. by SRK Consulting (Canada) Inc. June 2020.

SRK. 2021. *Back River: Updated Feasibility Study – Hydrology Update*. 16 July 2021. Tyson, J. D., W. M. Tonn, S. Boss, and B. W. Hanna. 2011. General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut. Canadian Technical Report of Fisheries and Aquatic Sciences 2935.

USDA, U. S. 1986. *Urban Hydrology for Small Watersheds*. Conservation Engineering Division: Technical Release 55.

APPENDIX A FIGURES



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NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
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3. HYDROGRAPHY DATA OBTAINED FROM GEOGRATIS DEPARTMENT OF NATURAL RESOURCES CANADA MODIFIED BY GOLDER. CONTOUR INTERVAL IS 5 m.
4. FOOTPRINT DATA RECEIVED BY B2GOLD ON DECEMBER 12, 2025 AND JANUARY 7, 2026.
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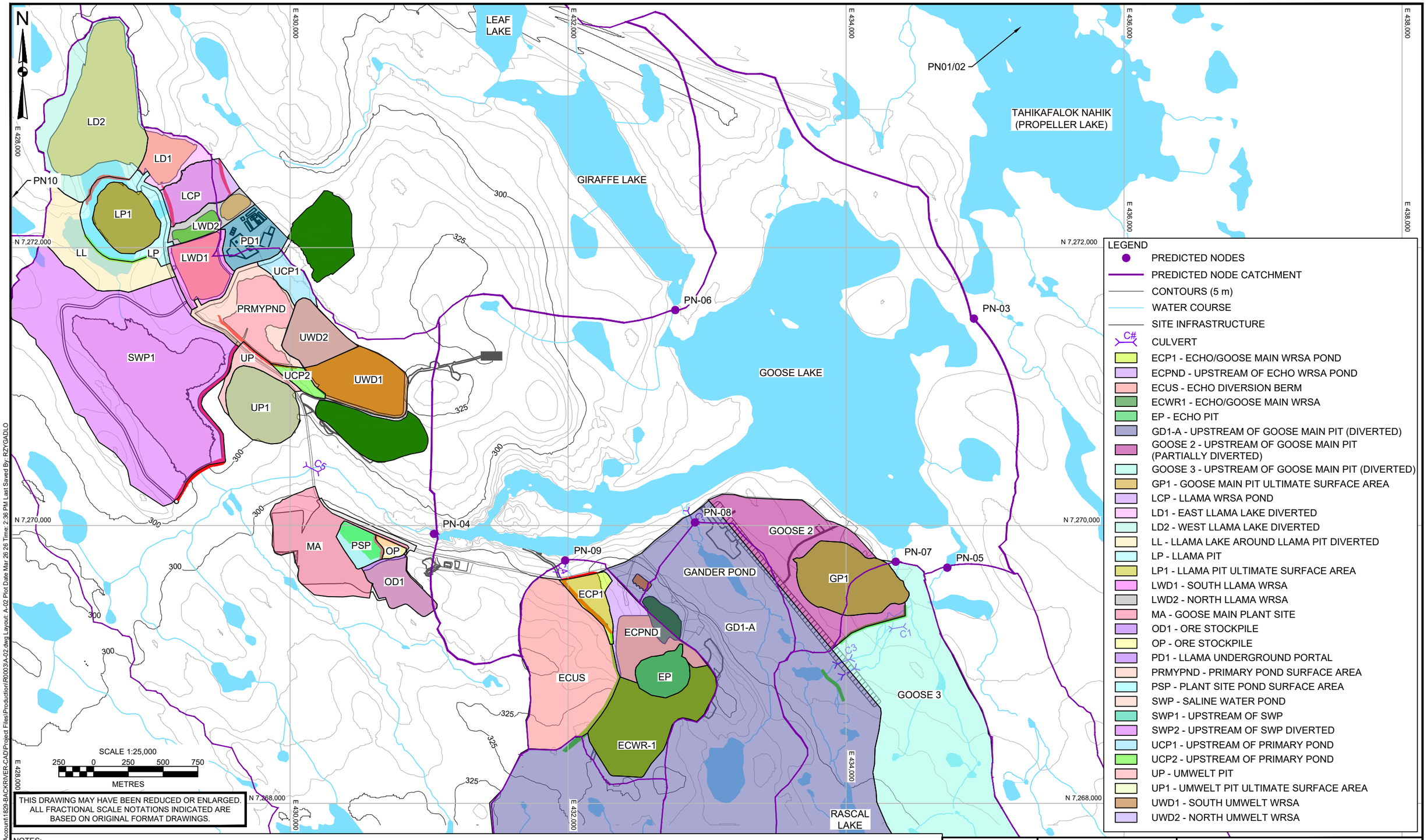
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PROJECT No.: **1829001**

DWG No.: **A-01**

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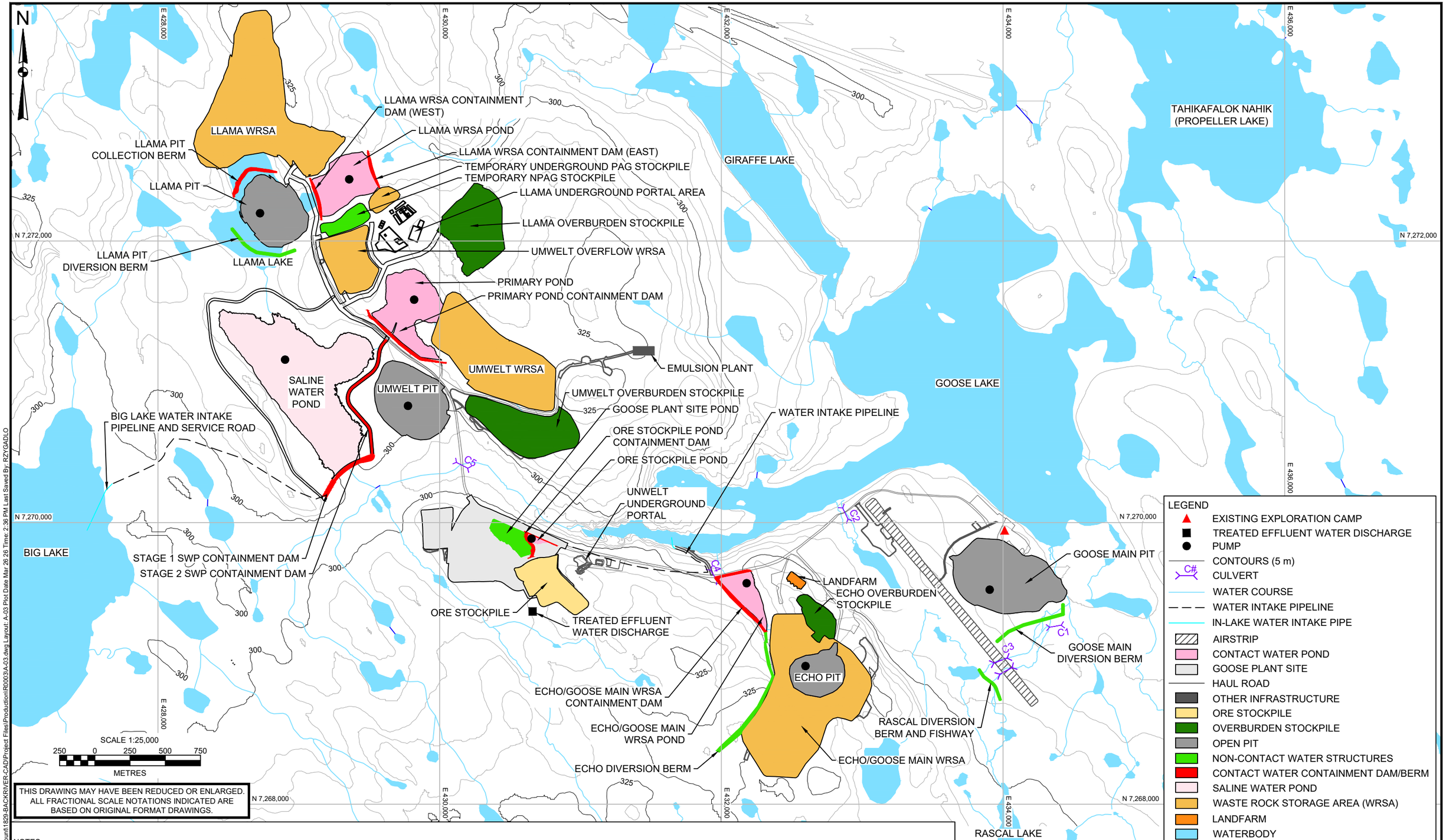
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PROJECT No.: **1829001**

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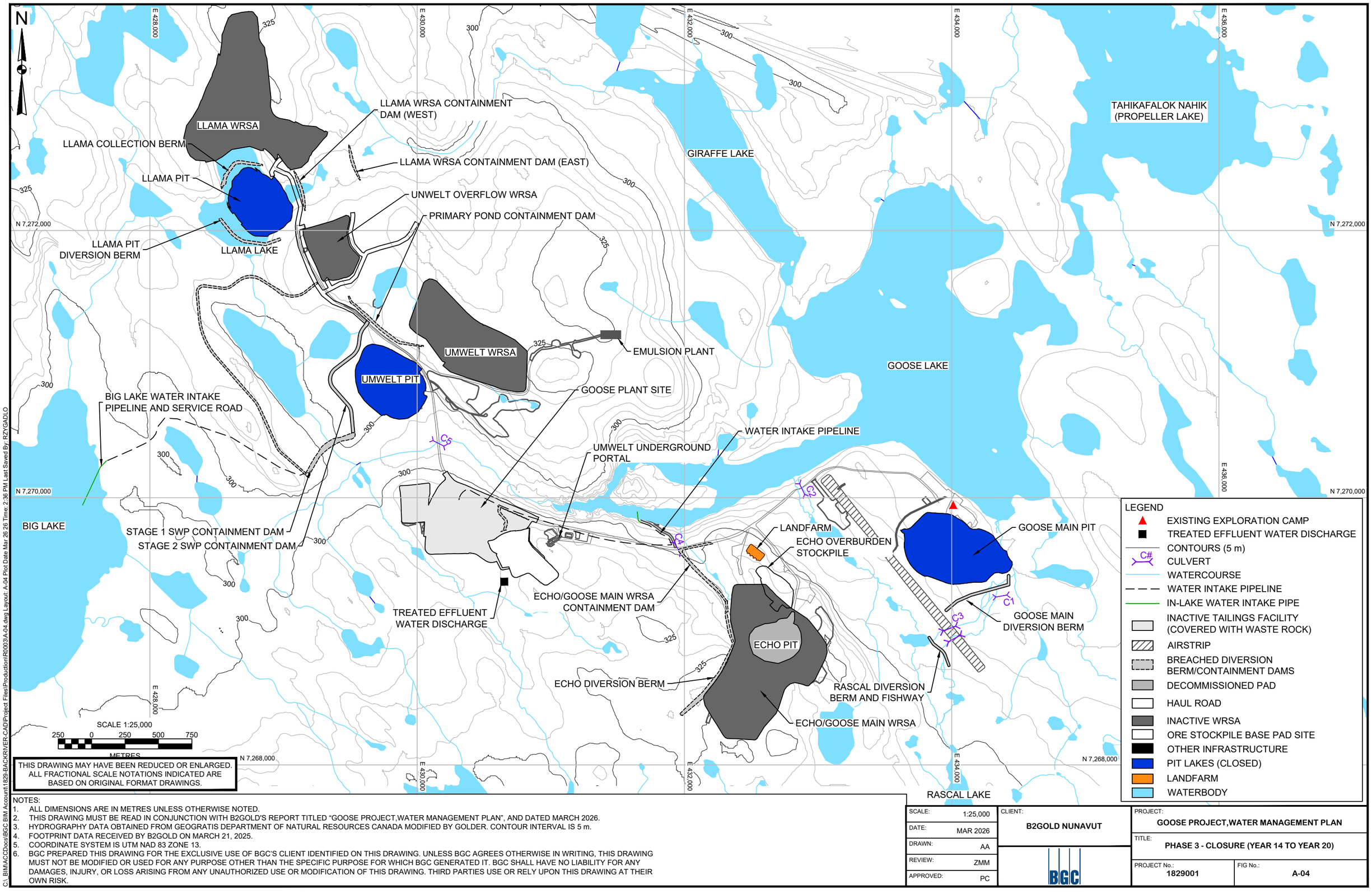
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TITLE: **PHASE 2 - OPERATIONS (YEAR 1 TO YEAR 13)**

PROJECT No.: **1829001**

DWG No.: **A-03**

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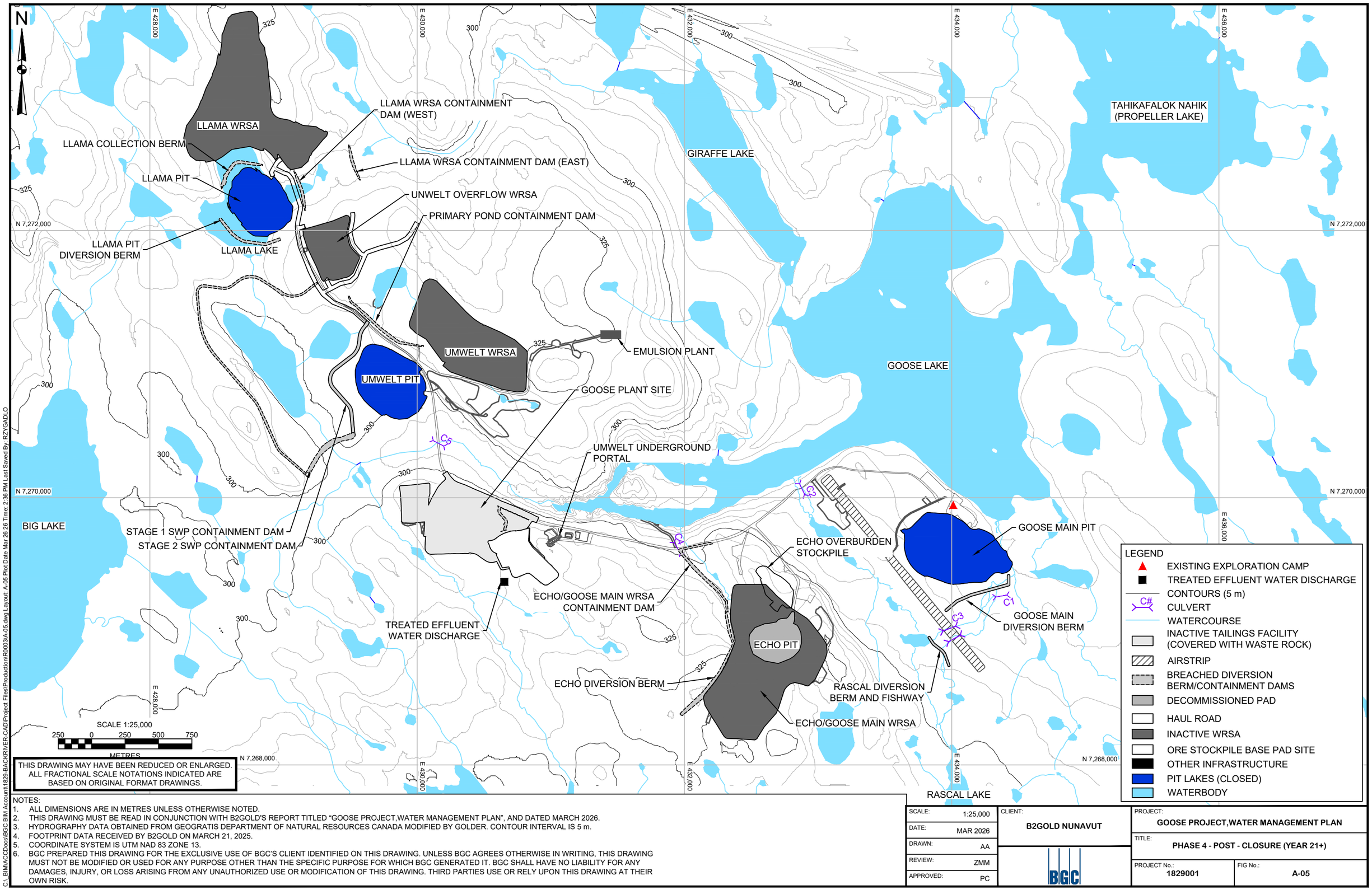
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PROJECT: **GOOSE PROJECT,WATER MANAGEMENT PLAN**

TITLE: **PHASE 3 - CLOSURE (YEAR 14 TO YEAR 20)**

PROJECT No.: **1829001**

FIG No.: **A-04**



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LEGEND

- EXISTING EXPLORATION CAMP
- TREATED EFFLUENT WATER DISCHARGE
- CONTOURS (5 m)
- C# CULVERT
- WATERCOURSE
- INACTIVE TAILINGS FACILITY (COVERED WITH WASTE ROCK)
- AIRSTRIP
- BREACHED DIVERSION BERM/CONTAINMENT DAMS
- DECOMMISSIONED PAD
- HAUL ROAD
- INACTIVE WRSA
- ORE STOCKPILE BASE PAD SITE
- OTHER INFRASTRUCTURE
- PIT LAKES (CLOSED)
- WATERBODY

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PROJECT: **GOOSE PROJECT,WATER MANAGEMENT PLAN**

TITLE: **PHASE 4 - POST - CLOSURE (YEAR 21+)**

PROJECT No.: **1829001**

FIG No.: **A-05**

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APPENDIX B SALINE WATER MANAGEMENT PLAN

GOOSE MINE

SALINE WATER MANAGEMENT PLAN V.4.0

DATE
June 2026



DOCUMENT DETAILS

The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from the Word file, but should be deleted from the PDF.

PROJECT NAME	Goose Mine
DOCUMENT TITLE	Water Management Plan - Appendix C: Saline Water Management Plan
Date	June 2026
Version	4.0
Author	B2Gold Nunavut

DOCUMENT HISTORY

Version	Date	Author	Comments
1	June 2018	N/A	Addition of Appendix C: Saline Water Management
2	May 2020	N/A	Updated to reflect the 2020 Modification Package changes, and as a Supporting Document; submitted to the Nunavut Planning Commission (NPC) and Nunavut Impact Review Board (NIRB).
3	October 2020	N/A	Submitted as a Supporting Document for the Type A Water Licence Amendment Application to the Nunavut Water Board (NWB).
4	June 2026	N/A	Updated to reflect changes in operations in WRSAs and stockpiles, removal of TSF WRSA, updated geochemical criteria for some deposits, and minor adjustments to roles and responsibilities; submitted to the NWB.

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
B2Gold Nunavut	B2Gold Back River Corp.
CCME	Canadian Council of Ministers of the Environment
MDMER	Metal and Diamond Mining Effluent Regulations
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
Project	Goose Project
Sabina	Sabina Gold & Silver Corp. (previous Licensee)
RO	Reverse Osmosis
SWMP	Saline Water Management Plan
SWP	Saline Water Pond
TF	Tailing Facility
WMP	Water Management Plan

1. INTRODUCTION

The Goose Project is a gold project owned and operated by B2Gold Back River Corp. (B2Gold Nunavut), formerly Sabina Gold and Silver Corp. (Sabina), within the West Kitikmeot Region of southwestern Nunavut. Additional details on the Goose Project location are provided in the Water Management Plan (WMP).

The Saline Water Management Plan (SWMP or the Plan) is developed as an appendix to the Water Management Plan (WMP) to provide additional details related to the management of saline groundwater at the Goose Mine in compliance with the Type A Water Licence, 2AM-BRP1831 Amendment No. 1.

The SWMP outlines the procedures required to manage the quantity and quality of saline groundwater interacting with Project components throughout the mine life, and characterization of saline water inflows into the underground mine workings and the Llama Open Pit. The SWMP also includes monitoring of thermal conditions, monitoring of saline water at the Goose Mine, mitigation measures designed to address the potential for higher-than-predicted volumes of saline water inflows into the open pits and the underground mine, and potential water treatment and disposal methods.

2. SCOPE AND OBJECTIVES

The SWMP is provided as an addendum to the WMP with the objective of further detailing the saline water management strategies and designs for the Project, including considerations about contingencies, monitoring, and potential adaptive management strategies. The SWMP applies to all phases of the Project during which saline water will be managed. The SWMP has been written to meet requirements of the Project Certificate (No. 007) as well as Part B, Item 13m of the Type A Water Licence (2AM-BRP1831 Amendment No. 1).

The purpose of the SWMP is to:

- Outline procedures and processes specific to management of saline water through all phases of the Project, as proposed in the WMP;
- Summarize designs of infrastructure dedicated to management of saline water;
- Meet relevant laws and regulations;
- Detail mitigation (adaptive management) strategies to manage potential adverse environmental effects; and
- Define steps that will be taken to monitor potential mitigation measures for success.

The WMP incorporates strategies for saline water management that allow full containment of saline water within the Project site throughout the various phases of the Project. Additional details related to the closure and reclamation of saline water management structures can also be found in the Interim Closure and Reclamation Plan (2AM-BRP1831 Amendment No. 1 Part J, Item 1).

The SWMP, as part of the WMP, will be updated as needed to reflect changes in operations and technology. Any updates will be submitted as an addendum to the Annual Report in accordance with the NIRB Project Certificate (PC No. 007), or as directed by the NIRB (NIRB 2020). Any further revisions will be subject to the direction of the NWB following regulatory review of the amendment application.

The SWMP is divided into the following sections:

- Applicable Legislation and Guidelines (Section 3);
- Saline Water Management Strategy (Section 4);
- Monitoring and Reporting Program (Section 5);
- Quality Assurance/Quality Control Procedures (Section 6);
- Adaptive Management (Section 7); and
- Reclamation (Section 8).

2.1 RELATED DOCUMENTS

The SWMP should be read in conjunction with the following key plans, which have been approved for implementation by the NWB in accordance with the Type A Water Licence, 2AM-BRP1831 Part B, Item 13 and Item 15. Additional documents and studies that support the SWMP has also been listed.

- Water Management Plan (Part B, Item 13q);
- Environmental Management and Protection Plan (Part B, Item 13c);
- Aquatic Effects Management Plan (Part B, Item 13a);
- Quality Assurance/Quality Control Plan (Part B, Item 14a);
- Interim Closure and Reclamation Plan (Part B, Item 13g);
- Hydrogeological Characterization and Modelling Report (Sabina 2017, Appendix F-5);
- Hydrology Report (Sabina 2015, Appendix V2-7B); and
- Water and Load Balance Report (Appendix C of the WMP).

3. REGULATORY REQUIREMENTS AND COMMITMENTS

Specific legislation, regulations, and guidelines related to water management in Canada, and specifically within Nunavut, that B2Gold Nunavut will have to comply with are also summarized in Table 3-1.

The Project is also bound by the requirements of the Back River Project Certificate, No. 007, the Type A Water Licence, 2AM-BRP1831, and various permits, including the land use permits issued by the Kitikmeot Inuit Association for Inuit Owned Land.

4. SALINE WATER MANAGEMENT STRATEGY

As defined in the WMP, saline water for the Project is the groundwater that flows into Llama Open Pit (only pit located within a through talik) and the underground workings (Figure A-01 of the WMP). A small volume of brine water may be used for drilling in the underground mine workings. This brine water would be recirculated during drilling as much as feasible, with any excess managed synonymously with other saline water from the Project as described below.

This section provides a description of the saline water management strategy throughout the Construction, Operations, and Closure phases of the Project. In summary, the saline water management strategy consists of collecting saline water from Llama Open Pit and the underground mine workings, and temporarily storing this saline water in a dedicated storage facility until it can be pumped into the exhausted Goose Main Open Pit and/or the mined-out underground workings.

The Construction phase for the Project has been completed. No saline water was encountered in any of the activities conducted during the Construction. The brine used for drilling during the Construction phase was managed locally and recirculated. Additional details are available in the annual reporting. The Construction phase is not further discussed in this document.

4.1 PERMAFROST CHARACTERISTICS AND GROUNDWATER INFLOWS

The Goose Mine is located in the continuous permafrost region of the Canadian Arctic. While permafrost may extend in excess of 400 metres below the ground surface (mbgs), it is expected that some of the underground development will extend below this depth into unfrozen rock and soil. In addition, Llama Open Pit will be located within a through talik underneath Llama Lake.

As part of the Project, a groundwater model was completed to predict potential groundwater inflows during mining at the Goose Mine; this model was employed in both the Final Environmental Impact Statement (FEIS) (Sabina 2015) and the Type A Water Licence Application (Sabina 2017). The last groundwater model update to predict revised groundwater inflows was completed in 2022 as part of the 2020 Modification Package (WSP Golder, 2022). For the purpose of the update of the WMP presented herein, the predictions of groundwater inflows included in WSP Golder (2022) were scaled to reflect the updated mine schedule and depth of mine openings (Appendix C of the Water Management Plan). A summary of the estimated annual groundwater inflows is summarized in in Table 4.1-1 for the developments extending into unfrozen rock. The estimated concentrations of dissolved solids in the groundwater flows are provided in Appendix C of the Water Management Plan.

At the Goose Mine, groundwater modelling and analysis determined that inflows are expected from Llama Open Pit, and all of the undergrounds. Llama open pit mining will be developed below Llama Lake within a through talik that is connected to the groundwater system. It is also expected that Umwelt, Llama, Echo, and Goose underground workings will intercept the groundwater system below the basal permafrost layer. The remaining developments (Umwelt Open Pit, Echo Open Pit, and Goose Main Open Pit) are not expected to have notable groundwater inflows.

Groundwater inflows predicted by the groundwater model and the scaling presented in Appendix C of the Water Management Plan (WMP) considered the uncertainty in the assumed hydraulic properties for the bedrock based on the field investigation program results. The Scenario 1 of the groundwater inflows (Appendix C, WMP) was used as the base case for the Water and Load Balance Model (Appendix C, WMP). A sensitivity analysis of the Water and Load Balance Model was completed considering Scenario 2 groundwater inflows. The model sensitivity results showed that the proposed saline water management strategy would remain suitable for the Project.

Table 4.1-1. Goose Mine Groundwater Inflows

Mine Year	Predicted Groundwater Inflow (m^3/day)				
	Umwelt Underground	Llama Open Pit	Llama Underground	Echo Underground	Goose Main Underground
Y1	0	n/a	n/a	n/a	n/a
Y2	130	75	n/a	n/a	n/a
Y3	160	<50	n/a	n/a	n/a
Y4	160	<50	0	n/a	n/a
Y5	170	<50	120	n/a	n/a
Y6	170	<50	110	n/a	n/a
Y7	160		160	n/a	n/a
Y8	140		160	<50	10
Y9	130		170	<50	50
Y10	130		160	<50	<50
Y11	130		160	<50	<50
Y12			160	<50	<50
Y13				<50	<50

4.2 SALINE WATER MANAGEMENT STRATEGY AND ASSOCIATED CONTROL STRUCTURES

B2Gold Nunavut recognizes that there is a chance that groundwater flow in the mine workings may be dominated by specific fractures or features that are intercepted. This uncertainty exists for all mining projects and is never completely alleviated, which is the reason why structural geology and hydrogeology data are regularly collected from mining operations. The influx of groundwater into a mine is a normal and well understood phenomenon and is regularly managed by standard operating procedures in operating mines. B2Gold Nunavut is aware of the uncertainty related to fault zones and will take advanced actions where feasible to help safely and appropriately manage groundwater inflows reporting to the mine workings. These actions may include use of surface and underground exploration information to identify enhanced permeability that may be intercepted by the mine workings, advancing cover and probe drilling (i.e., exploration drainage holes), and interpretation of groundwater pressure and inflow data when high permeability formations are encountered.

A series of options to manage saline water as it reports to the mine workings was identified and assessed during the development of the WMP. These options included, but were not limited to, physical barriers to cut off inflow, temporary and/or permanent storage in dedicated storage facilities, and an array of pumps and sumps to collect and transfer saline water. Potential saline water management options are listed in order of preference (from most preferred or applicable to least preferred or applicable) in Table 4.2-1, along with a discussion of the applicability of each option given the current mine plan.

Table 4.2-1. Saline Water Management Options Considered

Management Option/Location	Discussion of Applicability
Exhausted open pits (Umwelt, Llama, Echo, Goose Main)	A possible option if the future pit lake could be managed to support meromictic conditions, resisting turnover due to pit lake geometry, and therefore unlikely to result in a discharge of saline water to local freshwater streams. Currently, Goose Main Open Pit is expected to be developed as meromictic, but depending on the developing mine plan, all pits could be considered for the possibility of temporary or permanent saline water storage. In-pit tailings disposal in all pits would be prioritized over disposal of saline water. The use of exhausted open pits, along with mined-out underground workings, provide the most suitable permanent saline water disposal locations; however, the timing of saline water discharges, relative to the availability of the pits as permanent storage, may not match.
Closed U/G workings (Umwelt or other underground workings)	A possible temporary or final disposal option. It is noted that underground workings are the main source of saline water and could not be used for disposal until mining is completed. The use of mined-out underground workings, along with exhausted open pits, provide the most suitable permanent disposal locations; however, the timing of saline water discharges, relative to the availability of the underground workings as temporary or permanent storage, may not match.
Modified natural containment area (Llama Lake or Umwelt Lake)	A modified natural containment area (for example, Llama or Umwelt lakes) could be suitable as a temporary saline water storage area and could be used for permanent saline water storage as long as any overflow meets appropriate discharge criteria. A modified natural containment area is technically feasible and economically viable. Impacts to fish

Management Option/Location	Discussion of Applicability
	and fish habitat for use of Umwelt Lake and dewatering of Llama Lake have already been assessed (refer to the Back River Project Fisheries Act Authorization for details). No additional impacts to fish or fish habitat would be realized as a result of using Llama or Umwelt lakes as modified natural containment areas. Llama Lake would provide significant storage capacity for saline water with limited need for containment structures. However, the development of Llama Open Pit makes this option unsuitable. Current water management planning identifies Umwelt Lake as the Saline Water Pond; it is the preferred temporary saline water storage area and will be used for temporary saline storage in early years of the Operations Phase. Throughout the rest of the Operations Phase, the Saline Water Pond will provide contingency storage for saline water if inflow volumes are greater than anticipated.
Tailings Storage Facility / Tailings Facility (any mined-out open pit)	Supernatant pond water from the active Tailings Facility (TF) will be reclaimed for the Process Plant. The Process Plant cannot easily tolerate the expected high salinity levels in the saline water, and as such, storing saline water in the active TF is not the preferred option. However, saline water may be sufficiently diluted in the supernatant pond to temporarily provide storage for limited periods (i.e., months), if required, and not upset the process. In addition, if the groundwater is of better quality than currently predicted, or salinity tolerances in the Process Plant are higher, saline water could be permanently stored with the supernatant pond. Once a TF is no longer used for Process Plant reclaim (i.e., tailings deposition moved to the next TF), the facility could be used to store saline water as long as an appropriate freshwater cover was maintained over existing tailings, and discharge criteria are met for overflows.
Man-made surface containment ponds	Similar to the modified natural containment area, man-made surface containment ponds could be constructed (or a current water management pond could be utilized) to temporarily or permanently store saline groundwater; this would be at a higher (than other options) cost and could increase the footprint of the surface disturbance within the Goose Mine. The man-made surface containment ponds would be designed and constructed to avoid additional impacts to fish or fish habitat.
Local watercourses following treatment	Saline groundwater could be processed in a reverse osmosis (or similar) water treatment process for discharge to the environment. Saline water treated to meet effluent discharge criteria acceptable to the NWB could be released to a local watercourse. However, such treatment produces a small volume of high salt brine that would require management and disposal.
Transport and disposal to Bathurst Inlet	Should on-site storage volumes be insufficient, saline water, or high salt brine from reverse osmosis treatment, could be transported to Bathurst Inlet and discharged via a diffuser. Should this option be required it is noted that significant additional regulatory requirements (including MDMER) may be required.
Physical barriers to cut off groundwater inflow	Current data suggest that permafrost and tight ground conditions will limit the volume of inflows. Use of physical barriers to cut off groundwater inflows prior to it reporting to the mine workings is a high cost measure, especially if used on a large scale, and is therefore not the preferred option for the Project. However, this option will be considered as an adaptive management measure to mitigate local, higher than expected inflows, if encountered.

The availability and applicability of the above options depend upon a number of factors, including timing (when the saline water will be generated relative to when the appropriate storage location is available), actual Project development schedule, the need for prioritizing the disposal of tailings over saline water, and the fact that, unlike solid mine wastes such as tailings or waste rock, saline groundwater can be temporarily stored more easily as it can be moved (i.e., pumped) to its final disposal location with relative ease.

Should contingency measures for saline water storage in open pits or other above-listed storage locations be identified (other than what is currently captured in the mine plan), B2Gold Nunavut intends to provide the NWB at least 60 days' notice prior to implementation with the following: water disposal volumes, disposal timing, maximum pit/storage capacity, effects to pit closure, and appropriate mitigation and monitoring plans.

4.3 SALINE WATER POND DESIGN CRITERIA

The Saline Water Pond (SWP), in the former Umwelt Lake, was selected as the preferred alternative for the temporary storage of Project saline water before permanent storage capacity becomes available in Goose Main Pit, transitioned to Goose Main Reservoir.

The SWP is proposed to be constructed stages, as described in the WMP. The Stage 1 will have one containment dam located on the south end of the Umwelt Lake basin (WMP Figure A-01). The Stage 2 will have a second containment dam extending towards the Primary Pond. Additional details are provided in the WMP.

The design event for the containment structures was defined based on a qualitative assessment of the risk level associated with overtopping or breaching of the structure. The SWP Containment Dam was assigned a "high risk" classification based on the consideration that discharge from these structures in the unlikely event of an overtop/breach would be directly into the environment; this consideration is consistent with overall Project design criteria.

In 2018, Sabina (now B2Gold Nunavut) completed a geotechnical drill program at the Goose Mine that included field characterization at the SWP location at that time (which has now been updated). The findings from this drilling program and additional field characterization studies that will be completed in 2025 have been used to support the final design of the SWP. Further characterization, in the form of drilling and field percolation testing, will be carried out immediately prior to construction of the various stages of the SWP. The information from the field characterization will verify that the design meets the required intent of full containment of the saline water and will inform B2Gold Nunavut on the need for implementation of additional measures to provide containment of saline water. Information, including geological cross sections, collected in support of final designs of the infrastructure, will be provided to the NWB, and any additional information relevant to the design gathered during construction will be documented in the as-built drawings for the facility.

4.4 EXISTING GROUNDWATER MANAGEMENT CONTROL STRUCTURES

There are currently no existing groundwater management control structures in place at the Project.

4.5 SALINE WATER MANAGEMENT SCHEDULE

Table 4.5-1 outlines the timeline for key saline water management activities, including tasks and facilities. A detailed Mine schedule for overall mine water management activities is presented in the WMP.

During Year 1 dewatering of Umwelt Lake to construct the SWP was initiated, with approximately 50% of the lake volumed dewatered. Completion of Umwelt Lake dewatering will occur in Year 2. The Stage 1 SWP Containment Dam will be constructed in Year 2, and the SWP will be available to receive saline water in Q1 of Year 3. Saline water that will be encountered in the mine workings before Q1 of Year 3 will be managed locally or pumped to dewatered Umwelt Lake. It is expected that the dewatered Umwelt Lake will have capacity for saline water storage even before the completion of the stage 1 SWP Containment Dam. The stage 2 of the SWP is expected to be constructed in Year 3. B2Gold Nunavut is advancing preliminary designs for a Stage 3 SWP, to provide additional storage for saline water shall this be found to be required.

For Phase 2 (Operations), saline water from the Umwelt and Llama underground mine and the Llama Open Pit will be pumped to the SWP. Starting in Year 4, saline water from the SWP will treated at an RO plant at a rate of around 5,000 m^3/day and pumped to the Umwelt Pit (now Umwelt TF) and then to Llama Pit (Llama TF), if required. The brine sludge from the RO plant will be cycled back to the SWP. RO treatment of saline water and discharge to Umwelt TF or Llama TF may continue up to Year 9 when Goose Main Pit becomes available to receive water (Goose Main Reservoir). At that point all saline water collected at the site will be pumped to Goose Main Reservoir. It is expected that seasonal (summer only) RO treatment will be sufficient, except potentially in the first year of treatment when greater volume of water is in SWP. However, need for year-round RO treatment will be confirmed as part of the design of the RO treatment plant.

From approximately Year 4 the RO treatment and the pumping to Goose Main Reservoir will allow maintaining low water levels in the SWP, providing contingency storage capacity, as required. Following the final dewatering of the SWP during either during operations (when Goose Main Reservoir becomes available) or during closure, sediment in the basin will be tested, and removed, if required, to meet defined discharge water quality criteria; see Section 5.2 for additional details. The containment dam will be breached once water from the SWP area is deemed suitable for discharge.

Table 4.5-1. Overview of Saline Water Management Activities

Activity	Mine Year	Notes
Umwelt Lake is fished out in preparation for lake dewatering	-1	Completed
Umwelt Lake is partially (Approximately 50%) dewatered to Goose Lake to allow for construction of the Saline Water Pond.	1	completed
Umwelt Lake dewatering is completed	2	Portion of water is treated for TSS
The Stage 1 SWP is constructed.	2	
The Stage 2 SWP is constructed.	3	
Saline water from underground mines and Llama Open Pit is pumped to the Saline Water Pond.	2-9	Approximately until Q2 of Year 9
Saline water collected in SWP is treated at a RO Plant and pumped to Umwelt TF or Llama TF	4-9	Approximately until Q2 of Year 9
Saline water is pumped to Goose Main Reservoir	9-13	SWP may be used as transfer facility before pumping to Goose Main Reservoir
Surficial soils in the footprint of former Umwelt Lake lakebed are excavated and placed in the Llama TF	As early as Year 9	Top 1-2m will be removed
Decommissioning of Saline Water Pond Containment Dam	During Closure Phase	During Closure.

Source: Water Management Plan

5. MONITORING AND REPORTING PROGRAM

This section presents a summary of the saline water monitoring and reporting programs that will be carried out during Operations related to mine development water quantity and quality.

As part of effective mine water management, monitoring is important to verify the predicted water quality and quantity trends and conduct adaptive management should differing trends be observed. Monitoring will occur at three levels:

- Regulated discharge monitoring occurring at monitoring points specified in the approved Licence or regulations.
- Verification monitoring carried out for operational and water management purposes by B2Gold Nunavut. This monitoring data will not be reported to the Regulators in the Annual Water Licence Report but can be provided upon request by the Regulators.
- General monitoring included in the Licence requirements and subject to compliance assessment to confirm sampling was carried out using established protocols, including quality assurance/quality control provisions, and addressing identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB.

All three types of monitoring will be used at the Mine. The WMP presents the monitoring plan relating to water management during Construction, Operations, and Closure. More detailed information on the planned monitoring programs for the Project is provided in the Environment Management and Protection Plan (2AM-BRP1831 Amendment No. 1 Part I, Item 1).

5.1 WATER QUANTITY

The volume of saline water being collected and transferred to and from the SWP will be measured using flow meters. This data will be supplemented by periodic seepage surveys which will record visually observed groundwater inflows in the open pits and underground mines. Measured groundwater inflow rates will be compared to model predictions on an annual basis. If significant variations from model predictions are observed, the assumptions behind the analysis will be reviewed and the analysis updated, if required. In addition, updates to the groundwater model may be required based on operational changes as the Project advances.

The prediction node PN04 will illustrate flows downstream of Umwelt Open Pit and the SWP.

5.2 WATER QUALITY

Saline water quality will be monitored in the SWP to assess the quality of groundwater flowing into Llama Open Pit and the underground workings. The Water Quality Monitoring for the Project provides information on proposed water quality sampling stations to be monitored. Saline water inflows from Llama Open Pit and underground mines will be monitored. The proposed BRP-11 monitoring station at the SWP will be used monitor the quality of water in this pond.

To understand and plan for treatment requirements at surface, if deemed necessary, water accumulating in sumps underground will also be sampled on a monthly basis prior to recirculation for underground use or pumping to the SWP.

Water quality results will be compared to regulated water licence requirements, Metal and Diamond Mining Effluent Regulations (MDMER; Canada Gazette 2017), Canadian Council of Ministers of the Environment (CCME), and Site-Specific Water Quality Objectives guidelines.

B2Gold Nunavut notes the potential for chloride concentrations within sediments encountered at the bottom of the SWP, once the saline water has been removed. B2Gold Nunavut has identified a number of mitigation measures to reduce chloride concentrations within the sediment, including removal of sediments for disposal within Goose Main Reservoir (if removal happens during operations when Goose Main Reservoir becomes available) or Llama TF (if removal occurs later in the operations phase or in closure). B2Gold Nunavut will track sediment and pore water chloride concentrations for the SWP to ensure appropriate water quality for the reconnection of Umwelt Lake to surface waters. A target chloride concentration of 120 mg/L (following the CCME guideline for the Protection of Aquatic Life) would be achieved at the receiving environment (defined as per the *Fisheries Act*).

B2Gold Nunavut also notes the potential exists for migration of saline water from the SWP to the surrounding environment. B2Gold Nunavut will therefore monitor the permafrost in the locations where seepage may occur as well as monitor the condition of vegetation in the vicinity of the SWP for effects due to the presence of saline groundwater.

5.3 THERMAL CONDITIONS MONITORING

The potential effect of the underground operations to the permafrost thermodynamics and hydrogeological system will consist of minor local modification of the thermal regime at the vicinity of the underground workings and a mobilization of frozen groundwater into the regional system.

During Operations, the underground workings will be backfilled progressively with waste rock, as practicable, and the groundwater encountered at depth will be pumped to the SWP (or Goose Main Reservoir) at surface. Once mining and backfilling are complete, remaining saline water stored in the SWP will be pumped mostly to Goose Main Reservoir or into the remaining underground void space. As water (pumped or from natural saline groundwater inflows) saturates the mined-out areas, the heat will transfer to the surrounding permafrost and generate local thawing of the frozen ground surrounding the workings. The underground areas will be expected to freeze back where the minimum ground temperature is less than -2°C (above ~350 mbgs depth). However, it is possible that parts of the underground areas will not completely freeze back due to the large latent heat requirements combined with relatively warm permafrost temperatures at depth.

The underground mines are in competent rock and the structural stability of this bedrock does not rely on permafrost. The Project mine design parameters for the permafrost and talik zones are identical demonstrating that the structural integrity of the mines does not rely on presence of permafrost. There are therefore no concerns that permafrost thawing would lead to subsidence at surface. Pending final engineering designs and additional field characterization, B2Gold Nunavut will review and assess the requirements associated with thermal conditions monitoring. B2Gold Nunavut will undertake verification monitoring if needed.

6. QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

Quality Assurance refers to plans or programs that encompass a wide range of internal and external management and technical practices designed to ensure the collection of data of known quality that matches the intended use of the data. Quality Control is a specific aspect of Quality Assurance that refers to the internal techniques used to measure and assess data quality.

Quality Assurance and Quality Control specific guidelines for the Project are provided in the Quality Assurance/Quality Control Plan (2AM-BRP1831 Amendment No. 1 Part I, Item 1). These guidelines will equally apply to the saline water management structures and the saline water monitoring program.

7. ADAPTIVE MANAGEMENT

The mine design, including the management of saline water, has been carefully prepared taking into consideration the vast database of site characterization data gathered for the Project, coupled with rigorous engineering analysis. Where data were limited, conservative assumptions were consistently applied. While there is a high level of confidence that the plans are viable and realistic, it is understood that mining activities are by nature inherently uncertain. Therefore, additional mitigation or adaptive management may be required as an outcome of monitoring activities described in Section 5. This may include changes to saline water management as a result of operational, engineering, and/or environmental monitoring. Any additional mitigation or adaptive management that is found to be required will be implemented in a timely manner.

Possible upset scenarios, and contingency strategies to address, are outlined Table 7-1.

Table 7-1: Saline Water Contingency Strategies

Possible Scenario	Contingency Strategy
Saline inflow volumes into the mine workings are greater than expected.	Modification and/or adjustment of the mine plan to avoid areas of concern, or to use mined-out underground stopes to provide surge capacity. Additional sump capacity to handle higher than predicted inflows. Pre-grouting of highly conductive structures prior to intersection with the mine workings. Isolation of mining sections with bulkheads to control or minimize mine inflows. If the average long-term groundwater inflows are higher despite these measures, the meromictic lake in the Goose Main Reservoir has extra capacity for saline water storage. Additional storage locations (including stage 3 of SWP) could be identified, blending of saline water with other contact water may be investigated, or treatment to desalinate the water may be required.
Water quality in the SWP does not meet wildlife guidelines and wildlife (such as migratory waterfowl or caribou) are found to be using the pond or drinking from the pond.	Wildlife will be excluded from the ponds following an adaptive management approach.
Underground mining operations cease prior to the underground deposition of the required volume of saline water from the SWP.	Additional storage locations will need to be identified, or treatment to desalinate the water may be required. If necessary, the meromictic lake in the Goose Main Reservoir has extra capacity for saline water storage.

Possible Scenario	Contingency Strategy
Chloride sediments are encountered at the bottom of the Saline Water Pond once the saline water has been removed.	Sediments will be excavated and deposited in Goose Main Reservoir or Llama TF. Alternatively, the base of the dewatered SWP could be washed down with freshwater and the rinse water will be pumped out. If necessary, this rinsing method would be repeated until the salinity of the rinse water is acceptably low (i.e., chloride concentration of 120 mg/L or less).
Water quality within the re-watered Umwelt Lake does not meet the requirements (Section 5.2) at the time of release.	Additional water treatment may be necessary.

The SWMP is part of a continually evolving process that relies not only on the efficacy of data collection and analytical results, but is also dependent on feedback from the communities, government, Indigenous groups, and the public. Having an adaptive and flexible program allows for appropriate and necessary changes to the design of monitoring studies, and the mitigation and monitoring plans. Some changes may come about through the observation of unanticipated effects or inadequacies in the sampling methods to detect measurable effects. Other changes may result from ecological knowledge acquired through working with Indigenous community members and discussions with Elders, both in the field and through workshops.

The SWMP will be reviewed on a regular basis to incorporate lessons learned, major changes to facility operation or maintenance, and environmental monitoring results relating to the management of saline water at the Project. Any updates will be filed with the Annual Report submitted under the Type A Water Licence (2AM-BRP1831 Amendment No. 1 Part B, Item 2), unless otherwise directed by the NWB.

8. RECLAMATION

The majority of the SWP closure activities will occur as progressive reclamation with the remainder occurring in the Closure Phase. The SWP will be dewatered to the Goose Main Reservoir using separate pumping and pipeline infrastructure during Operations.

Once the SWP has been dewatered, sediments will be tested and if the chloride content would be considered to be too high to achieve Site-specific Water Quality Objectives and/or CCME guidelines for the Protection of Freshwater Aquatic Life when the facility was re-watered, this sediment would be removed and placed in the Goose Main Reservoir or Llama TF. In either Goose Main Reservoir of in Llama TF, the SWP sediments will have several years to settle prior to overflows from the facility are anticipated. The water will be tested prior to overflow, and treatment for suspended sediment will be implemented if necessary.

Once the water in the re-watered SWP meets Site-specific Water Quality Objective and/or CCME guidelines for the Protection of Freshwater Aquatic Life, the SWP Containment Dam will then be breached allowing Umwelt Lake to re-establish.

Additional details pertaining to reclamation and closure are provided in the Interim Closure and Reclamation Plan (2AM-BRP1831 Amendment No. 1 Part J, Item 1).

9. REFERENCES

Canada. 1985. *Fisheries Act*. R.S.C., 1985, c. F-14.

MDMER. 2017. Canada Gazette. Regulations Amending the Metal Mining Effluent Regulations. Canada Gazette Part 1, Vol 151, No. 19. 2017-05-13. Available at: http://www.gazette.gc.ca/rp-pr/p1/2017/2017-05-13/pdf/g1-15119.pdf.

NIRB. 2020. Direction Regarding the "Back River Project 2020 Modification Package" submitted by Sabina Gold & Silver Corp. in relation to the Back River Project (K. Kaluraq to M. Pickard, dated August 11, 2020, NIRB File No. 12MN036.

Sabina (Sabina Gold & Silver Corp.). 2015. The Back River Project, Final Environmental Impact Statement. Submitted to the Nunavut Impact Review Board. November 2015.

Sabina. 2017. Type A Water Licence Application for Sabina Gold & Silver Corp. Back River Project. Submitted to the Nunavut Water Board. October 4, 2017.

WSP Golder. (2022). Back River Project Water and Load Balance Report. Submitted to Sabina Gold & Silver Corp. August 30, 2022.

APPENDIX C WATER AND LOAD BALANCE REPORT

Goose Project

2026 Water and Load Balance Report

Prepared by BGC Engineering Inc. for:

B2Gold Back River Corp.

June 25, 2026

Project 1829001

Document 1829001-R02-Rev2

Pioneering responsible solutions to complex earth science challenges

June 25, 2026

Project 1829001
Document 1829001-R02-Rev2

B2Gold Back River Corp.
Suite 2400 – 666 Burrard Street
Vancouver, British Columbia, V6C 2X8

Attention: Ali El Takch, Corporate Civil Engineer

Goose Project – 2026 Water and Load Balance Report

Please find the above-referenced report attached for your review and comment. We appreciate the opportunity to collaborate with you on this challenging and interesting project.

Should you have any questions, please do not hesitate to contact the undersigned.

Yours sincerely,

BGC Engineering Inc.
per:

Paolo Chiaramello, P.Eng.
Principal Hydrotechnical Engineer

EXECUTIVE SUMMARY

B2Gold Back River Corp. (B2Gold) is developing the Goose Project within the west Kitikmeot region of southwestern Nunavut, 95 km southeast of the southern end of Bathurst Inlet. The Goose Project is comprised of two main areas: the Goose Mine and the Marine Laydown Area. The Goose Mine considers mining of approximately 18.8 million tonnes of ore from four deposit areas (i.e., Echo, Umwelt, Llama, and Goose Main) using both open pit and underground methods. The total mine life of the Goose Mine from beginning of Operations to the end of Closure is approximately 20 years.

In June 2025, B2Gold initiated production at the Goose Mine, with the processing of ore material that had been stockpiled during the mining of Echo Pit. Tailings have been deposited in the Echo Pit, that has become the Echo TF.

As part of its commitment under Type A Water Licence (2AM-BRP1831), B2Gold is required to periodically review the Water and Load Balance Model to reflect changes in operations and/or technology. This report describes the water and load balance model (Model) developed for the Goose Mine area to support the 2026 Water Management Plan (WMP; B2Gold, June 2026). This report represents an update of the water and load balance model presented in WSP Golder (August 30, 2022), to reflect changes to the mine plan, mine layout, and water management strategies. The structure of the report and the content of specific sections have been generally maintained from WSP Golder (August 30, 2022).

The objective of the Model is to provide water quantity and quality estimates based on the Goose Project timeline, WMP, and available input data. The Model was used as a tool to assess water management options and treatment needs, potentially required during the life of the Goose Project. The water management strategy for the Goose Mine area is based on managing the inventory of the mine water stored on site, and separating saline, contact, and non-contact water, to the practicable extent. The model provides water quality predictions in the main mine facilities, including open pits, tailings facilities, storage ponds and at predefined prediction nodes. Water quality predictions at the predefined prediction nodes were compared to Metal and Diamond Mining Effluent Regulations discharge limits (Government of Canada, 2002).

The Model results indicate that there is sufficient capacity on site to store tailings, contact water, and saline water for the Goose Project life. The volume of water collected was also confirmed to be adequate to support the water demands for the Process Plant when supplemented by freshwater from Goose Lake and Big Lake while staying within their maximum consumption limits. Water treatment is expected to be required during the operations phase (not at mine start up) to manage saline water inventory before the final repository location (Goose Main Reservoir) becomes available. With the support of treatment during late Operations and Closure, concentrations in discharge from the mine site to Goose Lake are predicted to be below Metal and Diamond Mining Effluent Regulations discharge limits.

TABLE OF REVISIONS

Date	Revision	Remarks
March 20, 2026	A	Draft for B2Gold review
March 31, 2026	0	Final
June 11, 2026	1	Revision
June 25, 2026	2	Revision

CREDITS AND ACKNOWLEDGEMENTS

BGC would like to acknowledge Isabelle Cheff and Zennin Mittal Mercer for their contributions to this report.

This report represents an update of the water and load balance model presented in WSP Golder (August 30, 2022), to reflect changes to the mine plan, mine layout and water management strategies. The structure of the report and the content of specific sections have been generally maintained from WSP Golder (August 30, 2022). The following table provides a brief description of the nature of the changes made to the individual sections of the report and credit to WSP for the sections that were not significantly modified.

Section	Changes/Credits[1]
Executive Summary	Content maintained from WSP Golder (August 30, 2022), with updates limited to changes to mine plan and schedule
1.0 Introduction	Updated
2.0 Model Framework	Content maintained from WSP Golder (August 30, 2022) except for change B2Gold 2026 water management plan report (instead of 2022 version)
2.1 Mine Infrastructure	Content maintained from WSP Golder (August 30, 2022) only change is Figure numbering.
2.2 Mine Schedule and Mine Phases	Structure of the section maintained from WSP Golder (August 30, 2022); updates made based on changes in mine plan and schedule
3.1 Water Balance Overview	Structure of the section maintained from WSP Golder (August 30, 2022); updates made based on changes in mine plan and schedule
3.2.1 Hydrology	Content maintained from WSP Golder (August 30, 2022)
3.2.2 Climate Change	Content maintained from WSP Golder (August 30, 2022)

Section	Changes/Credits[1]
3.2.3 Catchment Delineation	Content updated to reflect update mine plan and schedule
3.2.4 Site Specific Hydrology	Content maintained from WSP Golder (August 30, 2022)
3.2.5 Runoff Coefficients	Content maintained from WSP Golder (August 30, 2022)
3.2.6 Milling Quantities and Freshwater Demand	Content updated to reflect update mine plan and schedule
3.2.7 Permafrost and Groundwater	Content updated to reflect updated groundwater inflow estimates by BGC
4.1 Load Balance Overview	Content maintained from WSP Golder (August 30, 2022)
4.2 Load Balance Inputs	Content maintained from WSP Golder (August 30, 2022)
4.2.1 Background Surface Water Quality and Lake Initial Water Quality	Content maintained from WSP Golder (August 30, 2022)
4.2.2 Groundwater Quality	Content maintained from WSP Golder (August 30, 2022), with exception of reference to BGC estimate of groundwater inflows quantity and quality
4.2.3 Waste Rock Storage Areas, Pit Walls, High Walls, Ore Stockpile, and Industrial Pad Runoff	Content maintained from WSP Golder (August 30, 2022)
4.2.4 Process Water Effluent	Content maintained from WSP Golder (August 30, 2022)
4.2.5 Swage Treatment Plant (STP) Treated Effluent	Content maintained from WSP Golder (August 30, 2022)
4.2.6 Blasting Residues	Content maintained from WSP Golder (August 30, 2022)
4.2.7 Cyanide Degradation Reactions	Content maintained from WSP Golder (August 30, 2022)
4.2.8 Brine Residues	Content maintained from WSP Golder (August 30, 2022)
4.2.9 Process Plant Outflow Water Quality	Content maintained from WSP Golder (August 30, 2022)
4.2.10 Cryoconcentration	Content maintained from WSP Golder (August 30, 2022)
5.1.1 Time step	Content maintained from WSP Golder (August 30, 2022)
5.1.2 Stochastic Water Balance Model	Content maintained from WSP Golder (August 30, 2022)
5.1.3 Stochastic Load Balance Model	Content maintained from WSP Golder (August 30, 2022)

Section	Changes/Credits[1]
5.2 Modelled Constituents and Discharge Limits	Content maintained from WSP Golder (August 30, 2022)
5.2.1 Water Treatment	Updated to reflect water management strategies implemented in the Model
6.0 Water Balance Results	The structure of Section 6.0 and associated sub-sections is maintained from WSP Golder (August 30, 2022), with changes associated with the description of the updated water balance results.
7.0 Load Balance Results	The structure of Section 7.0 and associated sub-sections is maintained from WSP Golder (August 30, 2022), with changes associated with the description of the updated load balance results.
8.0 Model Assumptions and Uncertainties	Content maintained from WSP Golder (August 30, 2022)
8.1 Water Balance Model	Content maintained from WSP Golder (August 30, 2022), with changes limited to updates to Model assumptions and uncertainties specific to the Model update presented in this document
8.2 Load Balance Model	Content maintained from WSP Golder (August 30, 2022), with changes limited to updates to Model assumptions and uncertainties specific to the Model update presented in this document
9.0 Conclusions	Content maintained from WSP Golder (August 30, 2022)
10.0 Closure	Updated

Note:

WSP Golder (August 30, 2022) = *"Back River Project. Water and Load Balance Report".* Submitted by WSP Golder to Sabina Gold & Silver Corp. (now B2Gold Back River Corp.) on August 30, 2022. Reference No. 21505757-122-R-Rev0-100.

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1.0 INTRODUCTION

B2Gold Back River Corp. (B2Gold) is developing the Goose Project within the west Kitikmeot region of southwestern Nunavut, 95 km southeast of the southern end of Bathurst Inlet. The Goose Project is comprised of two main areas: the Goose Mine and the Marine Laydown Area. A winter ice road connects the two main areas. The Goose Mine considers mining of approximately 18.8 million tonnes of ore from four deposit areas (i.e., Echo, Umwelt, Llama, and Goose Main) using both open pit and underground methods. The total mine life of the Goose Mine from beginning of Operations to the end of Closure is approximately 20 years.

In June 2025, B2Gold initiated production at Goose Mine, with the processing of ore material that had been stockpiled during the mining of Echo Pit. Tailings have been deposited in the Echo Pit, that has become the Echo Tailings Facility (TF).

BGC Engineering Inc. (BGC) was retained by B2Gold (purchase order [PO] number 4700001104, dated February 25, 2026) to update the water and load balance model (Model) developed for the Goose Mine to support the 2026 Water Management Plan (WMP) (B2Gold, June 2026). The objective of the Model is to provide water quantity and quality estimates based on the Goose Mine timeline, WMP, and available input data. The Model was used as a tool to assess water management options and treatment needs, potentially required during the life of the Goose Mine.

This report is structured as follows:

- A summary of the Goose Mine plan, including timelines, infrastructure, and water management plan (Section 2.0)
- A description of the water balance component framework (Section 3.0)
- A description of the load balance component framework (Section 4.0)
- Model implementation (Section 5.0)
- Water balance results (Section 6.0)
- Load balance results (Section 7.0)
- Limitations of the Model (Section 8.0)
- Conclusions (Section 9.0).

2.0 MODEL FRAMEWORK

The Model was developed using GoldSim, a graphical, object-oriented, mathematical modelling program where all input parameters and functions are defined by the user and built as individual objects or elements linked together by mathematical expressions. The object-based nature of the program is designed to facilitate an understanding of the various factors that control an engineered or natural system and predict potential changes in the system.

GoldSim was selected as a modelling platform for the following reasons:

- It facilitates probabilistic simulations, allowing descriptive statistics and probabilities to be assigned to the model outputs.
- The model framework can be easily adjusted to account for changing conditions of the Goose Mine site, allowing the model to be used as a planning tool.

- Water balance (i.e., quantity) and load (i.e., quality) components of the Model can be directly linked, allowing both to be updated simultaneously when conducting sensitivity scenarios for alternate water management strategies.

The GoldSim Model was developed to be used as a tool to analyze water management options during the life of Goose Mine. Water management options are focused on managing the inventory of the mine water stored on site and maintaining the separation of saline, contact, and non-contact water, to the practicable extent. When required, treatment of mine water discharges was also assessed to meet water quality guidelines downstream of the discharge points from the Goose Mine.

A detailed description of the WMP can be found in B2Gold (June, 2026). The following subsections provide an overview of the major infrastructure at the Goose Mine, as well as the timelines for key water management activities and development sequencing.

2.1 Mine Infrastructure

The major infrastructure at the Goose Mine at full build out is shown in Drawing 2-1, which includes the following:

- Goose Plant Site (i.e., Goose Camp Accommodations and Process Plant)
- Ore Stockpile
- Open pits and underground mine workings (i.e., Echo, Umwelt, Llama, and Goose Main open pits and undergrounds)
- Tailings management facilities (i.e., Echo Open Pit as Echo Tailings Facility [TF], Umwelt Open Pit as Umwelt TF, and Llama Open Pit as Llama TF)
- Waste Rock Storage Areas (WRSAs) (i.e., Umwelt WRSA, Llama WRSA, Echo/Goose Main WRSA, Umwelt Overflow WRSA)
- Temporary NPAG Stockpile and Temporary Underground PAG Stockpile
- Goose Mine All-weather Airstrip
- Saline Water Pond (SWP) (i.e., Umwelt Lake, once dewatered)
- Primary contact water storage pond (i.e., Primary Pond)
- Goose Main Reservoir (i.e., Goose Main Open Pit as meromictic lake[2])
- Event ponds (i.e., Llama WRSA Pond, Echo/Goose Main WRSA Pond, Plant Site Pond, Ore Stockpile Pond)
- Non-contact water diversion and contact water collection berms
- Haul and service roads.

2.2 Mine Schedule and Mine Phases

On June 2025 gold production was initiated at the Goose Mine. The construction activities for Goose Mine (Phase 1) were largely completed ahead of June 2025. As such, the timeframe of the Model was updated to initiate in May 2025, approximately 1 month before the gold

[2] A meromictic lake is a lake where the water layers do not mix, resulting in distinct layers with different properties like temperature and salinity, and a lower layer that is isolated and often lacks oxygen.

production. Construction activities that have extended past June 2025 (i.e., dewatering of Llama Lake and Umwelt Lake) are now included in the Operations Phase.

Water management throughout the mine life is described in a series of phases:

- Phase 1: Construction
    - This phase is not included in the water and load balance model. Construction activities that extended beyond June 2025 are now accounted for in the Operations Phase (Phase 2)
    - Information about the Construction Phase, including implemented water management strategies and monitoring data are provided under a separate cover.
- Phase 2: Operations (Year 1 to Year 13)
    - The dewatering of Llama Lake and Umwelt Lake was initiated during Year 1 (Operations Phase) and is planned to be completed in Year 2. The lake dewatering activities are therefore included within the Operations Phase.
- Phase 3: Closure (Year 14 to Year 20).
- Phase 4: Post-Closure (Year 21+).

The Operations Phase (Phase 2) is further subdivided into three stages, representative of the different active Tailings Facilities (TFs):

- Phase 2: Operations, Echo Open Pit (Echo TF) (Year 1, Q2 to Year 5, Q1)
- Phase 2: Operations, Umwelt Open Pit (Umwelt TF) (Year 5, Q1 to Year 11, Q4)
- Phase 2: Operations, Llama Open Pit (Llama TF) (Year 11, Q4 to Year 13, Q3).

The Operations Phase is expected to end in Q3 of Year 13. For the Model described herein, the Closure Phase was assumed to begin in Year 14; however, some closure activities may initiate in the last quarter of Year 13.

A summary of the key water management activities and mine development sequencing for the Goose Mine during the Operations, Closure and Post-Closure Phases is provided in Table 2-1. An overview of the timelines for mining and water management elements/activities is provided in Appendix A and is illustrated conceptually by flow diagrams in Appendix B. The Construction Phase is completed; for reference, a summary of the key activities that occurred during the Construction Phase (i.e., before Year 1) is provided in Table 2-2.

Table 2-1 Summary of the key water management activities at the Goose Mine.

Phase/Stage	Mine Year	Mine Development Sequence and Key Activities
Phase 2: Operations, Echo TF Active	1	• Llama Lake dewatering was initiated during the open water season (i.e., Q3), with approximately 50% of the volume removed from the lake. The majority of the water was conveyed to Goose Lake. A portion of the water was pumped to Primary Pond to support initiation of mine operations. • Umwelt Lake dewatering was also initiated during the open water season (Q3), with approximately 50% of the volume removed from the lake. Similarly to Llama Lake the majority of the water was conveyed to Goose Lake without treatment. A portion of the water was pumped to Primary Pond to support initiation of mine operations. • Echo Open Pit mining and deposition of waste rock in Echo WRSA is complete. • Milling operations initiated in June 2025 and tailings are deposited in Echo TF. • Water from Echo WRSA is collected in Echo TF, directly or through temporary collection sumps. • Umwelt Open Pit mining and deposition of waste rock in Umwelt WRSA continues. Underground production at Umwelt continues. • The Primary Pond collects contact water across the Goose Mine, including flows collected in the Ore Stockpile Pond, runoff from Umwelt WRSA, and inflows to Umwelt Open Pit. • Runoff from the Plant Site is collected in the Plant Site Pond, which is released to the tundra without treatment; if water is found not suitable for discharge it will be pumped to Primary Pond. • Water for the Process Plant is sourced from the contact water collected in Primary Pond during the open water season, and from Echo TF for the remainder of the year. • Water from Goose Lake (through the intake structure) is used to meet the freshwater demands for domestic, construction, operation, and associated uses, including mining and milling activities, as needed.
Phase 2: Operations, Echo TF Active	2	• The dewatering of the remaining approximately 50% of Llama Lake is completed during the open water season (Q3). It is assumed that approximately 80% of the remaining volume in Llama Lake would have total suspended solids (TSS) concentrations in excess of discharge limits and will require treatment prior to discharge directly to Goose Lake or will be pumped to Primary Pond to support mining operations. The remaining 20% is expected to have high TSS concentrations and will be pumped and contained in Umwelt Lake. • The dewatering of the remaining approximately 50% of Umwelt Lake is completed during the open water season (Q3). It is assumed that approximately 50% of the remaining volume in Umwelt Lake would have total suspended solids (TSS) concentrations in excess of discharge limits and will require treatment prior to discharge directly to Goose Lake or will be pumped to Primary Pond to support mining operations. The other 50% of the volume is expected to have high TSS concentrations and will be kept in Umwelt Lake. • Mining continues in Umwelt Open Pit and Underground. • Mining of Llama Open Pit begins (Q4).

Phase/Stage	Mine Year	Mine Development Sequence and Key Activities
		• Diversion and collection berms around Llama Open Pit are constructed. • Engineered berms are proposed to be constructed around the rim of Echo Open Pit to expand storage capacity for tailings (information regarding these engineered berms will be provided through a subsequent application package). • Waste rock is placed in Llama WRSA, but only in the catchment area immediately upstream of Llama Pit (catchment LD2 in Drawing 3-1). Contact water from the Llama WRSA is intercepted at the Llama Open Pit collection berm and pumped to Primary Pond. • NPAG waste rock placement in the Temporary NPAG Stockpile begins. Water from the Temporary NPAG Stockpile is discharged to the environment (if water quality is suitable), or (if water quality is not suitable for discharge) collected locally and pumped to Primary Pond. • The SWP Stage 1 dams are constructed around Umwelt Lake and Round Lake to create the SWP. • Umwelt Underground groundwater inflows are managed locally or pumped to Umwelt Lake (after lake dewatering is complete). • The contact water collected in the Primary Pond or Echo TF is used as reclaim in the Process Plant.
Phase 2: Operations, Echo TF Active (cont'd)	3	• Waste rock placement in Umwelt WRSA is completed (Q3). • Waste rock placement in Umwelt Overflow WRSA is initiated (Q4). • The contact water collected in the Primary Pond or Echo TF is used as reclaim in the Process Plant. • Construction of perimeter berms around Umwelt Lake and Round Lake to create the Stage 2 SWP are completed. Saline groundwater inflows in Umwelt Underground and Llama Open Pit are pumped to the SWP.

Phase/Stage	Mine Year	Mine Development Sequence and Key Activities
Phase 2: Operations, Umwelt TF Active	4	• Predevelopment activities for Llama Underground mining starts (Q3), and mining continues in Llama Open Pit and Umwelt Underground. • Umwelt Open Pit mining is complete (Q1) and starts to fill with site contact water within its catchment and stored (Umwelt TF) to be used as reclaim in the Process Plant. • Excess water from the closure of Echo TF is pumped to Umwelt TF. • Waste rock placement in the Umwelt Overflow WRSA is completed (Q1). • Placement of PAG waste rock material in the Temporary Underground PAG Stockpile begins (Q3). • A non-contact water diversion berm, the Goose Main diversion berm, is constructed south of Goose Main Open Pit to divert water away from the facility and into Goose Lake. • Construction of Echo/Goose Main WRSA Pond. • Saline groundwater encountered is pumped to the SWP and treated by reverse osmosis (RO) starting in Q3, sending brine effluent back to the SWP and treated effluent to Umwelt TF. • The Llama WRSA Pond is constructed and starts receiving contact water from the Llama WRSA (Q3). • The contact water collected in the Primary Pond or Echo TF is used as reclaim in the Process Plant.
	5	• Mining begins in Goose Main Open Pit and continues in Llama Open Pit and Umwelt Underground. Predevelopment activities continue in Llama Underground • Waste rock from Goose Main Open Pit is deposited in Echo/Goose Main WRSA. Waste rock from Goose Open Pit is used for the closure cover of Echo TF. • Tailings deposition transitions from Echo TF to Umwelt TF in Q1. • Mill reclaim water during the non-open water season source transition from Echo TF to Umwelt TF • Contact water from the Echo/Goose Main WRSA is collected in Echo/Goose Main WRSA Pond and pumped to the Primary Pond. • Contact water in Llama WRSA Pond is pumped to Primary Pond. • Contact water from the Goose Main Open Pit is pumped to Umwelt TF along with excess water from the Primary Pond. • Other water management strategies from Year 4 continue.
	6	• Llama Open Pit mining and deposition of waste rock in Llama WRSA is complete, and the open pit starts to fill with site contact water (Q2). • Mining continues in Goose Main Open Pit, Umwelt Underground and commences in Llama Underground (Q2). • Waste Rock placement in the Temporary NPAG Stockpile terminates (Q1). The stockpile is expected to be mostly depleted throughout the life of mine with material used for construction throughout the Goose Mine. • Contact water collected in the Llama WRSA pond is pumped to Llama Open Pit. • Tailings deposition in Umwelt TF continues. • Other water management strategies from Year 5 continue.

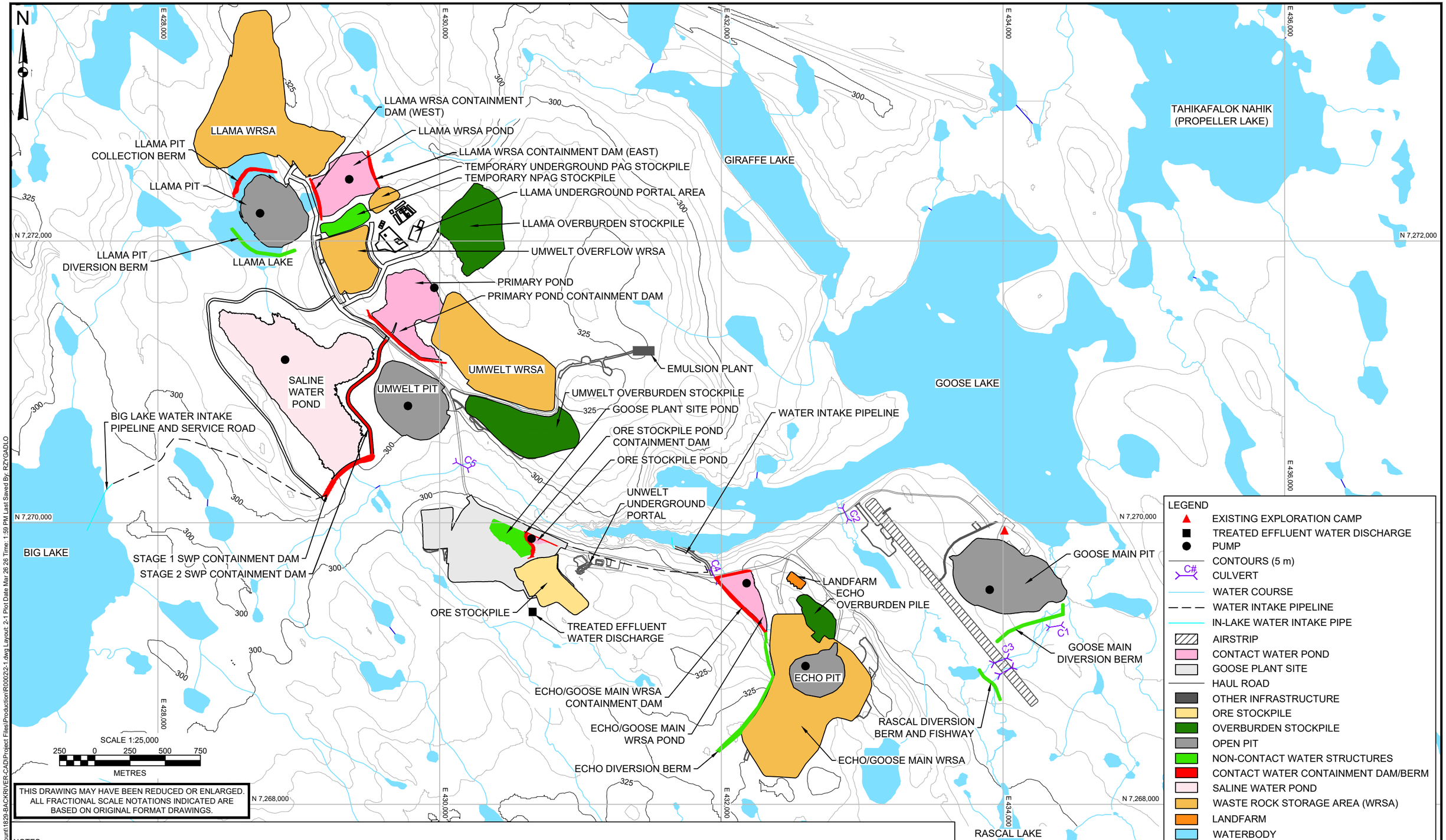
Phase/Stage	Mine Year	Mine Development Sequence and Key Activities
	7	• Mining continues in Goose Main Open Pit, Umwelt Underground, and Llama Underground. • Water level in SWP is kept low through RO treatment to provide contingency storage for saline water, as required. • Water management strategies from Year 6 continue.
Phase 2: Operations, Umwelt TF Active (cont'd)	8	• Mining continues in Goose Main Open Pit, Umwelt Underground, and Llama Underground. • Predevelopment activities for Goose Main Underground (Q1) and Echo Underground (Q4) begins. • Placement of waste rock material in the Temporary Underground PAG Stockpile terminates (Q4). • Water management strategies from Year 7 continue.
	9	• Mining in Goose Main Open Pit finishes (Q2) and the Goose Main Open Pit transitions to Goose Main Reservoir. • Predevelopment activities for Goose Main Underground and Echo Underground continues. • Mining continues in Umwelt Underground and Llama Underground. • Waste rock placement in Echo/Goose Main WRSA is completed. • Goose Main Reservoir begins to fill (Q3) and becomes available to receive saline water. Freshwater from Goose Lake or Big Lake may be pumped to Goose Main Reservoir to supporting the closure filling • RO treatment ceases and water level in SWP is kept low through pumping to Goose Main Reservoir to provide contingency storage for saline water, as required. • Backfilling of Llama Underground with material from the Temporary Underground PAG Stockpile begins. • Saline water from various mine developments is pumped to Goose Main Reservoir. • SWP is pumped empty, and all saline sediments are removed and placed in Goose Main Reservoir • Water management strategies from Year 8 continue.
	10	• Mining continues in Umwelt Underground and Llama Underground, and starts in Goose Main Underground (Q2) and Echo Underground (Q3). • Water management strategies from Year 9 continue.

Phase/Stage	Mine Year	Mine Development Sequence and Key Activities
Phase 2: Operations Llama TF Active	11	• Mining in Umwelt Underground is completed in Q4; mining continues in Llama Underground, Goose Main Underground and Echo Underground. • Umwelt Underground is also available for permanent storage of saline water as required. • Tailings deposition transitions to Llama TF (Q4). • Water management strategies from Year 10 continue.
	12	• Llama Underground mining is complete (Q3). • Mining continues in Goose Main Underground and Echo Underground. • Llama Underground is also available for permanent storage of saline water as required. • Primary Pond and Umwelt TF continue to be used as reclaim source to the mill. • Recirculation treatment in Umwelt TF begins and freshwater from Goose Lake or Big Lake may be pumped to Umwelt TF to supporting the closure filling. • Water management strategies from Year 11 continue.
	13	• Goose Main Underground mining completes in Q3 and Echo Underground mining completes in Q2. • Tailings deposition in Llama TF is complete (Q3). • Milling operation in the Process Plant is completed and reclaim water is no longer needed. • Ore Stockpile Pond is decommissioned. • Closure activities may be initiated (Q4)
Phase 3: Closure[(a)]	14 – 17	• Primary Pond discharges by gravity to the SWP (then called Umwelt Treatment Pond). • The Llama containment dams are breached, and Llama WRSA runoff flows by gravity to Llama TF. • Recirculation treatment starts in Llama TF and continues in Umwelt TF. • Freshwater from Goose Lake or Big Lake is pumped to Umwelt TF, Llama TF and Goose Main Reservoir, as needed, until they are full. • Echo WRSA Pond is diverted to PN08. • Water from Rascal diversion berm is diverted to expedite filling of Goose Main Reservoir, as required. • Llama TF is full (Year 14) and passively discharges to Umwelt Treatment Pond. Recirculation treatment continues in Llama TF. • Water in the Umwelt Treatment Pond is treated prior to discharge to the Environment (PN04). • Goose Reservoir is full and passively discharges to the environment (PN05) (Year 17). • Goose reservoir outflows are treated, as required, before discharge to the environment
	18 - 20	• Recirculation treatment is complete in Umwelt and Llama TF. • Umwelt (Year 19) is full and discharge by gravity to Umwelt Treatment Pond. • Water in the Umwelt Treatment Pond is treated prior to discharge to the Environment (PN04). • All remaining water management structures are decommissioned.

Phase/Stage	Mine Year	Mine Development Sequence and Key Activities
Phase 4: Post-Closure	21+	• Subject to runoff meeting discharge limits. WRSAs, open pits/TFs, and down gradient ponds passively runoff/spillover.

Table 2-2 Summary of the key activities that occurred during the Construction Phase.

Phase/Stage	Mine Year	Mine Development Sequence and Key Activities
Phase 1: Construction	-3 to -1	• Water intake infrastructure constructed at Goose Lake to meet the freshwater demands for domestic, construction, operation, and associated uses, including mining and milling activities. • Construction of Goose Plant Site, Camp area and all-weather roads/crossings and pads. • The Plant Site Pond/Ore Stockpile Pond constructed at the Goose Plant Site. • The Primary Pond was constructed. • Pre-stripping and mining of Echo Open Pit; mining of Umwelt Open Pit began. • Waste rock was placed in Echo WRSA; contact water runoff from Echo WRSA was collected locally, treated and discharged if necessary to the environment. • Contact water in the Ore Stockpile Pond was pumped to the Primary Pond (once it became available). • Umwelt Open Pit mining was initiated, and inflows were pumped to the Primary Pond. Waste rock was placed in Umwelt WRSA; contact water runoff from Umwelt WRSA was collected in the Primary Pond. • Predevelopment activities for Umwelt Underground were initiated. • Contact water from the Plant Site was collected in the area of Plant Site Pond, then released to the environment.



THIS DRAWING MAY HAVE BEEN REDUCED OR ENLARGED. ALL FRACTIONAL SCALE NOTATIONS INDICATED ARE BASED ON ORIGINAL FORMAT DRAWINGS.

NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. THIS DRAWING MUST BE READ IN CONJUNCTION WITH BGC'S REPORT TITLED "GOOSE PROJECT, 2026 WATER AND LOAD BALANCE REPORT", AND DATED MARCH 2026.
3. HYDROGRAPHY DATA OBTAINED FROM GEOGRATIS DEPARTMENT OF NATURAL RESOURCES CANADA MODIFIED BY GOLDER. CONTOUR INTERVAL IS 5 m.
4. FOOTPRINT DATA RECEIVED BY B2GOLD ON DECEMBER 12, 2025 AND JANUARY 7, 2026.
5. COORDINATE SYSTEM IS UTM NAD 83 ZONE 13.
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CLIENT: **B2GOLD NUNAVUT**

PROJECT: **GOOSE PROJECT, 2026 WATER AND LOAD BALANCE REPORT**

TITLE: **GOOSE MINE AREA AND LAYOUT, END OF OPERATIONS**

PROJECT No.: **1829001**

DWG No.: **2-1**

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3.0 WATER BALANCE MODEL DESCRIPTION

3.1 Water Balance Overview

The water balance component of the Model is based on mass balance principles, available hydrology monitoring data, mining and production schedules, and the water management plan, with consideration of geochemistry data. The Model tracks all inputs, outflows, and available storage at the Goose Mine site which include:

Water Input: saline groundwater inflows from Llama Open Pit and the underground mines (Llama, Umwelt, Goose Main, and Echo), and precipitation in the form of direct precipitation and surface runoff.

Water Storage: contact water ponds, saline water ponds, open pits, underground mine workings, and tailings void spaces.

Water Output: discharge such as pumped contact/saline water to treatment or contact/saline water storage facilities, open pit overflow, evaporation, and seepage.

The cumulative water storage is calculated for each specified time step in a simplistic form using the following equation:

$$Water\ Storage\ (m^3) = Water\ Input\ (m^3) - Water\ Output\ (m^3) \quad \text{[Eq. 3-1]}$$

The water storage calculated for each time step is added to the water storage at the previous time step.

Direct precipitation and surface runoff are calculated as a function of precipitation, where the runoff coefficient accounts for losses such as evapotranspiration, infiltration, and seepage (for waste rock storage areas only). Direct precipitation and surface runoff can be represented as follows:

$$Direct\ Precipitation\ (m^3) = Water\ Surface\ Area\ (m^2) \times Runoff\ Coefficient\ (unitless) \times Precipitation\ (m) \quad \text{[Eq. 3-2]}$$

$$Surface\ runoff\ (m^3) = Land\ Surface\ Area\ (m^2) \times Runoff\ Coefficient\ (unitless) \times Precipitation\ (m) \quad \text{[Eq. 3.3]}$$

3.2 Water Balance Inputs

3.2.1 Hydrology

The Model's hydrological inputs are based on the hydrological analysis for the Goose Project (SRK, July 16, 2021). Site-specific and regional precipitation data were analyzed to estimate annual precipitation for the Goose Project which included a correction for undercatch based on published data from Environment and Climate Change Canada (ECCC) for the region (details are provided in SRK, July 16, 2021).

The mean annual precipitation (MAP) for the Goose Mine was estimated to be 427 mm/year. As described in Section 3.1, runoff is a function of precipitation and can be further defined as rainfall runoff and snowmelt runoff. Snowmelt is generated predominantly by the melting of

accumulated snowpack and is concentrated during the period of spring freshet. The snowmelt is simulated in the model when the average temperature (T) rises above a base temperature (Tb) and is calculated using the following equation:

$$Snowmelt = Melt\ factor\ x\ (T - Tb) \quad \text{[Eq. 3-4]}$$

A melt factor (Mf) of 3.3 mm/ºC and base temperature (Tb) of 0ºC were applied, based on previous local studies (SRK, April 2015). Average daily temperatures (T) previously derived for the Goose Mine were also applied (SRK, June 2020).

Ice formation is modelled in each water reservoir, to a maximum of 2 m. Ice formation is linear with time and starts to form in October reaching its maximum depth in February and is completely melted by the start of July (SRK, April 2015).

The mean annual lake evaporation for the Goose Mine was estimated to be 324 mm/year. Table 3-1 summarizes the monthly distribution of precipitation, evaporation, and temperature estimates for the Goose Mine. Table 3-2 summarizes the frequency analysis of annual precipitation used to evaluate water volumes for a range of hydrological conditions (i.e., wet, average, and dry). Climate change projections were also applied as described in Section 3.2.2.

Table 3-1 Summary of mean hydrological inputs and monthly distributions.

Month	Precipitation		Evaporation		Average Air Temperature (ºC)
	Distribution (%)	Mean (mm)	Distribution (%)	Mean (mm)	
January	4.7	27.9	0	0	-28.7
February	4.1	23.3	0	0	-26.6
March	5.9	30.3	0	0.1	-25.1
April	6.2	28.9	1.8	5.9	-15.6
May	6.4	30.0	8.0	25.8	-5.1
June	9.8	40.9	29.8	96.4	5.4
July	12.5	43.2	33.1	107.0	11.4
August	18.2	63.4	20.3	65.8	9.3
September	11.4	41.8	6.9	22.4	2.3
October	9.7	40.8	0.1	0.4	-7.3
November	6.3	30.8	0	0	-18.4
December	4.8	26.0	0	0	-25.4
Annual	**100**	**427.3**	**100**	**323.8**	**-10.3**

Note:

Source: SRK (July 16, 2021) (precipitation and evaporation, adjusted to fix rounding errors) and SRK (June 2020) (average air temperature, calculated from daily averages).

Table 3-2 Summary of frequency analysis results.

Hydrological Conditions	Return Period (year)	Annual Precipitation (mm)
Wet	200	653
	100	628
	50	601
	20	561
	10	527
	5	486
Average	-	427
Dry	5	341
	10	306
	20	278
	50	247
	100	227
	200	209

Note:
Source: SRK (July 16, 2021)
mm = millimetre

3.2.2 Climate Change

A climate change analysis was completed for the Goose Project in 2015 (SRK, November 2015a) which projected the rate of change in precipitation and temperature in the future on an annual basis. While most surface water management infrastructure will have short lifespans and be breached at Closure, open pits filled with tailings and saline water, and waste rock storage areas will remain in perpetuity and long-term climate change effects were considered.

The long-term air temperature and precipitation projections used as inputs to the Model are provided in Table 3-3, based on trends from 1979 to 2005. Temperature and precipitation projections in the Model were linearly interpolated and centred for 2025, 2055, and 2085, with climate projections beyond 2085 assumed to remain constant.

Table 3-3 Climate change projections.

Period	Change with Respect to Baseline (1979 to 2005)	
	Mean Annual Air Temperature (ºC)	Total Annual Precipitation (%)
2020s (2011-2040)	2.0	6.0
2050s (2041 – 2070)	3.7	11.0
2080s (2071 – 2100)	5.3	16.0

3.2.3 Catchment Delineation

Mine infrastructure and upstream catchments were delineated for the Goose Mine based off the most recent mine plan and mine facilities layout, where applicable (B2Gold, A. El Takch, personal communication. December 12, 2025 and January 7, 2026). In the Model, each mine facility reaches its final footprint as soon as it becomes active according to the Goose Mine schedule (Section 2.2). This assumes that the entire ultimate footprint of each mine facility will be stripped and/or prepared ahead of operating the facility.

The delineated catchment areas and associated infrastructure are summarized in Table 3-4 and shown in Drawing 3-1, including the road areas, where available. A total of 10 prediction nodes (PN) were included in the Model to assess the hydrology and water quality effects of the proposed development. The total area of mine infrastructure (including roads) at the Goose Mine encompasses approximately 5.0 km^2, which consists of 5.3% of the total Goose Lake watershed; however, the total extent of the affected area varies depending on the phase of the Goose Mine.

Table 3-4 Goose property catchment areas and associated infrastructure areas.

Prediction Node Catchment	Catchment ID	Catchment Description	Area (m^2)		
			Local Catchment [a]	Infrastructure	Roads
01	PN01	Downstream of Propeller Lake outlet	6,486,915,400	-	-
02	PN02	At the outlet of Propeller Lake	108,970,700	-	-
03	PN03	Outlet of Goose Lake	10,495,000	-	87,900[b]
04	PN04	West inlet of Goose neck	15,750,500	-	141,400[b]
	LD1	Upstream of Llama diversion	134,000	-	-
	LD2	Upstream of Llama diversion	691,900	-	-
	LCP	Llama WRSA Pond surface	151,500	151,500	-
	LP1	Llama Open Pit ultimate surface	178,400	178,400	-
	LP	Upstream of Llama Open Pit	152,900	-	26,000
	LL	Llama Lake	269,000	-	3,100

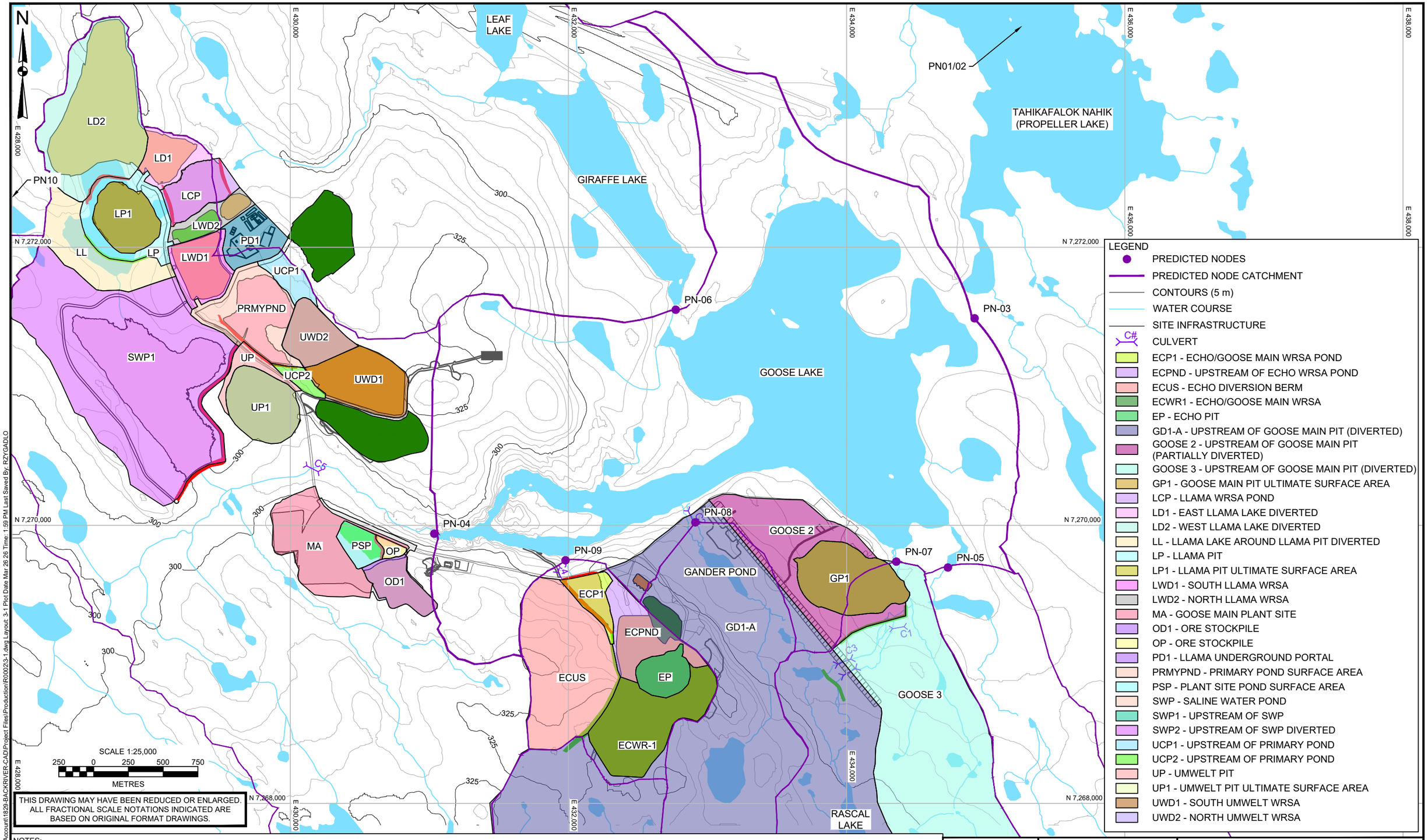
Prediction Node Catchment	Catchment ID	Catchment Description	Area (m^2)		
			Local Catchment [a]	Infrastructure	Roads
04	LWD1	Llama WRSA	162,500	162,500	-
	LWD2	Llama WRSA	102,200	102,200	-
	SWP1	SWP1 total catchment	1,635,400		8,500
		SWP surface	992,200	992,200	
		Upstream of SWP	630,500	-	42,400
	UCP1	Upstream of Primary Pond	71,900	-	-
	PRMYPND	Primary Pond surface	307,600	307,600	31,900
	UP	Upstream of Umwelt Open Pit	59,800	-	6,100
	UP1	Umwelt Open Pit ultimate surface	220,600	220,600	-
	UCP2	Upstream of Umwelt Open Pit	35,900	-	-
	UWD1	Umwelt WRSA	249,900	249,900	-
	UWD2	Umwelt WRSA	151,000	151,000	-
	MA	Goose Plant Site	337,100	250,800	-
	OP	Ore Stockpile Pond surface	19,400	19,400	-
	OD1	Ore Stockpile	120,100	113,000	6,000
	PSP	Plant Site Pond Surface	70,700	70,700	-
05	PN05	Discharge from Goose Main Open Pit	2,652,000	-	101,100[b]
06	PN06	Outlet of Giraffe Lake	27,543,400	-	28,500
	PD1	Underground PAG Temporary Stockpile	160,700	150,100	10,600
07	PN07	Upstream of PN05	35,266,900	-	-
	GOOSE2	Upstream of Goose Main Open Pit	465,000	465,000	17,900
	GOOSE3	Upstream of Goose Main Open Pit	2,760,400	-	-
	GP1	Goose Main Open Pit ultimate surface	306,000	306,000	0

Prediction Node Catchment	Catchment ID	Catchment Description	Area (m^2)		
			Local Catchment [a]	Infrastructure	Roads
08	PN08	Gander Pond outlet	1,794,600	-	45,100
	GD1-A	Goose Main diversion berm	34,156,900[b]	-	52,400
09	PN09	Echo outlet	1,517,500	-	13,300
	ECP1	Echo WSRA Pond surface	85,100	85,100	-
	ECUS	Echo Pond diversion	637,700	-	-
	ECPND	Upstream of Echo Pond	213,000	-	-
	EP	Echo Open Pit ultimate surface	102,900	102,900	-
	ECWR1	Echo WSRA surface	379,700	303,400	-
10	PN10	Mam Lake Outlet	10,858,400	-	21,600

Notes:

a) Local catchment represents total area of the catchment as delineated in Drawing 3-1; where applicable, the portions of the local catchment occupied by mine infrastructure and roads are provided.
b) WSP Golder (August 30, 2022)

m^2= square meter



LEGEND

- PREDICTED NODES
- PREDICTED NODE CATCHMENT
- CONTOURS (5 m)
- WATER COURSE
- SITE INFRASTRUCTURE
- C# CULVERT
- ECP1 - ECHO/GOOSE MAIN WRSA POND
- ECPND - UPSTREAM OF ECHO WRSA POND
- ECUS - ECHO DIVERSION BERM
- ECWR1 - ECHO/GOOSE MAIN WRSA
- EP - ECHO PIT
- GD1-A - UPSTREAM OF GOOSE MAIN PIT (DIVERTED)
- GOOSE 2 - UPSTREAM OF GOOSE MAIN PIT (PARTIALLY DIVERTED)
- GOOSE 3 - UPSTREAM OF GOOSE MAIN PIT (DIVERTED)
- GP1 - GOOSE MAIN PIT ULTIMATE SURFACE AREA
- LCP - LLAMA WRSA POND
- LD1 - EAST LLAMA LAKE DIVERTED
- LD2 - WEST LLAMA LAKE DIVERTED
- LL - LLAMA LAKE AROUND LLAMA PIT DIVERTED
- LP - LLAMA PIT
- LP1 - LLAMA PIT ULTIMATE SURFACE AREA
- LWD1 - SOUTH LLAMA WRSA
- LWD2 - NORTH LLAMA WRSA
- MA - GOOSE MAIN PLANT SITE
- OD1 - ORE STOCKPILE
- OP - ORE STOCKPILE
- PD1 - LLAMA UNDERGROUND PORTAL
- PRMYPND - PRIMARY POND SURFACE AREA
- PSP - PLANT SITE POND SURFACE AREA
- SWP - SALINE WATER POND
- SWP1 - UPSTREAM OF SWP
- SWP2 - UPSTREAM OF SWP DIVERTED
- UCP1 - UPSTREAM OF PRIMARY POND
- UCP2 - UPSTREAM OF PRIMARY POND
- UP - UMWELT PIT
- UP1 - UMWELT PIT ULTIMATE SURFACE AREA
- UWD1 - SOUTH UMWELT WRSA
- UWD2 - NORTH UMWELT WRSA

NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. THIS DRAWING MUST BE READ IN CONJUNCTION WITH BGC'S REPORT TITLED "GOOSE PROJECT, 2026 WATER AND LOAD BALANCE REPORT", AND DATED MARCH 2026.
3. HYDROGRAPHY DATA OBTAINED FROM GEOGRATIS DEPARTMENT OF NATURAL RESOURCES CANADA MODIFIED BY GOLDER. CONTOUR INTERVAL IS 5 m.
4. FOOTPRINT DATA RECEIVED BY B2GOLD ON DECEMBER 12, 2025 AND JANUARY 7, 2026.
5. COORDINATE SYSTEM IS UTM NAD 83 ZONE 13.
6. BGC PREPARED THIS DRAWING FOR THE EXCLUSIVE USE OF BGC'S CLIENT IDENTIFIED ON THIS DRAWING. UNLESS BGC AGREES OTHERWISE IN WRITING, THIS DRAWING MUST NOT BE MODIFIED OR USED FOR ANY PURPOSE OTHER THAN THE SPECIFIC PURPOSE FOR WHICH BGC GENERATED IT. BGC SHALL HAVE NO LIABILITY FOR ANY DAMAGES, INJURY, OR LOSS ARISING FROM ANY UNAUTHORIZED USE OR MODIFICATION OF THIS DRAWING. THIRD PARTIES USE OR RELY UPON THIS DRAWING AT THEIR OWN RISK.

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CLIENT: **B2GOLD NUNAVUT**

PROJECT: **GOOSE PROJECT, 2026 WATER AND LOAD BALANCE REPORT**

TITLE: **GOOSE MINE CATCHMENTS, END OF OPERATIONS**

PROJECT No.: **1829001**

DWG No.: **3-1**

C:_BIM\ACCDocs\BGC BIM Account\1829-BACKRIVER-CAD\Project Files\Production\R000\3-1.dwg Layout: 3-1 Plot Date: Mar 26 26 Time: 1:59 PM Last Saved By: RZYGADLO

3.2.4 Site Specific Hydrology

Local hydrometric stations are installed at the prediction nodes mentioned in Section 3.2.3. As described in the Hydrology Report (SRK November 2015b), some stations experience significantly higher unit flows than others due to catchments spilling over into adjacent catchments during high flows. The equivalent area transferred from one catchment to the adjacent catchment is provided in Table 3-5, which include:

- PN10 to PN04; however, the overflow is contained by Llama diversion berms when in place (see Drawing 3-1).
- PN06 to PN04; however, the overflow is contained by Llama diversion berms when in place (see Drawing 3-1).
- PN05 to PN08; however, the overflow is contained by Goose Main diversion berm when in place (see Drawing 3-1).

Table 3-5 Site-specific hydrology inputs.

Overflows from	Transferred to	Equivalent Area Transferred
PN10	PN04	2.2 km^2
PN06	PN04	2.2 km^2
PN05	PN08	3.1 km^2

Note:
Source: SRK, November 2015b.
km^2 = square kilometer

3.2.5 Runoff Coefficients

Specific runoff coefficients were assigned to each area depending on its surface cover. Because the Goose Mine is in a continuous permafrost zone, the thermal state of the waste rock deposited was considered which assumed the waste rock storage areas were in an unfrozen state until the first frost after waste rock placement was initiated and then frozen thereafter. The runoff coefficients applied to each surface cover are presented in Table 3-6. These coefficients were adopted from previous studies (SRK, June 2020).

Table 3-6 Runoff coefficient by surface cover.

Surface Cover	Runoff Coefficient (Unitless)
Undisturbed Area	0.36
Waste Rock Storage Area (unfrozen)	0.30
Waste Rock Storage Area (frozen)	0.60
Open Pit Wall Area	0.80
Underground/Industrial Pads Area	0.30
Road Surface Area	0.30
Ponded Area	1.00

3.2.6 Milling Quantities and Freshwater Demand

The Goose Mine consists of open pit and underground mining that will feed a whole-ore leach Process Plant. Before the start of the Process Plant (June 2025), ore was stockpiled at the Goose Plant Site and was used for commissioning of the Process Plant in Year 1. The Process Plant will be operational for 13 years, processing a total of 18.8 million tonnes of ore. Table 3-7 summarizes the milling production rates during the Operations Phase, which were used in the Model as an input in conjunction with the tailings parameters in Table 3-8, to calculate tailings solids produced, water lost to tailings voids, reclaim water demand, freshwater demand, and the tailings storage capacity.

Table 3-7 Milling production rate.

Mine Year	Production Rate (tonnes/day)
Year 1, Q1	0
Year 1, Q2[(a)]	300
Year 1, Q3	1,500
Year 1, Q4	2,300
Year 2, Q1	2,400
Year 2, Q2	2,800
Year 2, Q3	2,900
Year 2, Q4	3,200
Year 3, Q1	3,500
Year 3, Q2	3,500
Year 3, Q3	4,000
Year 3, Q4 to Year 13, Q	4,000

Note:

Source: received from B2Gold (A. El Takch, personal communication. February 5, 2026).

(a) Production started in June of Year 1.

Table 3-8 Tailing parameters.

Parameters	Value
Tailings Specific Gravity	3.1
Initial Dry Density	1.4 tonne/m^3
Ore Precent Solid	97%
Water Density	1.0 tonne/m^3
Tailings Slurry Solids Concentration – Year 1	46%
Tailings Slurry Solids Concentration – Year 2 to end of operations	58%
Process Plant Minimum Fresh Water Requirement	22 m^3/hr

Source: received from B2Gold (A. El Takch, personal communication. February 25, 2026)

Freshwater requirements will be sourced primarily from Goose Lake and as needed, from Big Lake. Table 3-9 summarizes the freshwater consumption requirements for domestic and industrial use, excluding process freshwater demand. For modeling purposes, the maximum water withdrawal from Goose Lake includes 1,500 m^3/day of freshwater year-round and an additional 400 m^3/day during the open water season, for a total of 1,900 m^3/day. The maximum water withdrawal from Big Lake is 750 m^3/day of freshwater year-round for the life of the Goose Mine.

Table 3-9 Domestic and industrial freshwater demands.

Demand	Rate
Domestic Water Supply	300 m^3/day during Operations 15 m^3/day during the Closure Stage
Industrial Water Supply (excluding process water demand)	300 m^3/day during Operations, (does not include Process Plant water)

Source: received from B2Gold (A. El Takch, personal communication. March 18, 2025).

The waste rock from each Open Pit (Echo Open Pit, Umwelt Open Pit, Llama Open Pit and Goose Main Open Pit) will be placed in the associated WRSA (Echo WRSA, Umwelt WRSA, Llama WRSA and Echo/Goose Main WRSA). The mine plan used for the Model assumes that a small amount (approximately up to 4.4 tonnes) of waste rock from Umwelt Open Pit will be placed in Umwelt overflow WRSA, located near Primary Pond. NPAG waste rock material will be temporarily placed in the Temporary NPAG stockpile, also located near Primary Pond. Throughout the life of mine, the material in this stockpile will be removed and used as construction material at Goose Mine. PAG material from predevelopment activities and mining of the Llama Underground will be temporarily placed in the Temporary Underground PAG Stockpile located east of Primary Pond. Throughout the life of mine material in this stockpile will be removed and used to backfill the Llama Underground.

3.2.7 Permafrost and Groundwater

The Goose Mine is located in a continuous permafrost region of the Canadian Arctic. It is expected that Llama, Umwelt, Goose Main, and Echo underground developments will extend below the permafrost layer (i.e., at least 400 m below the ground surface) into unfrozen soil and rock referred to as taliks. In addition, open pit mining at Llama Open Pit will occur in the footprint of Llama Lake, which is also associated with taliks. Other developments (i.e., Umwelt, Echo, and Goose Main open pits) are expected to be fully within permafrost. Although, groundwater may flow through the top 1 to 3 m of overburden during the warmer months of the year (unfrozen conditions), the volume of flow is likely insignificant in comparison to the surface water runoff. A summary of the estimated annual groundwater inflows and associated total dissolved solids (TDS) for the mining developments that extend into unfrozen rock is presented in Appendix C. The groundwater inflows for Scenario 1 in Appendix C were used for the model simulation. As detailed in Appendix C, BGC used the groundwater inflows and associated total dissolved solids (TDS) presented in WSP Golder (August 30, 2022) and scaled them by

comparing the timing and depth of the mine openings (i.e., BGC did not update the groundwater model developed by WSP Golder (August 30, 2022)).

Inherent uncertainties associated with the estimated groundwater inflows are always present until operational information can verify inflows. The estimate of the groundwater inflows will be refined as additional groundwater information becomes available during mine development. Also, strategies mentioned in WSP Golder (August 30, 2022) to reduce groundwater inflows, such as grouting of the faults, will be considered based on actual groundwater inflows encountered during operations.

3.2.8 2025 Site Monitoring Data

Throughout the construction phase of the Goose Mine, B2Gold installed a network of stations to monitor pumped flows/volumes, water levels, mining volumes/tonnages, process flows/volumes and snowpack. The Goose Mine meteorological station has also continued collecting climate data (e.g. rainfall only, temperature).

As mine production started in June of Year 1, site data are available for only a short period of time (less than 1 year) and were not considered sufficient to support a calibration of the Model. Also, the data are related to the start up of the process plant and may not be representative of conditions during the rest of the life of mine. However, some of the data collected in Year 1 were implemented in the Model such that the Model reflects the actual site conditions at the end of Year 1, which represent the start of the model projection period. It is noted that due to some uncertainties in the precipitation data collected at the Goose Mine meteorological station in Year 1, precipitation data collected at the ECCC Robertson Lake station (approximately 200 km southeast from Goose Mine) were applied as a surrogate to the site data.

4.0 LOAD BALANCE MODEL DESCRIPTION

4.1 Load Balance Overview

The load balance component of the Model was developed to evaluate the potential effects of the Project on water quality of the receiving environment. The Model was also used to inform optimal water management and identify water treatment requirements during Operations and Closure. The Model was based on conservation of mass and does not consider geochemical reactions or physical processes such as settling of suspended solids.

Mine components were treated as source terms (Table 4-1). For each source term, the constituent's concentration was calculated based on humidity cell test (HCT) data, geochemical modelling, and extrapolation of monitoring data from geologically similar sites in the area.

Loading rates were generated based on the predicted corresponding flows in the water balance component of the Model. Loading rates in the load balance component of the Model were defined as:

- Direct loadings based on a defined input source term
- Linked loadings from GoldSim reservoirs (representing open pits, ponds, lakes, etc.). Most often loading rates were direct loadings calculated using source term concentrations.

$$Loading\ Rate = Flow\ Rate\ x\ Source\ Terms\ Concentration \quad \text{[Eq. 4-1]}$$

Linked loading rates were used for flows from upstream facilities. They were derived using the calculated concentration in the upstream GoldSim reservoir representing that facility and the associated flow from the upstream facility in the water balance. Loading rates provide a rate at which mass is being added to the receiving GoldSim reservoir, which is then divided by the volume of water in that reservoir to determine the concentration (Equation 4-2).

$$Calculated\ Concentration\ GoldSim\ reservoir = \frac{Mass\ Parameter}{Volume_{GoldSim\ reservoir}} \quad \text{[Eq. 4-2]}$$

$$Loading\ Rate = Flow\ Rate\ x\ Calculated\ Concentration_{Goldsim\ reservoir} \quad \text{[Eq. 4-3]}$$

The Model also accounted for mass loading from reagent addition rates in the Process Plant and drilling brine in the underground developments.

Table 4-1 Summary of source terms applied in the load balance component of the model.

Source Term	Units	Applies to	Associated Mine Component	Mining Phase
Background surface water quality	mg/L	Undisturbed catchments, initial water quality in lakes, and non-contact runoff	Undisturbed catchment areas, Llama Lake dewatering, Umwelt Lake dewatering, Goose Lake withdrawals, non-contact runoff	Operations, Closure, and Post-Closure
Groundwater quality	mg/L	Groundwater inflows into open pits and underground mining	Llama Open Pit, Umwelt Underground, Llama Underground, Echo Underground, Goose Main Underground	Operations
Ore stockpile runoff	mg/L	Stockpile areas (all Project phases)	Ore Stockpile	Operations
Waste rock storage area runoff	mg/L	Waste rock surface areas	Umwelt WRSA, Llama WRSA, Echo/Goose Main WRSA, Umwelt Overflow WRSA	Operations, Closure, and Post-Closure
NPAG Stockpile	mg/L	NPAG Stockpile	Temporary NPAG Stockpile	Operations
PAG Stockpile	mg/L	PAG Stockpile	Temporary Underground PAG Stockpile	Operations
Pit wall runoff	mg/L	Pit wall areas below pit overflow elevation	Umwelt Open Pit, Llama Open Pit, Echo Open Pit, Goose Main Open Pit	Operations
			Umwelt Tailings Facility, Llama Tailings Facility, Echo Tailings Facility	Operations
High wall runoff	mg/L	Pit wall areas above pit overflow elevation	Umwelt Reservoir, Llama Reservoir, Goose Main Reservoir	Closure
Industrial pad runoff	mg/L	Process Plant area, roads, and underground pads	Process Plant area, roads, Umwelt Underground, Llama Underground, Echo Underground, Goose Main Underground	Operations, and Closure
Process water effluent	mg/L	Tailings slurry supernatant	Umwelt Tailings Facility, Llama Tailings Facility, Echo Tailings Facility	Operations

Source Term	Units	Applies to	Associated Mine Component	Mining Phase
Blasting residue	mg/ year	Ore, WRSAs, roads, and underground pads	Ore Stockpile, Umwelt WRSA, Llama WRSA, Echo/Goose Main WRSA, Umwelt Underground, Llama Underground, Echo Underground, Goose Main Underground	Operations
Brine residue	mg/ year	Underground waste rock and ore	Umwelt Underground, Llama Underground, Echo Underground, Goose Main Underground	Operations, Closure

Note:
mg/L = milligram per litre, WRSA = waste rock storage area.

4.2 Load Balance Inputs

Site-specific data, such as measured concentrations of background surface water and groundwater quality, were used as model inputs where available. Similarly to the water balance component of the Model (Section 3.2.8), site-specific data collected in Year 1 were considered not sufficient to support a model calibration. Also, these data were collected during the start-up of mine operations and may not be representative for the rest of the life of mine. These data were therefore not considered for this Model update.

Where data were not available, assumptions were used to simulate the complex interplay of climate, the geochemical characteristics of the rock materials, and the physical characteristics of the mine facilities (e.g., WRSAs and blasting residue). This modelling approach is consistent with industry practices and was appropriate for evaluating the potential effects associated with the Goose Mine. Actual contact water quality during Operations, Closure, and Post-Closure may differ from the predictions presented.

Model inputs and assumptions are presented in the following subsections and reflect the updates made to the Goose Mine WMP (B2Gold, June 2026).

4.2.1 Background Surface Water Quality and Lake Initial Water Quality

WSP Golder compiled and analyzed water quality data collected at the Goose Mine from 2011 to 2018 (Golder, July 2019). Stream water samples were collected and analyzed during freshet and the remaining open water season. The median concentrations were used as inputs in the load balance component of the Model (Appendix D).

Measurements below the detection limit were conservatively assumed to be equal to the detection limit, with the exception of mercury which was treated as half the detection limit.

Initial concentrations were assigned to Llama and Umwelt lakes in the model based on data collected in 2011 by Rescan (Rescan, June 2012) (Appendix E). Initial concentrations for Goose Lake in the model were based on data as part of the monitoring for the Aquatic Effects Monitoring Program by WSP Golder (Golder, July 2019) (Appendix E).

4.2.2 Groundwater Quality

Groundwater quality was unchanged from the 2020 version of the load balance component of the Model (SRK, June 2020), with the exception of flow rates, chloride and TDS concentrations. Westbay well (13-GSE-319) installed by SRK adjacent to the Umwelt deposit at the Goose Mine was used as groundwater quality for the load balance. Data from the well were corrected for the concentrated calcium chloride drilling brine used to avoid freezing during drilling (SRK, April 2015). An average from the Westbay well Zone 3 and Zone 5 monitoring results was applied in the model.

The salinity of groundwater inflows into the Goose Mine is expected to be more saline than sea water. The dominant ions in the groundwater inflows are calcium, sodium and chloride. Westbay well monitoring data indicate that salinity concentrations likely increase with depth.

WSP Golder (August 30, 2022) updated the flow rates and TDS and chloride concentrations for the developments that extend into unfrozen rock as part of their water and load balance model. This represents the last update of the groundwater numerical model. To support the 2026 Model update, BGC scaled the WSP Golder (August 30, 2022) estimates by comparing the timing and depth of the mine openings (Section 3.2.7), as the mine schedule has since been updated by B2Gold, including the timing of the mining of the undergrounds.

The average groundwater inflow quantity and quality (expressed as TDS concentrations) expected during mine operations are included in Appendix C. Scenario 1 in Appendix C was used in the Model. It was assumed that 60% of measured TDS is composed of chloride. Estimated salinities used in the Model are of similar concentrations to those reported for other sites situated in continuous permafrost environments (e.g., Meliadine[3], Hope Bay[4]) (SRK, April 2015).

4.2.3 Waste Rock Storage Areas, Ore Stockpile, Pit Walls, High Walls, and Industrial Pad Runoff

4.2.3.1 Waste Rock Storage Areas and Ore Stockpile

Dissolved source concentrations for water in contact with the WRSAs and the Ore Stockpile were developed by SRK (April 2015), and subsequently refined by WSP Golder in different stages, last by WSP Golder (August 30, 2022) for use in the load balance component of the Model. In support of the 2026 modification package, Stantec confirmed that the source concentrations included in the WSP Golder (August 30, 2022) version of the Model remains suitable (received from Stantec, Brenda Bailey, personal communication. March 03, 2026).

Source concentrations were predicted using HCT results and included the application of correction factors (i.e., temperature, coarseness, and flow channeling), geochemical modelling, and extrapolation of monitoring data from geologically similar sites in the area. The hydrological

[3] Meliadine Gold Project, Agnico Gold, Nunavut, Advanced Exploration.

[4] Hope Bay, TMAC, Nunavut, Historical Drilling / Advanced Exploration.

inputs for these predictions were based on an average hydrological year and assumed infiltration rate as described in Section 3.2.5. Calculations (Equation 4.4) to derive source term concentrations were built into the Model to allow for source term concentrations to update based on predicted proportions of lithologies in the WRSAs or exposed areas in the pit walls.

$$Source\ Term = \frac{(HCT\ Avg\ Loading\ Rate\ x\ \%lithology)_{Lithology,Parameter}\ x\ 52\ \frac{weeks}{year}\ x\ RockMass}{Pile\ Flow}\ x\ TC\ x\ CC\ x\ FCC \quad \text{[Eq. 4-4]}$$

Where:

- TC = Arrhenius temperature correction factor (0.2)
- CC = Coarseness correction factor (0.2)
- FCC = Flow channelization correction factor (0.5).

Values for these correction factors are consistent with the geochemical characterization and source term development performed by SRK (April 2015).

After developing the mass balance-based source term concentration for the WRSAs and Ore Stockpile, the concentrations were adjusted using regional limits (SRK, April 2015) and geochemical modelling using PHREEQC (ver. 3.6.2; Parkhurst & Appelo, 2013), a publicly available thermodynamic equilibrium modeling software. Maximum concentrations from each mining phase were selected from the time series of the WRSA and Ore Stockpile source terms and used for geochemical modelling using PHREEQC. The goal of this modelling was to balance ion charges, allow for mineral equilibrium reactions, and reflected the application of the regional limits developed by SRK. Source term concentration inputs were adjusted as follows using PHREEQC:

- Alkalinity set to 0.1 mg/L as $CaCO_3$ to allow for geochemical convergence within PHREEQC.
- pH set to 5 based on kinetic testing data.
- Charge balance on chloride (for positive charge imbalance) and sodium (for negative charge imbalance).
- Equilibration with an atmospheric pCO_2 value of -3.4.

The outputs from the PHREEQC modelling were then further adjusted for constituents that were below background regional limits. Upper-bound regional limits (SRK, June 2020) were applied for: aluminum, antimony, arsenic, cadmium, calcium, cobalt, copper, iron, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, and zinc. The source terms used in the Model are provided in Appendix D.

The conceptual model for the WRSAs includes seasonal freezing of the piles resulting in a permanently frozen core and a minimum 5 m active layer during any period of the year. This active layer thickens with deposition of new material during the unfrozen portion of the year and is reduced to 5 m during the winter months. Once material is no longer being added to a WRSA, a 5 m NPAG cover will be added to the pile. The load model assumes that the NPAG cover will

be comprised of NPAG lithologies proportional to the final year of mining from the associated pit.

4.2.3.2 Pit Walls, High Walls, and Industrial Pads

The HCT results used for the pit walls are based on pre-acidity measurements, while high wall concentrations are based on post-acidity measurements of PAG materials. The reactive mass of the pit walls was determined based on the exposed surface area, an assumed reactive depth of 1 m and a percentage of 5% of reactive rock within the reactive rock volume. The source term calculation for the pit walls was the same as Equation 4-4, but without the coarseness and flow channelization correction factors. PHREEQC modelling was not conducted on the pit wall runoff source term.

Runoff from industrial pads, roads, and berms were calculated using Equation 4-4 with inputs being NPAG HCT data and rock masses based on infrastructure areas in the mine plan and an average thickness of 2 m.

Appendix D includes a summary of constituent concentrations for the Ore Stockpile and the WRSA runoff applied in the Model.

4.2.4 Process Water Effluent

The process water source term represents a single pass of ore processing through the Goose Process Plant. This source term was refined using samples provided to WSP Golder by Sabina Gold and Silver that represent thickener overflow solutions (M. Keefe, February 4, 2022). Average concentrations were used for the source term (Appendix D).

4.2.5 Sewage Treatment Plant (STP) Treated Effluent

Source terms concentrations for the STP treated effluent discharged during Operations and Closure are presented in Appendix D (received from B2Gold, Chris LeGoffe, personal communication. March 04, 2026).

4.2.6 Blasting Residues

The loads associated with blasting residues (i.e., ammonia, nitrate, and nitrite) applied to blasted rock used as backfill are derived from methods described by Ferguson and Leask (1988). Equation 4-5 was included in the Model with several assumed input parameters (Table 4-2).

$$NH_4NO_3\text{-}N = W_r \times P_f \times AN_c \times N_c \times R_f \quad \text{[Eq. 4-5]}$$

Where:

- NH_4NO_3-N (kg of ANFO [ammonium nitrate/fuel oil] / day) = annual release of total ammonium nitrate as nitrogen;
- Wr (tonne rock / day) = waste rock production rate;
- Pf (kg ANFO / tonne rock) = powder factor;
- ANc (constant) = fraction of ammonium nitrate in ANFO;

- Nc (constant) = fraction of nitrogen content in ammonium nitrate; and
- Rf (%) = residual nitrogen remaining.

Table 4-2 Blast residue input parameters.

Parameter	Label	Value
ANFO : NH_4NO_3	ANc	1:0.94
NH_4NO_3 : NH_4NO_3 as N	Nc	1:0.35
Surface Rock Powder Factor	Pf	0.27 kg ANFO / tonne rock
Underground Powder Factor	Pf	0.9 kg ANFO / tonne rock
Residual ANFO Factor	Rf	5%
Annual Flush Rate	n/a	40%

Note:
The residual ANFO factor (1%) specified by Ferguson and Leask (1988) was increased by a factor of five. ANFO = ammonium nitrate/fuel oil. The powder factor data were provided by B2Gold (Chris LeGoffe, personal communication. March 09, 2026)

The total nitrogen was portioned between ammonia, nitrate, and nitrite according to the speciation of nitrogen in the blast residues: 37% ammonia, 60% nitrate, and 3% nitrite (Morin &, Hutt, 2009).

Pads made of fill (i.e., underground pads and roads) were based on a 2 m thickness and total surface areas of the infrastructure (Section 3.2.4). The annual nutrient loads were distributed monthly based on the annual hydrograph (Table 3-1) and assume that 40% of the residue would be flushed annually. Nitrogen loadings from blasting residue from all WRSAs, Ore Stockpile area, roads, and underground pads were included in the Model.

4.2.7 Cyanide Degradation Reactions

SRK derived degradation rates for total cyanide (TCN), cyanate (OCN-), thiocyanate (SCN-), and ammonia (NH_4+). The relevant degradation pathways for these species (Table 4-3) were included in the Model. WSP Golder (August 30, 2022) conservatively assumed that the final product of the degradation pathway (i.e., ammonia degradation) is nitrate (NO_3) to maintain a mass balance for nitrogen species. The WSP Golder (August 30, 2022) model iteration only accounted for the decrease in ammonia concentration and did not track the gaining species (attributed to various N forms).

Table 4-3 Degradation reactions and relevant species.

No.	Degradation Reaction	Losing Species	Gaining Species
1	TCN degrades to OCN-	TCN	OCN-
2	OCN- degrades to NH4+	OCN-	NH4+
3	SCN- degrades to NH4+	SCN-	NH4+
4	NH4+ is transformed to a variety of other forms of nitrogen (attributed to nitrate)	NH4+	NO3

Note:
TCN = total cyanide; OCN- = cyanate; SCN- = thiocyanate; NH4+ = ammonia; NO_3 = nitrate.

SRK calculated degradation rates from mass balance data from the Colomac Mine (SRK, March 2004). The methods are described in the 2020 Water and Load Balance Report (SRK, June 2020). The degradation rates were preserved in this version of the Model (Table 4-4).

Table 4-4 Summary of degradation rates.

Constituent	Degradation Rate ($mg/m^2/day$)
TCN-N	-218
OCN-N	-300
SCN-N	-674
NH_4+-N	-249

Note:
$mg/m^2/day$ = milligrams per meter squared (of surface area) per day. TCN = total cyanide; OCN- = cyanate; SCN- = thiocyanate; NH4+ = ammonia.

4.2.8 Brine Residues

Calcium chloride will be required for mining the underground portions of Umwelt, Llama, Goose Main, and Echo deposits. Brine loading concentrations used in the Model (Table 4-5) were based on Hope Bay[5] (SRK, April 2015), which were derived from shake flask tests and runoff monitoring data from waste rock piles for drilling in permafrost. Brine residues were assumed to be flushed out over time at a rate of 40% per year, and the brine mass from ore was assumed to be 100% flushed upon entering the Process Plant.

Table 4-5 Brine addition details.

Material	Location	Calcium Chloride Load (mg/kg)
Underground Waste Rock (on surface)	Permafrost	780
Underground Ore	Permafrost	390

4.2.9 Process Plant Outflow Water Quality

The water quality of the Process Plant outflow was informed by the reclaimed water concentrations from Echo and Umwelt TFs and the Primary Pond, as well as the additional load from ore porewater, release of load from ore dissolution, brine and ANFO flushing, and the Process Plant reagent addition for gold cyanidation and products of cyanide destruction.

The Process Plant reagent addition rates (Table 4-6) are based on work by JDS Energy and Mining Inc. (JDS, October 28, 2015). The total nitrogen generated by the cyanide addition was determined by the weak acid dissociable (WAD) cyanide concentration in the carbon adsorption tanks reporting to the cyanide destruction circuit. The nitrogen speciation was derived from the proportion of the cyanide breakdown products in the process water source terms. Sulphate

[5] Hope Bay, Doris North Project – Water and Load Balance.

generated in the cyanide destruction was calculated using a SO_2(g): CN_WAD(g) ratio of 5.5. Reagent loads were determined by multiplying the reagent concentrations by the Process Plant inflow rate.

Solubility limits were applied to the following metals to account for precipitation in the Process Plant circuit: aluminum, cadmium, copper, iron, lead, cobalt, magnesium, manganese, mercury, nickel, silver, strontium, thallium, tin, titanium, and zinc (JDS, October 28, 2015). Sulphate concentrations were determined considering calcium concentrations and calcite precipitation, as well as sodium concentrations and sodium sulphate generation.

Table 4-6 Summary of process plant reagent additions used in the load balance component of the model.

Reagent Dose (kg/tonne)	
Sodium Cyanide (NaCN)	1.4
Sodium Metabisulphite ($Na_2S_2O_5$)	1.5
Species Addition (g/tonne)	
Ammonia (NH_3)	53[(a)]
Nitrate (NO_3)	0.14[(a)]
Nitrite (NO_2)	0.15[(a)]
Cyanate (OCN^-)	21[(a)]
Thiocyanate (SCN^-)	24[(a)]
Total Cyanide	0.62[(a)]
Weak Acid-Dissociable Cyanide	180[(a)]
Sodium	1000
Sulphate (5.5g SO_2 / g of WAD CN)	1500

Note:
[(a)]: g-nitrogen/tonne.

4.2.10 Cryoconcentration

It was assumed there will be 100% exclusion of dissolved constituents from ice formation in water bodies within the Model, resulting in higher concentrations in the underlying water. Water bodies modelled as GoldSim reservoirs in the load balance (i.e., lakes, ponds, and open pit reservoirs including Llama, Umwelt, and Goose Main) therefore experience cryoconcentration. Each water body has an associated volume of liquid water in the water balance that fluctuates based on the ice thickness, but the mass of each constituent is unaffected by these volume changes, and therefore the concentration increases or decreases with each freeze-thaw cycle. The inclusion of cryoconcentration in the model improves accuracy by capturing seasonal water quality variations of these water bodies.

A maximum ice thickness of 2.0 m was applied to water bodies modelled. Ice was assumed to form in October, reaching a maximum depth in February, and receding to a zero-ice thickness by the start of the open water season in July (Table 4-7). These assumptions are based on

observations recorded during the freshwater baseline study performed by Rescan ERM (June 2012).

Table 4-7 Ice thickness input.

Day of the Year	Average Ice Thickness (m)
1	1.6
31	2
60	2
180	0
274	0
366	1.6

Note:

Thicknesses interpolated linearly between points.

5.0 MODEL IMPLEMENTATION

5.1 Modelling Approach

5.1.1 Time Step

The Model relies on a daily timestep from Year 1 to Year 46, which is when the pit lakes and conditions at the prediction nodes reach steady-state conditions (depending on climate conditions, such conditions may be reached earlier). Although most Model input parameters are entered on a monthly time step, the Model calculates daily values by dividing monthly values by the number of days in each month.

5.1.2 Stochastic Water Balance Model

The Model results for the water balance component were generated using a Monte Carlo simulation. A Monte Carlo simulation is a mathematical technique which builds an ensemble of possible results by using a probability distribution. The Model utilizes precipitation probability distribution developed for the Goose Mine (see Table 3-2) to estimate an annual precipitation. The annual precipitation is then multiplied by the monthly distribution, a runoff coefficient (based on the surface type), and the catchment area to estimate the runoff volumes. A total of 100 model runs were completed with a randomly generated annual precipitation for each year. At the end, all results were compiled, and a probability distribution of runoff results was generated for the 5th (i.e., representing lower than average precipitation), 50th (i.e., median precipitation, similar to average precipitation conditions), and 95th (i.e., representing greater than average precipitation) percentiles.

5.1.3 Stochastic Load Balance Model

The Model results for the load balance component were generated using the stochastically modelled annual precipitation of the water balance model. Similar to the water balance component of the Model, a total of 100 runs were completed. Once results (i.e., predicted daily concentrations) of these 100 runs were compiled, the 5th, 50th, and 95th percentiles of the results from the 100 runs were calculated for each daily time step and then monthly mean concentrations were calculated.

The assessment of the load balance results focussed on the 50th percentile of predicted concentrations, which represents median hydrological conditions (i.e., similar to an annual precipitation of 427 mm/yr) and are consistent with conditions used in the derivation of the source terms. The 5th and 95th percentiles of the predicted concentrations are also included in this report to provide a range of predicted concentrations that could potentially occur under different hydrological conditions.

5.2 Modelled Constituents and Discharge Limits

Water quality constituents included in the load balance component of the Model are listed in Table 5-1. Results of the load balance component of the Model were screened against the

Metal and Diamond Mining Effluent Regulations (MDMER) discharge limits (Government of Canada 2002, current to 5 May 2025) (Table 5-2). It is acknowledged that additional requirements for discharge limits may be applicable (e.g., Water Licence discharge limits) to meet in-lake (i.e., Goose Lake) water quality objectives.

Table 5-1 Constituents included in the load balance component of the model.

TDS	Total Ammonia as N[(a)]	Cadmium	Molybdenum	Thorium
TSS	Orthophosphate as P	Calcium	Nickel	Tin
Free Cyanide	Phosphate as P	Chromium	Phosphorus	Titanium
Total Cyanide	Total Organic Carbon	Cobalt	Potassium	Uranium
Weak Acid-Dissociable Cyanide	Aluminum	Copper	Selenium	Vanadium
Cyanate	Antimony	Fluoride	Silicon	Zinc
Thiocyanate	Arsenic	Iron	Silver	-
Sulphate	Barium	Lead	Sodium	
Chloride	Beryllium	Lithium	Strontium	
Nitrate as N	Bismuth	Manganese	Tellurium	
Nitrite as N	Boron	Mercury	Thallium	

Note:

N = nitrogen; P = phosphorous.

(a) Total ammonia was used to calculate un-ionized ammonia based on conservative estimates of effluent temperature (15ºC) and pH (8.5).

Table 5-2 MDMER discharge limits applied to discharge at the prediction nodes.

Constituent	MDMER Discharge Limit[(a)] (mg/L)
TSS	15
Un-ionized ammonia	0.50[(b)]
Cyanide	0.50
Arsenic	0.10
Copper	0.10
Lead	0.080
Nickel	0.25
Zinc	0.40

Notes:

(a) Maximum authorized monthly mean concentration.
(b) mg-nitrogen/L.
MDMER = Metal and Diamond Mining Effluent Regulations.

5.3 Water Treatment

Model results are the basis for understanding the level of treatment required for the Goose Mine to meet MDMER discharge limits at the discharge points to Goose Lake.

In Year 1 of Operations, approximately 50% of the water in Llama Lake was dewatered either to Goose Lake or to Primary Pond for use at project startup (process plant initial water supply, development of initial water cap in Echo TF). The remaining approximately 50% of Llama Lake will be dewatered in Year 2 of Operations (Y2, Q2-Q3). It has been assumed that 80% of the water to be removed in Year 2 (i.e., 40% of total original volume of Llama Lake) will have medium TSS concentration (i.e., a concentration of TSS larger than maximum allowed for discharge but that is treatable) and will be treated at the TSS treatment plant prior to discharge to Goose Lake. The last 20% of the volume to be dewatered in Year 2 (i.e., 10% of total original volume of Llama Lake) is assumed to have high TSS (i.e. higher that the maximum acceptable by the TSS treatment plant) and will be stored in Umwelt Lake.

In Year 1 of Operations, approximately 50% of the water in Umwelt Lake was dewatered either to Goose Lake or to Primary Pond for use at project startup (process plant initial water supply, development of initial water cap in Echo TF). The remaining approximately 50% of Umwelt Lake will be dewatered in Year 2 of Operations (Y2, Q2-Q3). It has been assumed that 50% of the water to be removed in Year 2 (i.e., 25% of total original volume of Umwelt Lake) will have medium TSS concentration and will be treated at the TSS treatment plant prior to discharge to Goose Lake. The last 50% of the volume to be dewatered in Year 2 (i.e., 25% of total original volume of Umwelt Lake) is assumed to have high TSS and will remain in Umwelt Lake.

Saline water from Llama, Umwelt, Echo, and Goose Main underground workings and from Llama Open Pit will be sent to the SWP for holding prior to being treated by reverse osmosis (RO) at the RO plant for reuse in the mining process or storage in the TFs. A treatment efficiency (in terms of contaminant removal) of 98% was assumed for the RO process (Sabina, March 2021), with permeate (i.e., desalinated portion of the treated effluent) being sent to Umwelt TF and brine being cycled back into the SWP. The incoming flow volume will be split 80% to permeate and 20% to brine. If needed to manage water in the SWP and/or in case of an emergency at the RO plant, saline water from the SWP could be transferred to Llama TF, when available.

Water quality predictions indicate that water treatment will be required to treat water in Umwelt and Llama TFs before discharge to the environment. As the Umwelt and Llama TFs are filling up, after deposition is complete, water treatment for some constituents included in Table 5-1 (ammonia, nitrate and nitrite, aluminium, arsenic, chromium, copper, iron and selenium) will be circular at a rate of 5,000 m^3/day for each pit (total of 10,000 m^3/day), with treated water being sent back to the TFs. When they reach capacity, the Umwelt and Llama TFs will discharge to the SWP, which becomes the Umwelt Treatment Pond (after the saline water and contaminated sediments have been removed from SWP) to provide flow attenuation for additional treatment prior to discharge to the environment, as required. The proposed treatment in Umwelt Treatment Pond is year-round at an average flow rate of 5,000 m^3/day, and a potential

maximum rate of 65,000 m^3/day. Treatment rates required in Umwelt Treatment Pond will be refined during future updates of the Model.

Treatment for the Goose Main Reservoir before discharge to Goose lake (via PN05), if needed, will begin in Year 18 (following freshet after the filling of Goose Main Reservoir) and continue until the start of Post-Closure. Brine will be sent back to Goose Main Reservoir. Circular treatment in Goose Main Reservoir, with treated water being sent back to the Goose Main Reservoir, can also be considered to improve water quality in this reservoir prior to reaching its capacity, if required.

Treatment was assumed to be available year-round; for the RO treatment year-round may only be required for during the first year of treatment, when the RO treatment is needed to remove saline water accumulated in SWP during previous years. After the first year, seasonal (summer only) RO treatment may be sufficient. Future evaluation of treatment needs will assess opportunities to further concentrate treatment only during the open-water season.

For all types of treatment required, modular treatment plants will likely be employed as they can be relocated and combined as necessary to achieve the appropriate water quality at different phases of the Goose Mine. The expected required treatment, including a list of primary constituents that will require treatment, is provided in Table 5-3.

Table 5-3 Goose Mine treatment summary.

Phase	From	To	Start	End	Flow Rate (m^3/d)	Primary Constituents
Operations	Llama Lake	Goose Lake	Yr 2 Q2	Yr 2 Q3	10,800	TSS
Operations	Umwelt Lake	Goose Lake	Yr 2 Q2	Yr 2 Q3	10,800	TSS
Operations/ Closure/Post-Closure	Saline Water Pond (SWP)	Umwelt TF[(a)]	Yr 4 Q3	Yr 9 Q2	5,000	TDS
	Llama TF	Llama TF	Yr 15 Q1	Yr 20 Q4[(b)]	10,000	TDS, ammonia, nitrate, nitrite, aluminum, arsenic, chloride, chromium, copper, iron, phosphorus, selenium, uranium[(c)]
	Umwelt TF	Umwelt TF	Yr 12 Q1	Yr 19 Q2[(b)]		
	Umwelt Treatment Pond	Goose Lake (via PN04)	Yr 18	Yr 19[(b)]	Variable (0 - 65,000[(c)]	TDS, ammonia, nitrate, nitrite, aluminum, arsenic, chloride, chromium, copper, iron, phosphorus, selenium, uranium[(d)]
	Goose Main Reservoir	Goose Lake (via PN05)	Yr 18	Yr 20	5,000[(e)]	TDS, ammonia, nitrate, nitrite, aluminum, arsenic, chloride, chromium, copper, iron, phosphorus, selenium, uranium[(c)]

Notes:

(a) 80% of flow from SWP treated and sent to Umwelt TF; 20% returned to SWP. Llama TF, when available, could also receive treated saline water, if required.

(b) Approximate timing, estimation based on the average climate scenario. Options to reduce duration of recirculation treatment will be evaluated as part of future updates of the water and load balance model.

(c) Potential maximum treatment rate; required treatment rate in Umwelt Treatment Pond to be refined during future updates of the water and load balance

(d) Full list of potential constituents; treatment is expected to be required only for some constituents.

(e) Contingency treatment; not required based on current results of the water and load balance.

6.0 WATER BALANCE RESULTS

Results of the water balance component of the Model are presented at key locations to provide context to other linked modules including water management planning and load balance predictions. To the extent practicable, water quantities for Year 1 are based on monitoring data received from B2Gold (see Section 3.2.8). Quantities for the period after Year 1 are based on the inputs provided in Section 3.2, using a Monte Carlo simulation for the 5th, 50th, and 95th percentiles as described in Section 5.1.2. The simulated percentiles represent lower than average (i.e., 5th percentile), average (i.e., 50th percentile, equal to median precipitation), and greater than average (i.e., 95th percentile) hydrological conditions with the average representing the most likely occurrence, and upper and lower assessed bounds represented by 95th percentile and 5th percentile, respectively.

Most of the results are provided for the Operations and Closure Phase, except for facilities where conditions have not stabilized yet by the end of the Closure Phase.

6.1 Saline Water Pond

Umwelt Lake was partially dewatered during Year 1 of operation and is planned to be fully dewatered in Year 2 to allow completion of the construction of the Stage 1 of SWP. In Year 3, the Stage 1 SWP will be operational with a maximum storage capacity (maximum operating water level [MOWL]) of 1.1 M-m^3. The Stage 2 SWP will become available in Year 4 for a maximum capacity (MOWL) of 1.9 M-m^3.

The purpose of the SWP is to provide temporary storage of saline water encountered during the mining of Llama Open Pit, and Llama, Umwelt, Echo, and Goose Main undergrounds (see Section 3.2.7). Other inflows to the SWP include natural runoff and direct precipitation. Starting in the third quarter of Year 4, saline water collected in the SWP will be sent to a RO plant for treatment, with 80% of the treated effluent being sent to Umwelt TF, for use as reclaim water, and the other 20% of the volume recirculating back to the SWP as brine reject.

Once Goose Main Open Pit mining is complete (Q2 of Year 9), remaining saline water in the SWP will be transferred to Goose Main Open Pit (then called Goose Main Reservoir) for permanent storage. At this time saline water reporting to the operating underground mines will also be sent directly to Goose Main Reservoir. This strategy will allow maintaining low water levels in SWP for the rest of the Operations Phase to provide contingency storage for saline and contact water, as needed.

After Goose Main Reservoir becomes available, and when the SWP is no longer considered required for contingency storage, the top layer of sediment within the dewatered SWP will be excavated to remove potential chloride concentrations. This may occur during operations (for modeling purpose it was assumed to occur approximately in Year 10 after all saline water has been removed to Goose Main Reservoir) or during closure. Following excavations, the upstream catchments, including Llama TF (at that point Llama Reservoir), Primary Pond (through breach of the containment dam), and Umwelt TF (at that point Umwelt Reservoir), will be allowed to discharge to the SWP area. Water reporting to the SWP (then called the Umwelt Treatment Pond) will be treated prior to discharge to the environment, as required. It has been assumed

that the SWP containment dam will be maintained in place during Closure Phase to attenuate flow to the water treatment plant (WTP) and to provide contingency storage, as required. Monitoring of water levels in the Umwelt Treatment Pond during the early years of Closure will inform timing for breaching the SWP containment dam later in the Closure or Post-Closure Phase. Breaching of the dam will be dependent on water quality, and as such its timing may vary within the Closure/Post-Closure phase. Once the SWP containment dam is breached, the storage capacity of the Umwelt Treatment Pond will ultimately reduce to a volume similar to the original Umwelt Lake (~250,000 m^3).

Table 6-1 provides the maximum storage volume accumulated in the SWP during Operations for the 5th, 50th, and 95th percentile water balance results. The results show that the SWP requires a volume of about 1.7 M-m^3 to store the saline water encountered during Operations Phase until Umwelt TF, and ultimately Goose Main Reservoir are available for storage. Between Year 9 and end of Operations, low water levels will be generally maintained in the SWP, providing contingency storage for saline water, as required.

Table 6-1 Saline water pond maximum storage volumes.

Saline Water Pond Maximum Storage Volume (m^3)		
5th Percentile	**50th Percentile**	**95th Percentile**
1,100,000 [(a)]	1,300,000 [(a)]	1,700,000[(a)]

Note:

a) Storage capacity required for Operations Phase before water can be sent to Umwelt TF (Year 4, Q3). During Closure Phase a minimum 1.9 M-m^3 storage capacity has been assumed.

Figure 6-1 summarizes the water storage for the 5th, 50th, and 95th percentile water balance results. The SWP will be available starting in Year 3; some storage is available in Umwelt Lake, which is represented in the results for Year 1 and 2. Results are provided on a monthly basis for the period Year 1 to Year 6 (Echo TF and initial stages of RO treatment period; Figure 6-1a) to capture the monthly and seasonal variability of the water management strategies during this period. For the period Year 7 to the start of Post-Closure, the results are provided on an annual basis (Figure 6-1b). Monthly based results for this latter period will be provided in future updates of the Model, as water management strategies and mine plan are finalized and refined.

The following adaptive management strategies to reduce the amount of water reporting to the SWP have been identified and will be evaluated, as required, particularly during the early years of mine operations (i.e., before treatment at the RO unit commences):

- Construction of diversion berms around the SWP to reduce the runoff from undisturbed ground reporting to SWP,
- Snow removal from the frozen surface of the SWP to reduce the amount of water reporting to SWP during freshet,
- Use of evaporators during summer months to remove part of the water in SWP.

B2Gold is also exploring options to expand the capacity of SWP (Stage 3) and increase the robustness of the saline water management strategy at the site.

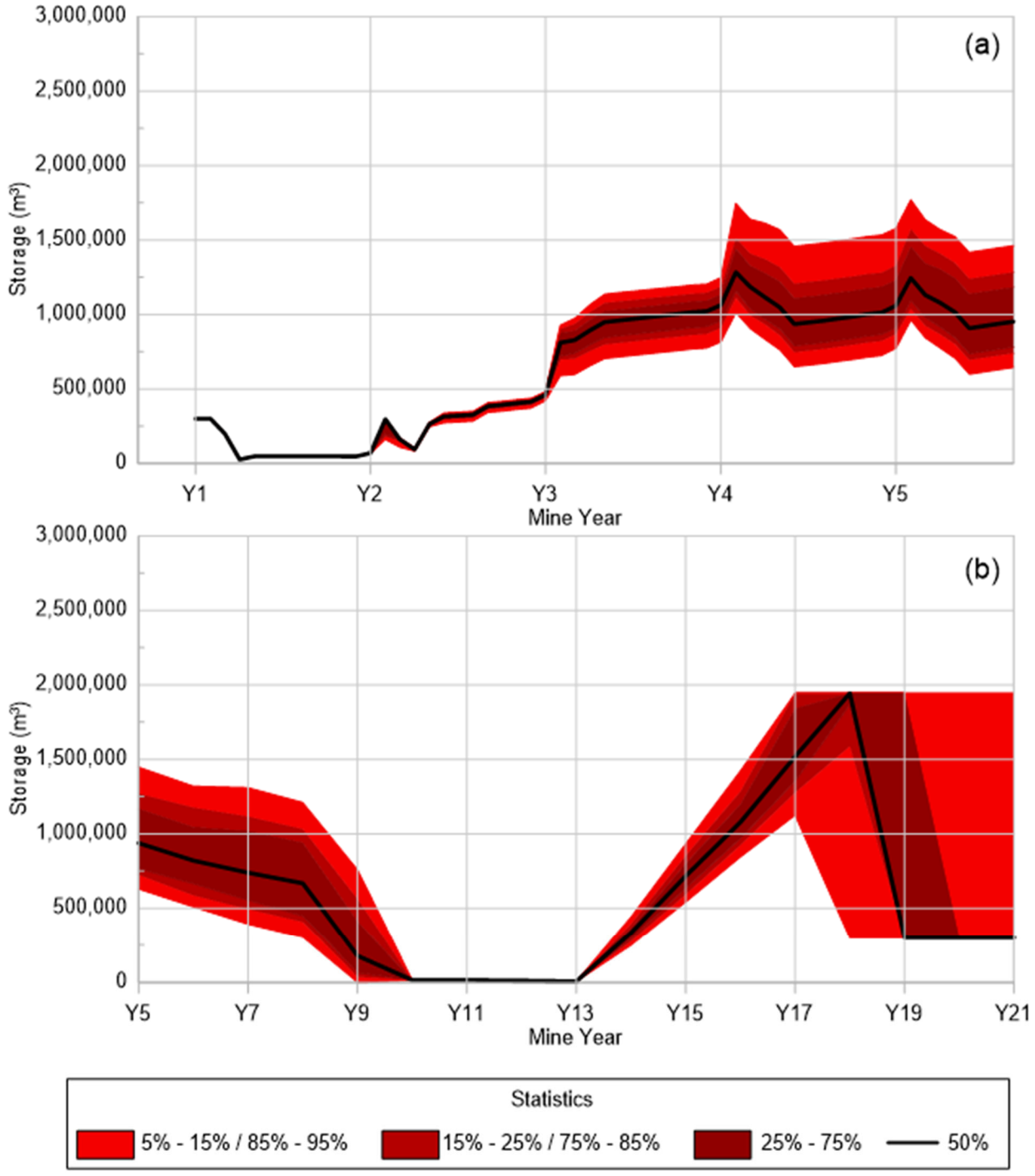


Figure 6-1 Saline Water Pond (SWP) storage volume: (a) monthly for Year 1 to Year 6; (b) annual for Year 6 to Year 21.

6.2 Echo Open Pit and Echo TF

Mining of Echo Open Pit, including waste rock deposition in the Echo WRSA (later called Echo/Goose Main WRSA), was completed during the construction phase of the Project (not included in the Model, as mentioned in Section 2.2). During mining of Echo Open Pit ore has been stored at the Ore Stockpile.

When production at the process plant initiated in June of Year 1, the Echo Open Pit became the active tailings facility (known as Echo TF). Echo TF will have a total capacity of 3.6 M-m^3. As tailings slurry is being deposited into Echo TF, a minimum water cover depth of 3 m will be maintained to reduce risk of developing frozen layers within the deposited tailings. The initial water cover (ahead of initiating tailings deposition) in Echo TF was developed in Year 1 using water from Umwelt and Llama Lake dewatering and water from the Primary Pond. Approximately 239,000 m^3 of water was pumped to Echo Open Pit in Year 1 to develop the initial water cover. In Year 2, some of the water from the completion of the dewatering of Llama Lake and Umwelt Lake will be pumped to Echo TF to support maintaining the minimum water cover.

During the Echo TF period, runoff collected in Echo TF will be kept in Echo TF and used as reclaim water for the Process Plant. When mining of Goose Main Open Pit begins runoff from the Echo/Goose Main WRSA[6] will be collected in the Echo/Goose Main WRSA pond and pumped to Primary Pond or Umwelt TF.

During the open water season the Primary Pond will be the primary source of water for the Process Plant, resulting in excess water from tailings deposition to accumulate in the Echo TF. This accumulated water will be used as the primary source of water for the Process Plant during the subsequent winter season. Freshwater from Goose Lake (or Big Lake as needed) will supply make-up water for process, if reclaim from Primary Pond and Echo TF is insufficient.

During the later stages of tailings deposition in Echo TF (tailings deposition expected to be completed in Q1 of Year 5), supernatant water in Echo TF will be pumped to Umwelt TF and then waste rock material (part of Echo/Goose Main WRSA) will be placed in Echo TF, completely covering the facility.

Figure 6-2 summarizes the water storage volume of Echo Open Pit (or Echo TF) for the 5th, 50th, and 95th percentile water balance results (except for Year 1, where model results are based, to the extent practicable, on monitoring data provided by B2Gold). As per the SWP, the results are provided on a monthly basis for the period Year 1 to Year 6. In Year 5 of Operations, Echo TF will be covered with waste rock and will no longer store any surface water. Runoff from the catchment will be captured in the Echo/Goose Main WRSA Pond and pumped to the Primary Pond during Operations. In Closure, pond outflow is diverted to PN08.

[6] Waste rock from the Goose Main Open Pit will be deposited within the Echo WRSA footprint, forming the Echo/Goose Main WRSA.

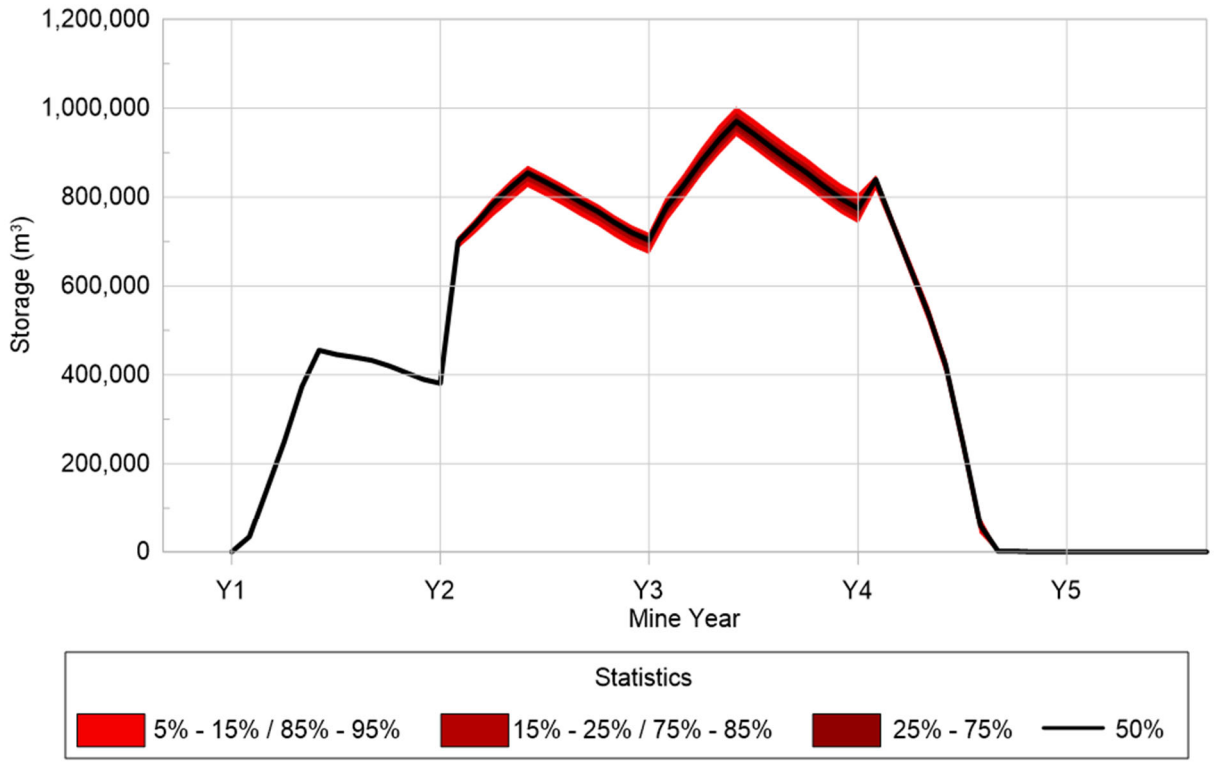


Figure 6-2 Echo open pit water storage volume: monthly results for Year 1 to Year 6.

6.3 Umwelt Open Pit and Umwelt TF

Stripping of Umwelt Open Pit was completed during the construction phase of the Project (not included in the Model, as mentioned in Section 2.2). Mining of Umwelt Open Pit is in progress at the time of writing of this report, with waste rock being disposed of in the Umwelt WRSA and ore placed at the Ore Stockpile for subsequent use at the Process Plant.

Runoff collected in Umwelt Open Pit will be pumped to the Primary Pond for reclaim use in the Process Plant. Once the use of Echo Open Pit for tailings storage (Echo TF) is complete (expected in Q1 of Year 5), tailings deposition will be transferred to Umwelt Open Pit, then known as Umwelt TF, with a total capacity of 11.7 M-m^3. Similar to Echo TF, a water depth of 3 m will be maintained to reduce risk of developing frozen layers within the deposited tailings. The initial minimum 3 m water cover will be formed using RO-treated water from the SWP and water pumped from Echo TF. During tailings deposition in Umwelt TF, the Primary Pond will remain the main source of reclaim water to the Process Plant during the open water season. Umwelt TF will provide reclaim water to the Process Plant during the winter season.

As tailings slurry is being deposited into Umwelt TF, saline water collected in the SWP will be treated at the RO unit and sent to the Umwelt TF for use as reclaim water and for generating contingency storage in the SWP. RO treatment will terminate when Goose Main Open Pit mining is complete and saline water can be transferred directly to Goose Main Reservoir (Q2 of

Year 9). Once the use of Umwelt Open Pit for tailings storage (Umwelt TF) is complete (expected in Q4 of Year 11), tailings deposition will be transferred to Llama TF. At the time of transition to tailings deposition in Llama TF, Umwelt TF would have had received 7.0 M-m^3 of tailings, approximately 60% of the total capacity of Umwelt Open Pit. For the purpose of this Model update, the time of transition of tailings deposition to Llama TF was assumed based on providing sufficient tailings volume in Umwelt TF and Llama TF, to expedite closure filling of the two pits. B2Gold will continue to refine the time of transition from Umwelt TF to Llama TF; an update to this timing will be provided in future updates of the Model. During tailings deposition in Llama TF, Umwelt TF will continue to be the main source of reclaim water for the Process Plant during the winter season.

At the end of Operations and in Closure phase, Umwelt TF (now known as Umwelt Reservoir) will be filled with catchment runoff and will discharge by gravity to Goose Lake via SWP, known as Umwelt Treatment Pond in the Closure Phase. To meet water quality guidelines at PN04 (i.e., ultimate discharge point to Goose Lake), water in Umwelt TF will be treated and recirculated to the pit once tailings deposition is complete (Q4 of Year 11) until the pit is filled (approximately Year 18 to Year 21, depending on climate conditions). Once filled with water, Umwelt TF will overflow to Umwelt Treatment Pond; if required, treatment of water in Umwelt Treatment Pond will occur until the water quality meets discharge criteria. To further expedite the filling of the pit and improve its water quality, freshwater from Goose Lake (or Big Lake) may be pumped to Umwelt TF until it is filled.

Figure 6-3 summarizes the storage volume of Umwelt Open Pit for the 5th, 50th, and 95th percentile water balance results (except for Year 1). The results are on an annual basis. As described in Section 6.1, monthly results will be provided in future updates of the Model, as required. These results show that Umwelt Reservoir will be full and will initiate discharging by gravity in the later stages of the Closure Phase of early stages of Post-Closure Phase (i.e., Year 18 to Year 21 depending on the hydrological conditions during this period).

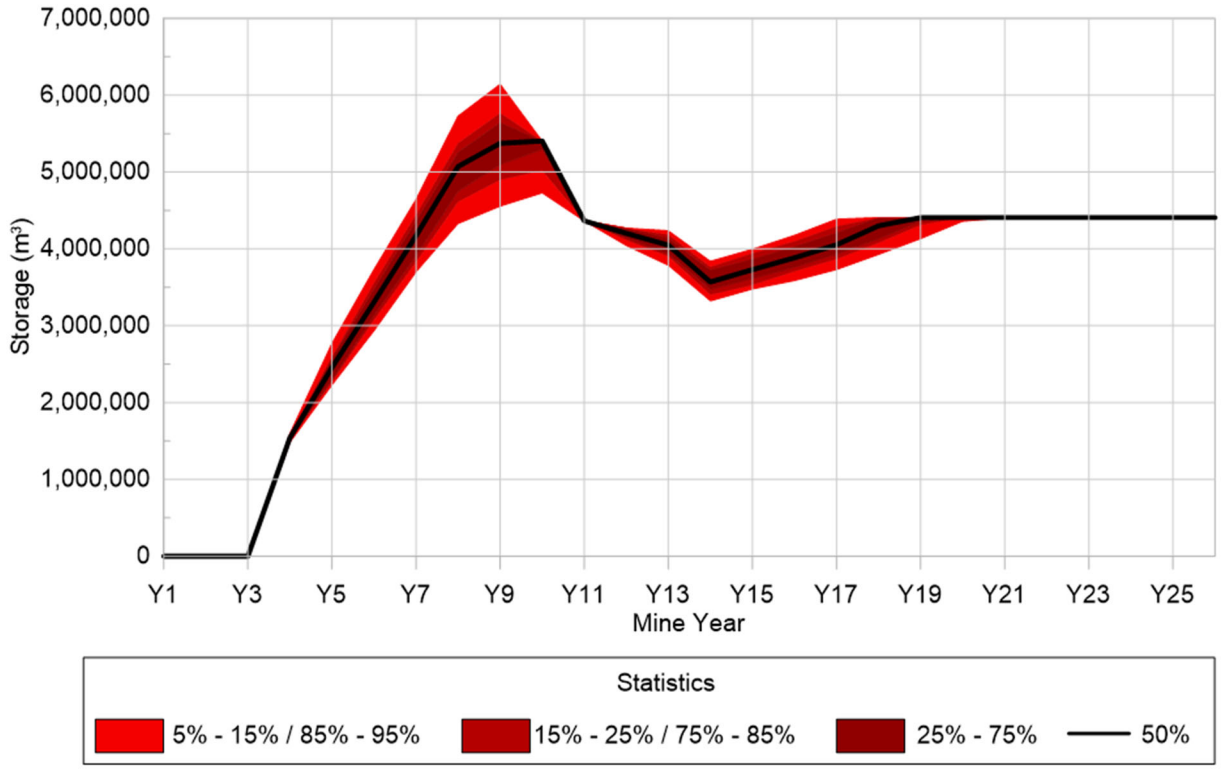


Figure 6-3 Umwelt reservoir water storage volume; annual results.

6.4 Llama Open Pit and Llama TF

Dewatering of Llama Lake, which has a natural capacity of approximately 1.13 M-m^3 was initiated in Year 1. Approximately 50% of the volume of Llama Lake was dewatered either to Goose Lake or to Primary Pond to develop the initial water cover in Echo TF or to supply the Process Plant. The remaining 50% of Llama Lake will be dewatered in Year 2 (Q2-Q3). It is assumed that this remaining volume in Llama Lake will have TSS concentration not suitable for direct discharge to Goose Lake. It has been assumed that 80% of this remaining volume will be treated for TSS before discharging to Goose Lake. The remaining 20% of the lake volume will be stored in Umwelt Lake (future SWP).

Mining of Llama Open Pit will begin in Q4 of Year 2. This will include the construction of the Llama Diversion berms around the footprint of Llama Open Pit and the Llama Collection Berm. Waste rock placement in Llama WRSA will be limited to the catchment area LD2 (Drawing 3-1) until Llama WRSA Pond is constructed in Q3 of Year 4. Runoff and seepage from Llama WRSA will be intercepted at the Llama Collection Berm and pumped to Primary Pond, or to Llama WRSA Pond when it becomes available. Water collected in Llama WRSA Pond will be transferred to Primary Pond.

During the Llama Open Pit active mining inflows to Llama Open Pit include runoff and groundwater inflows. The Llama Open Pit will be dewatered to the SWP until mining is complete in Q1 of Year 6 and then allowed to passively fill to support pit flooding at Closure. At

completion of Llama Open Pit mining, the Llama Collection Berm will be breached to support filling of the pit. Water in Llama WRSA Pond will also start being pumped to Llama TF to support its closure filling. During the RO treatment period, treated effluent may be pumped to Llama TF, to support pit flooding. Starting in Q4 of Year 11 (assumed date as mentioned in Section 6.3), tailings will be disposed in the mined-out open pit, then known as Llama TF with a total capacity of 11.9 M-m^3. During tailings deposition in Llama TF, excess water from tailings deposition and runoff will be allowed to collect in Llama TF. Due to the saline groundwater inflows, Llama TF is not planned to be used to provide reclaim water to the Process Plant.

At Closure the Llama Diversion Berm and the Llama Collection Berm will be breached and runoff from the catchment upstream of Llama Open Pit will be allowed to drain to the Llama TF (then known as Llama Reservoir). To meet water quality guidelines at PN04 (i.e., ultimate discharge point to Goose Lake), the water in Llama Reservoir will be recirculated through a WTP during the Closure Phase until the reservoir is full. Once full, overflow from Llama TF (now Llama Reservoir) will be directed to Goose Lake via the re-established Umwelt Treatment Pond (formerly the SWP). Treatment will occur at the Umwelt Treatment Pond prior to discharge to the environment during the Closure Phase until the water quality meets discharge criteria.

During the Closure Phase, freshwater from Goose Lake (or Big Lake) will be pumped to Llama Reservoir to expedite filling and improve water quality, as required. Alternatively, to the recirculation treatment, the top layer of water in Llama Lake could be treated and replaced with freshwater ahead of discharge from Llama TF to PN04 via the Umwelt Treatment Pond. This option will be further evaluated in future updates of the Model.

Figure 6-4 summarizes the storage volume of Llama Reservoir for the 5th, 50th, and 95th percentile water balance results. The results are on an annual basis. As described in Section 6.1, monthly results will be provided in future updates of the Model, as required. These results show that Llama Reservoir will start to overflow by gravity toward Umwelt Treatment Pond between Year 17 and Year 19, depending on hydrologic conditions at that time.

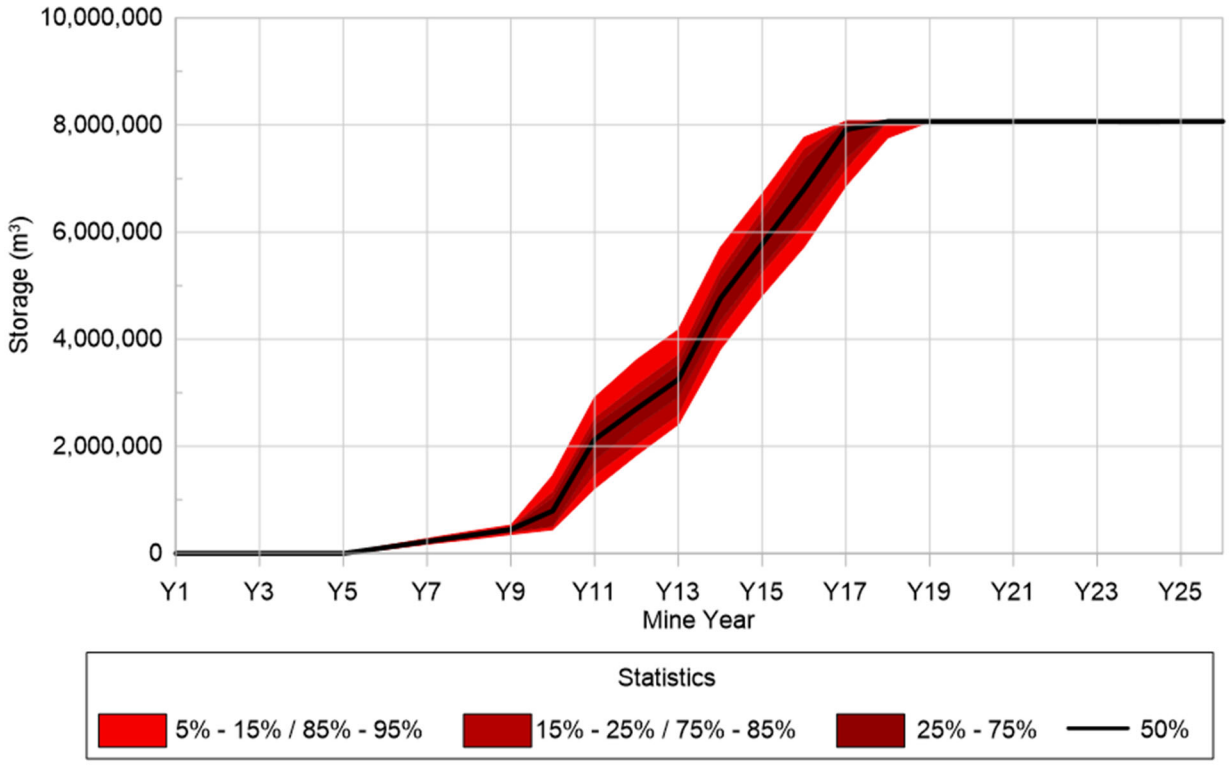


Figure 6-4 Llama Reservoir storage volume; annual results.

6.5 Goose Main Open Pit and Goose Main Reservoir

Stripping of Goose Main Open Pit will begin in Year 4 to prepare for the mining starting in Q1 of Year 5. Runoff collected in the open pit will be pumped to Umwelt TF for reclaim use in the Process Plant. Once mining is complete in Year 9 (Q2), the mined-out open pit, now known as Goose Main Reservoir, will be filled with contact water and saline water collected across the Project site for permanent storage and to support pit filling at Closure. At Closure, the Goose Main diversion berm and the Rascal Diversion berm will be breached to re-establish pre-development flows. At this point, the filling of Goose Main Reservoir will continue with runoff from the upstream catchment and freshwater from Goose Lake or Big Lake (as needed). The model results show that the non-contact inflows from the re-established catchment are sufficient to improve the water quality in Goose Reservoir such that no treatment is needed of its discharge to the environment. If found to be required, water in Goose Main Reservoir will be treated prior to discharge to the environment.

Figure 6-5 summarizes the storage volume of Goose Main Reservoir for the 5th, 50th, and 95th percentile water balance results. The results are on an annual basis. As described in Section 6.1, monthly results will be provided in future updates of the Model, as required. These results show that Goose Main Reservoir will initiate discharging by gravity within the Closure Phase (i.e., Year 16 or Year 17 depending on the hydrological conditions during this period.

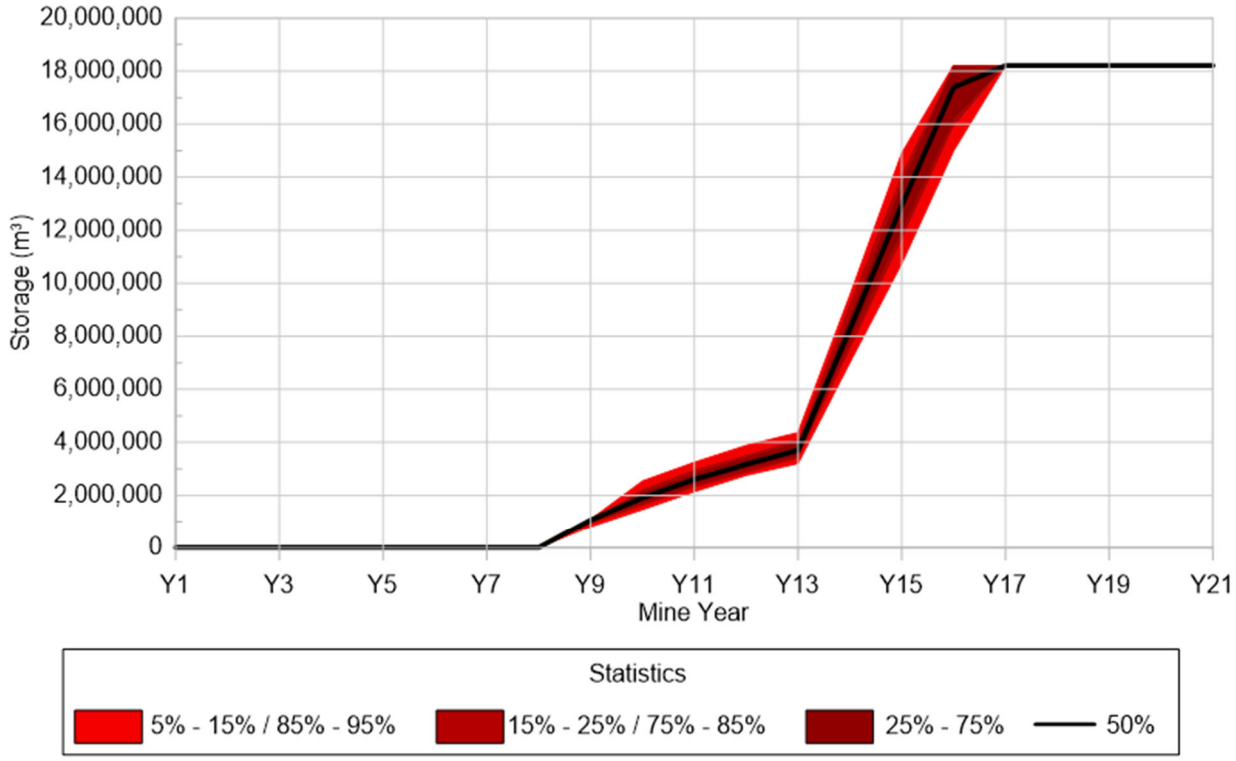


Figure 6-5 Goose Main Reservoir storage volume.

6.6 Primary Pond

The Primary Pond will be available by Year 1 to collect contact water from across the site. The contact water collected is used as reclaim in the Process Plant as well as to support pit filling (as required) once milling productions finish in Year 13. Throughout Operations, the water level in Primary Pond will be maintained generally low during the winter season, to provide storage capacity for contact water reporting and/or being pumped to the pond during freshet and the summer season. The Primary Pond will received runoff from its direct catchment area, which includes the Umwelt WRSA and the Umwelt Overflow WRSA. During the period before the Llama WRSA Pond becomes available (Q3 of Year 4), runoff and seepage from the Temporary NAG Stockpile, the Underground PAG Temporary Stockpile and the platform for the Llama Underground portal will be collected locally and pumped or allow to flow by gravity to Primary Pond. However, drainage from these facilities (particularly the Temporary NAG Stockpile and the platform for the Llama Underground portal) will be discharged to the environment if the water quality meets discharge criteria.

During the open water season, the Primary Pond will be the main source of reclaim water for the Process Plant, resulting in the pond reaching low water levels ahead of freeze up. The Primary Pond will have a capacity of approximately 0.4 M-m^3. Throughout most of the life of mine, contingency storage capacity is available in the other ponds at site (e.g. SWP, Echo TF, Umwelt

TF or Llama TF) to manage excess water in the Primary Pond, if needed. At closure, the Primary Pond will be breached, and water will be allowed to report to the SWP (future Umwelt Treatment Pond).

Figure 6-6 summarizes the water storage of the Primary Pond for the 5th, 50th, and 95th percentile water balance results. The results are provided on a monthly basis for the period Year 1 to Year 6 (Echo TF, Umwelt TF and RO treatment period; Figure 6-6a) and on an annual basis thereafter (Figure 6-6b). Monthly based results for this latter period will be provided in future updates of the Model, as required.

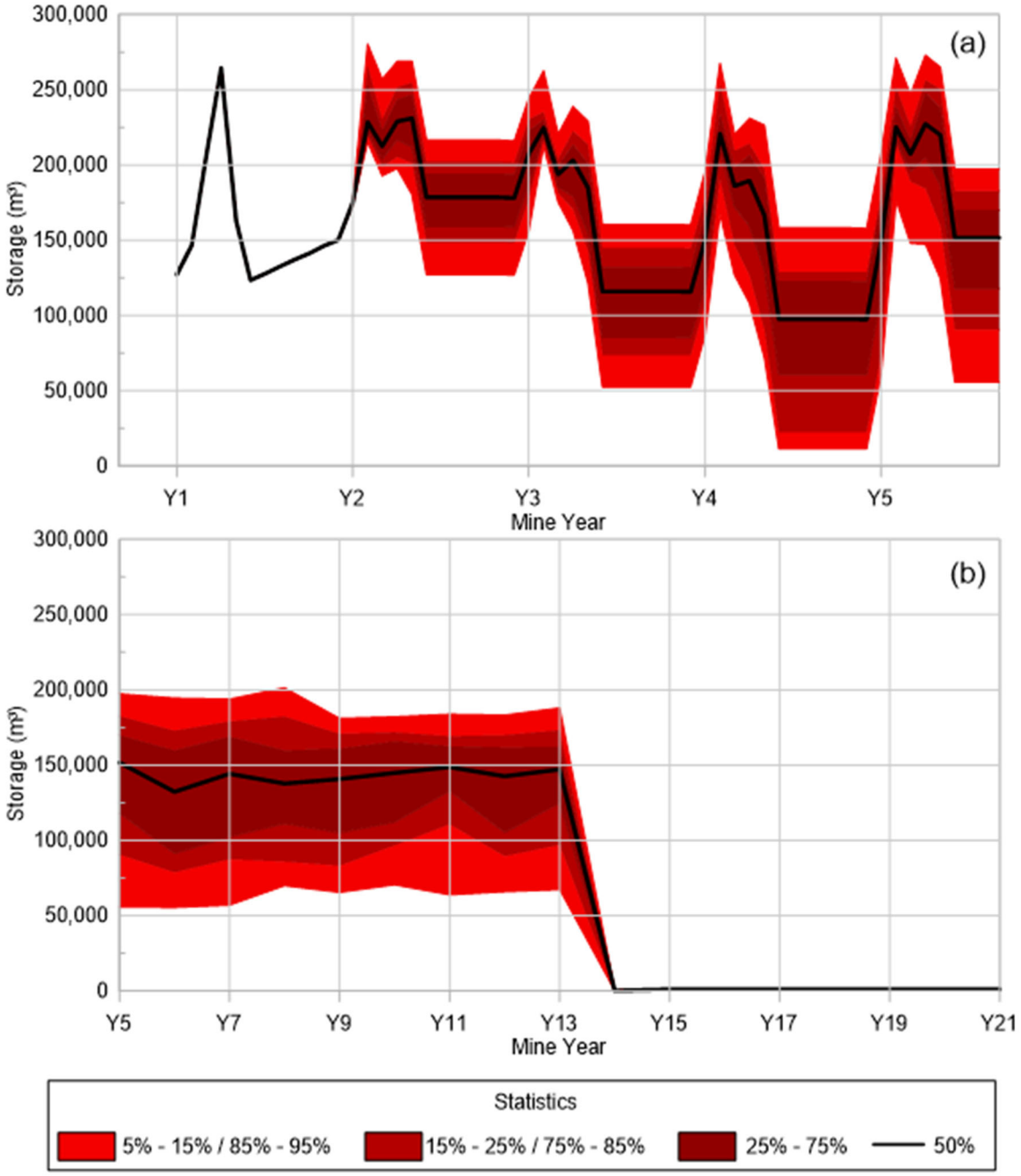


Figure 6-6 Primary Pond storage volume: (a) Monthly for Year 1 to Year 6; (b) Annual for Year 6 to Year 21.

6.7 Prediction Nodes

The change in annual flows at select prediction nodes were reviewed to assess the effects of the Project to the baseline hydrology. Results from the 5th, 50th, and 95th percentile were reviewed at prediction nodes with Project infrastructure directly upstream (i.e., PN04, PN05, PN08, and PN09; see Drawing 3-1 for locations/catchments). Results are presented to Year 41;

modeled annual flows remain unchanged (except for potential effect of climate change) between Year 41 and the end of the simulation period (Year 46).

A description of the change in hydrology conditions is presented in the following sections.

6.7.1 PN04

The upstream catchment of PN04 consists of Llama Open Pit, Umwelt Open Pit, Llama WRSA Pond, Umwelt WRSA, Primary Pond, SWP, and the Goose Process Plant Site (including the Ore Stockpile). Figure 6-7 shows the Project and baseline average annual flows at PN04. As described in Section 3.2.4, PN06 and PN10 flows spill over into PN04 until the Llama diversion berms are constructed. Due to the placement of diversion berms and the other Project infrastructure, flows during Operations are expected to be lower than baseline. At Closure, the maximum change over baseline occurs due to the outflows from pit lakes upstream beginning in Year 19 which continues into Post-Closure.

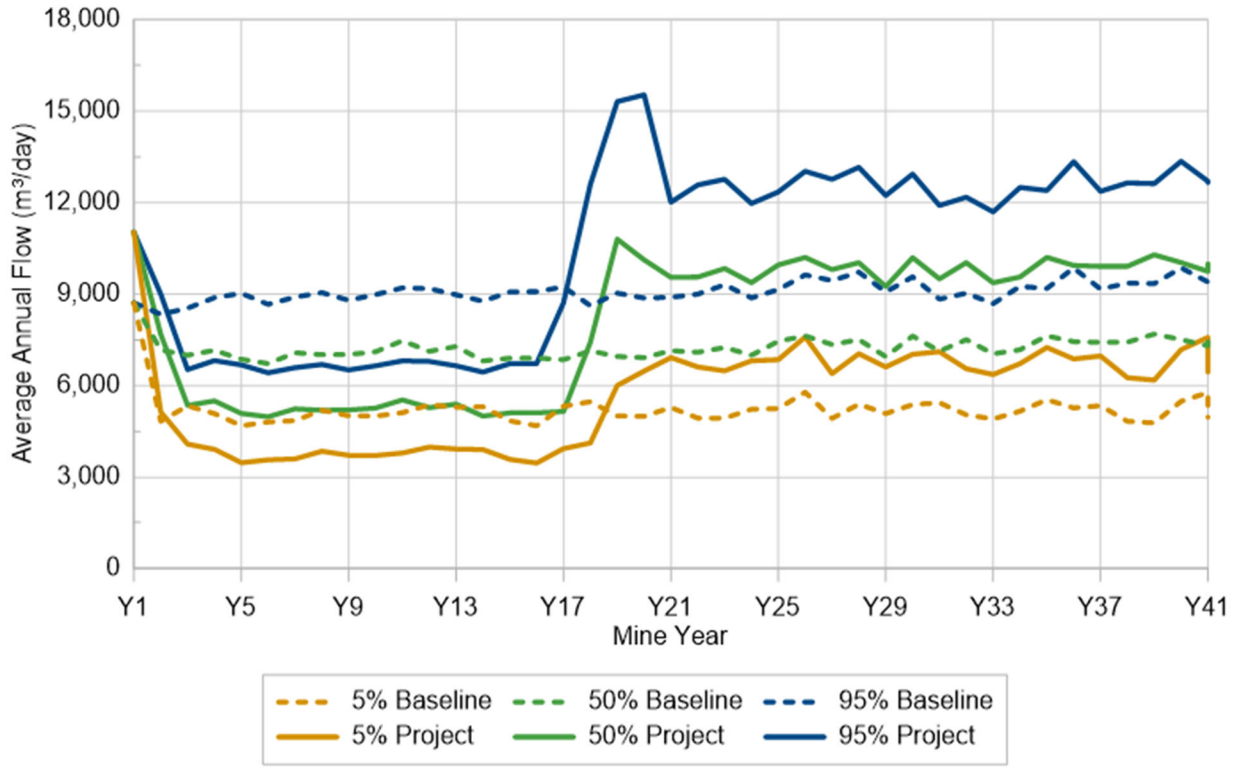


Figure 6-7 Project and baseline average annual flow at PN04.

6.7.2 PN05

PN05 represents discharge from Goose Main Open Pit, which includes the PN07 catchment once Goose Main Open Pit mining begins. Figure 6-8 shows the Project and baseline average annual flows at PN05. As described in Section 3.2.4, PN05 also receives spill overflows from

PN08 until the Goose Main diversion berm is constructed. As expected, flows are lower than baseline once Goose Main Open Pit mining activities begin (Year 5).

At Closure, the maximum change over baseline occurs due to the Goose Main diversion berm being breached and the upstream catchment is redirected to support filling of the mined-out open pit. Once full, Goose Main Reservoir overflows to PN05 and Project flows similar to that seen during Operations are re-established.

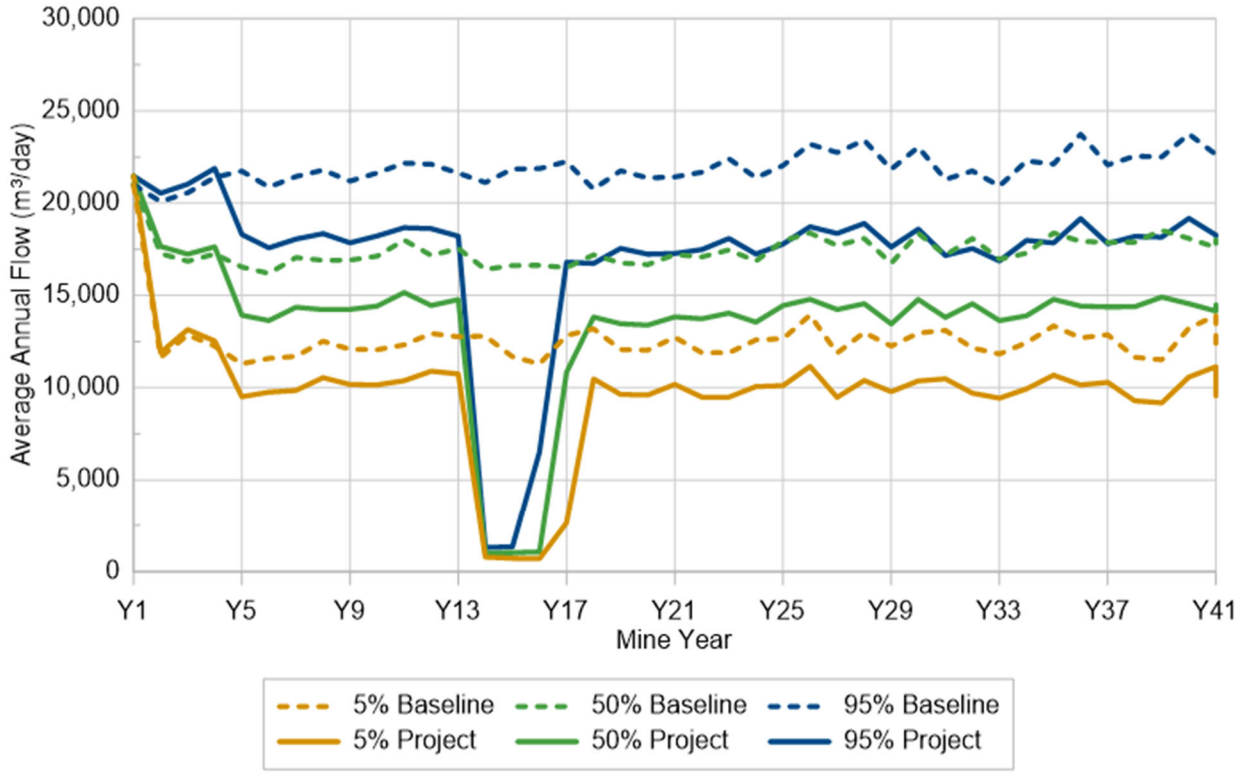


Figure 6-8 Project and baseline average annual flow at PN05.

6.7.3 PN08

At the outlet of Gander Pond is PN08. Figure 6-9 shows the Project and baseline average annual flows at PN08. Due to the placement of diversion berms for Goose Main Open Pit mining, flows are higher than baseline.

At Closure, the maximum change over baseline occurs due to Echo/Goose Main WRSA being diverted to PN08.

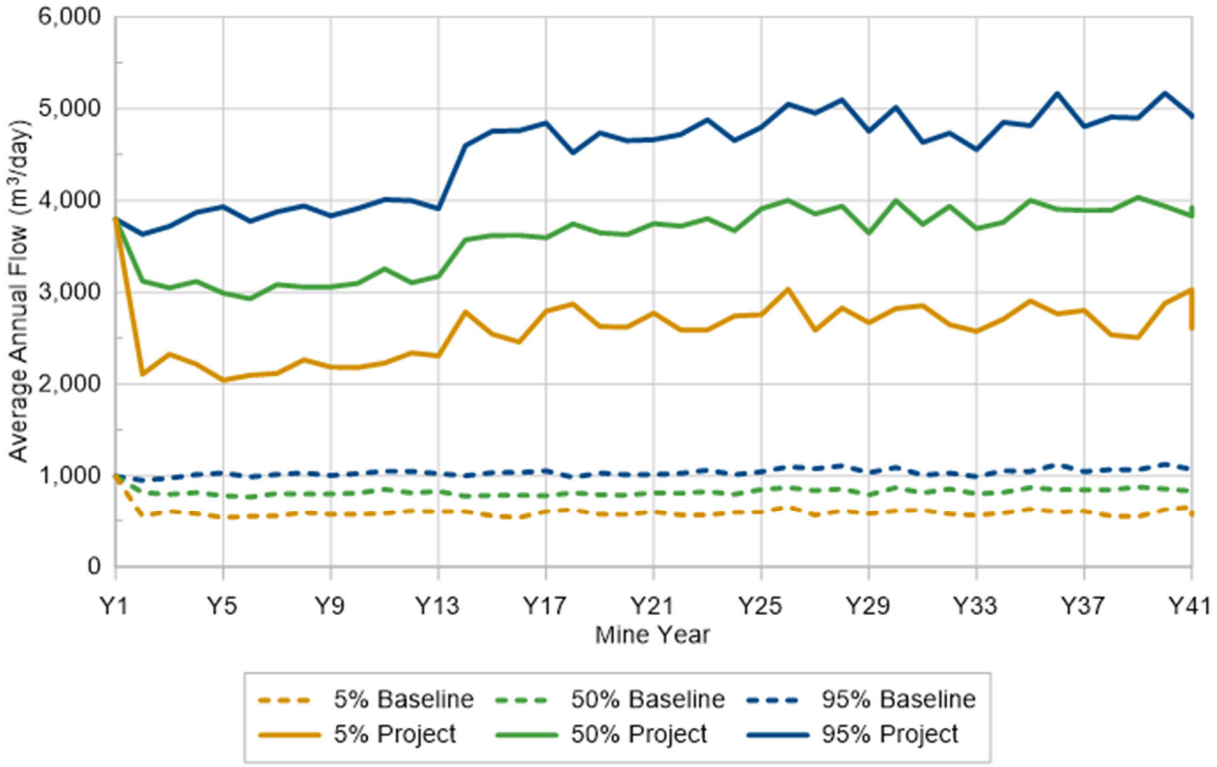


Figure 6-9 Project and baseline average annual flow at PN08.

6.7.4 PN09

The upstream catchment of PN09 consists of Echo Open Pit and the Echo/Goose Main WRSA Pond during Operations. Figure 6-10 shows the Project and baseline average annual flows at PN09. Flows are lower than baseline due to Project infrastructure capturing runoff for use in Operations.

After Closure, a similar trend is observed due to the runoff from Echo/Goose Main WRSA being diverted to PN08. The maximum change over baseline occurs while Echo TF is active and diversion berms are changing during the transition from Echo TF/WRSA to Echo/Goose Main WRSA.

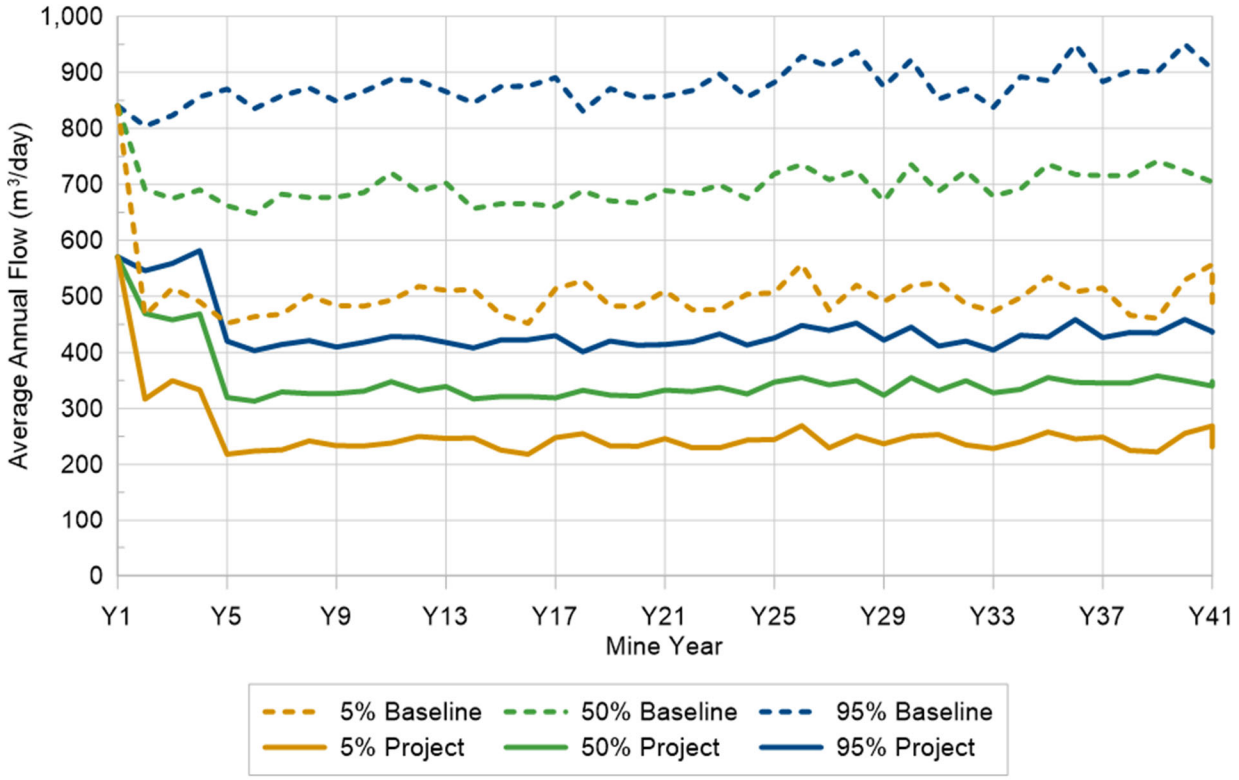


Figure 6-10 Project and baseline average annual flow at PN09.

7.0 LOAD BALANCE RESULTS

7.1 Overview

Results of the load balance component of the Model were evaluated at several prediction nodes (i.e., PN04, PN05, PN06, PN08, and PN09; Drawing 3-1) located downstream of the Goose Mine (i.e., at discharge points to Goose Lake). These nodes capture flow and water quality changes from infrastructure associated with the Goose Mine and were used to evaluate water treatment requirements to meet MDMER discharge limits (Sections 7.2 to 7.4). Model results are presented as the 5th, 50th, and 95th percentile of predicted monthly average concentrations.

Model results are presented for all predictions nodes in:

- Timeseries plots (Appendix F) of the predicted monthly average constituent concentrations (i.e., under average [i.e., 50th percentile] climate conditions; Section 5.1.3). These plots are presented for the constituents with MDMER.
- Tables of the predicted maximum of the monthly average[7] constituent concentrations for the average climate condition (i.e., 50th percentile) per mine phase for the constituents with MDMER discharge limits (Sections 7.2 to 7.4), and for all modelled constituents (Appendix G).
- Tables of predicted maximum monthly average constituent concentrations for the lower and upper bound concentrations (i.e., 5th and 95th percentiles) per mine phase (Appendix H; Tables H-1 and H-2). These results represent the range of predicted concentrations that could potentially occur under different hydrological conditions (i.e., dry and wet years).

Water quality at prediction nodes PN06 and PN09 is not affected by the Goose Mine activities (Section 6.7); thus, the following sections (Sections 7.2 to 7.4) discuss results at the prediction nodes that have their water quality affected by the Goose Mine activities (i.e., PN04, PN05, and PN08). Results for all discharge points to Goose Lake are presented in appendices F, G and H.

The estimated constituent concentrations at the prediction nodes are generally consistent with the predictions in WSP Golder (August 30, 2022). Some concentrations of metals, nutrients and total and suspend solids have changed at PN04 and PN05 due to changes to groundwater flow, pit volumes and tailings deposition, but concentrations remain typically within the same order of magnitude and always below MDMER limits, where applicable. Similarly, some changes in concentrations are predicted at PN08 and PN09 (in Closure when PN08 is diverted to PN09) due to changes in the waste rock facility and tailings deposition techniques.

7.2 PN04

PN04 is located at the neck of Goose Lake, downstream of Llama and Umwelt Reservoirs (see Drawing 3-1), and receives the flow from these facilities, routed through the re-established

[7] The average constituent concentration was calculated per each month of the mine life. The maximum of these monthly averages per each mine phase were taken.

Umwelt Lake when flooding occurs. Table 7-1 summarizes key events that influence predicted concentrations at PN04.

Table 7-1 Overview of activities affecting PN04 concentration history under average climate conditions.

Activity	Mine Year(s)	Effect
Dewatering of Llama and Umwelt Lakes routed through PN04 to Goose Lake	1	Water quality in the lake met discharge criteria.
Dewatering of Llama and Umwelt Lakes routed through PN04 to Goose Lake, treated for TSS	2	Primarily no major changes in concentrations. Increase in chloride, nitrogen species and total suspended solids, which are higher in Llama and Umwelt Lake compared to Goose Lake.
Treatment of water in Umwelt Treatment Pond, including discharge from Umwelt TF and Llama TF.	18-19	Contribution of treatment flows yield no change in concentrations as overflows are treated, discharged and diluted with natural runoff.
Umwelt TF and Llama TF discharge to Umwelt Treatment Pond and initiate discharge to PN04	20 Onwards	Contribution of untreated flows from Umwelt TF and Llama TF yield higher concentrations of metals (i.e. arsenic, copper, lead, boron, chromium, iron, molybdenum, selenium, silver, uranium), major ions and nitrogen species that are generally elevated in the TFs and previously required treatment. Concentrations decrease with time to a new plateau as the water quality improves in the pits. Time spent in the TFs allows more cyanide to degrade, lowering concentrations during post-closure.

Maximum monthly average concentrations are not predicted to exceed MDMER discharge limits at PN04 during any phase of the Goose Mine (Table 7-2).

Table 7-2 Predicted maximum monthly average constituent concentrations for each phase of the project at PN04 under average climate conditions (i.e., 50th percentile).

Constituent	Units	MDMER Limit[(a)]	Operation	Closure	Post-Closure
Total Suspended Solids	mg/L	15	2.8	2.8	2.3
Un-ionized ammonia	mg-N/L	0.50	0.012	0.26	0.24
Cyanide	mg/L	0.50	0.0022	0.0021	0.0015
Arsenic	mg/L	0.10	0.0036	0.055	0.043
Copper	mg/L	0.10	0.0015	0.0033	0.0030
Lead	mg/L	0.080	0.000055	0.0017	0.0011
Nickel	mg/L	0.25	0.0076	0.0080	0.0081
Zinc	mg/L	0.40	0.0039	0.0041	0.0040

Note:

(a) Refer to Table 5-2 for MDMER discharge limits

7.3 PN05

PN05 is located at the south-eastern shore of Goose Lake (see Drawing 3-1) and receives flows from Goose Main Reservoir after it reaches its capacity. Table 7-3 summarizes key events that influence predicted concentrations at PN05.

Table 7-3 Overview of activities affecting PN05 concentration history under average climate conditions.

Activity	Mine Year(s)	Effect
Goose Main diversion berm is breached	14-16	Undisturbed flows greatly reduced as they are directed to Goose Reservoir for filling; less dilution of road runoff flows; change in constituent concentration (increase or decrease) dictated by whether constituent is a higher concentration in pad source term versus baseline source term
Goose Main Reservoir overflow arrives to PN05	17 Onwards	Increase in metal concentrations (arsenic, lead, zinc, boron, cadmium, magnesium, iron, manganese, molybdenum, selenium, thallium and uranium), major ions and nitrogen species followed by a decreasing trend. Time spent in Goose Main Reservoir allows more cyanide to degrade, lowering concentrations during post-closure

Maximum monthly average concentrations are not predicted to exceed MDMER discharge limits at PN05 during any phase of the Goose Mine (Table 7-4).

Table 7-4 Predicted maximum monthly average constituent concentrations for each phase of the project at PN05 under average climate conditions (i.e., 50th percentile).

Constituent	Units	MDMER Limit(a)	Operation	Closure	Post-Closure
Total Suspended Solids	mg/L	15	3.0	2.9	2.7
Un-ionized ammonia	mg-N/L	0.50	0.00040	0.00038	0.000076
Cyanide	mg/L	0.50	0.0023	0.0022	0.00044
Arsenic	mg/L	0.10	0.00031	0.0021	0.0010
Copper	mg/L	0.10	0.0014	0.0015	0.0013
Lead	mg/L	0.080	0.000050	0.00012	0.000070
Nickel	mg/L	0.25	0.0035	0.0054	0.0034
Zinc	mg/L	0.40	0.0030	0.0071	0.0042

Note:

(a) Refer to Table 5-2 for MDMER discharge limits

7.4 PN08

PN08 is located along the eastern part of the neck of Goose Lake (see Drawing 3-1) and receives the runoff from Echo/Goose Main WRSA at Closure. Table 7-5 summarizes key events that influence predicted concentrations at PN08.

Table 7-5 Overview of activities affecting PN08 concentration history under average climate conditions.

Activity	Mine Year(s)	Effect
Flows diverted from PN09 to PN08, Echo/Goose Main WRSA runoff flows to Goose Lake at PN08.	14 Onwards	Increase in metal concentrations (arsenic, copper, cadmium, lead, nickel, aluminium, iron, magnesium, manganese, molybdenum, selenium, thallium, zinc, uranium) and major ions and nitrogen species to a new plateau concentration. Decrease in total dissolved solids and suspended solids, total organic carbon, cyanide and fluoride.

Maximum monthly average concentrations are not predicted to exceed MDMER discharge limits at PN08 during any phase of the Goose Mine (Table 7-6).

Table 7-6 Predicted maximum monthly average constituent concentrations for each phase of the project at PN08 under average climate conditions (i.e., 50th percentile).

Constituent (mg/L)	Units	MDMER Limit(a)	Operation	Closure	Post-Closure
Total Suspended Solids	mg/L	15	3.0	2.8	2.8
Un-ionized ammonia	mg-N/L	0.50	0.00039	0.00066	0.00037
Cyanide	mg/L	0.50	0.0023	0.0021	0.0021
Arsenic	mg/L	0.10	0.00043	0.014	0.014
Copper	mg/L	0.10	0.0014	0.0020	0.0020
Lead	mg/L	0.080	0.000050	0.00031	0.00016
Nickel	mg/L	0.25	0.0036	0.0070	0.0070
Zinc	mg/L	0.40	0.0031	0.0039	0.0039

Note:

(a) Refer to Table 5-2 for MDMER discharge limits

8.0 MODEL ASSUMPTIONS AND UNCERTAINTIES

The Model results are based on the Goose Mine timeline, water management plans, and available input data. As with any complex model, there is a degree of uncertainty associated with the modelling methods and inputs. The following sections outline assumptions made in the water balance and load balance components of the Model and their implications.

8.1 Water Balance Model

The following key assumptions were made in the water balance component of the Model:

- The fixed monthly distribution of climate data used as an input to the Model does not reflect the true behaviour of a hydrological year as months typically vary from year to year (e.g., above average freshet followed by a drier than average summer). This may result in a potential underestimation of the required storage capacities during unusually wet weeks/months and potential underestimation of water supply requirements during unusually dry weeks/months. Inclusion of year to year monthly variability into the water and load balance model will be considered for future updates of the Model.
    - The effects of annual wet and dry conditions were accounted for in the water balance model through the stochastic simulations and in the sizing of on-site storage facilities capacities and water supply requirements.
- The number of realizations for the stochastic simulation was selected to provide a general representation of effects of wet and dry conditions at the site.
- Runoff coefficient estimates for the mine-effected surfaces are based on professional judgement and available documentation (SRK, June 2020).
    - The runoff coefficient for the undisturbed ground was calibrated to regional data and was used as reference for the selection of the runoff coefficients for other surfaces, reducing the uncertainty related to the runoff coefficients for mine surfaces (SRK, June 2020).
- Groundwater inflows are dependent on hydraulic conductivity, and assumptions on permafrost and enhanced permeability structures/faults. The numerical groundwater model was not updated to support this Model update. Rather, groundwater inflows from WSP Golder (August 30, 2022) were scaled based on the updated duration of mining and depth of various pits and underground mines. Details on assumptions associated with the groundwater model and recommendations for mitigating effects of these assumptions are included in Appendix C.

Throughout the construction phase B2Gold has installed a network of stations to monitor pumped flows/volumes, water levels, mining volumes/tonnages, process flows/volumes and snowpack. Also, the Goose Mine meteorological station continues to collect site climate data (e.g., precipitation [rainfall only], temperature).

To the extent practicable, the data collected in 2025 have been implemented in the Model such that the Model reflects the actual site conditions at end of 2025, which represents the beginning of the projection period. However, the data available at the time of preparation of this Model

update were not sufficient to support a Model calibration and/or an update of the key hydrologic inputs (e.g., runoff coefficients).

8.2 Load Balance Model

Key assumptions and uncertainties of the load balance component of the Model are:

- Concentrations of constituents along the surface and subsurface flow paths are assumed to remain constant (e.g., no settling, precipitation, or reactions), which may result in an overestimation of constituent concentrations at prediction nodes.
- Diffusion of constituents from tailings consolidation and removal of chemical loading in open pits and tailings facilities are not accounted for in the load balance. This may result in an over- or underestimation of constituent concentrations within open pits and tailings facilities.
- Transport processes affecting TSS are not accounted for in the load balance which may result in an over- or underestimation of total suspended solids concentrations at prediction nodes.
- Water treatment targets that are set in the model are pending final treatment design.
- The load balance model assumes fully mixed conditions. Flows may not fully mix in ponds and reservoirs, which may result in an over- or underestimation of constituent concentrations at prediction nodes.
- The load balance assumes 100% exclusion of constituents from ice during under-ice conditions (i.e., cryoconcentration), which may result in an overestimation of constituent concentrations during under-ice conditions.
- Un-ionized ammonia is calculated based on total ammonia using the methods outlined in the MDMER (Government of Canada 2002). Inputs into the formula conservatively use the 95th percentile of surface water temperature measurements of streams flowing into Snap Lake[8] (15ºC; De Beers 2017), and an assumed pH (8.5) based on PHREEQC modelling of source terms and mill processes.
- Ammonia generated in the Process Plant is calculated assuming that the total nitrogen concentration after the leach circuit is the total nitrogen in weak acid-dissociable cyanide concentrations reported on the test work (JDS, October 28, 2015).

Inherent uncertainties in modelling assumptions may result in differences between model predictions and future monitored conditions; however, the overall effect of the assumptions and limitations above are anticipated to result in predictions that are typically more conservative relative to future conditions (e.g., overestimation of concentrations in discharges).

As per the water balance portion of the Model, B2Gold has initiated collecting site specific data that may support updating some of the inputs used in the load balance and described in Section 4.2. However, at the time of preparation of this Model update, data are available only for a short period of time and only for the mine start-up period, which may not be representative for the remainder of the life of mine.

[8] Snap Lake Project, De Beers Group, Northwest Territories, Aquatic Effects Monitoring Program

9.0 CONCLUSIONS

The water and load balance model was created to provide water quantity and quality estimates based on the Goose Mine timeline, water management plans, and available input data to support commitments under Type A Water Licence 2AM-BRP1831, Amendment No.1. The Model should be used as a planning tool to analyze water management options and treatment needs that would be potentially required during the life of the Goose Mine. The water management strategy focuses on managing the inventory of the mine water stored on site, and maximizing the separation of saline, contact, and non-contact water. Water quality predictions were evaluated at the discharge points to Goose Lake (i.e., prediction nodes) and compared to MDMER discharge limits.

The Model results indicate that there is sufficient capacity on site to store tailings, contact water, and saline water for the Goose Project life. The volume of water collected was also confirmed to be adequate to support the water demands for the Process Plant when supplemented by freshwater from Goose Lake and Big Lake while staying within their maximum consumption limits. Water treatment is expected to be required during the operations phase (not at mine start up) to manage saline water inventory before the final repository location (Goose Main Reservoir) becomes available. With the support of treatment during late Operations and Closure, concentrations in discharge from the mine site to Goose Lake are predicted to be below MDMER discharge limits.

During Closure, all open pits (or pit reservoirs) will fill under all hydrological conditions assessed (i.e., 5th, 50th, and 95th percentile water balance results). As part of operational activities, B2Gold will adjust water management strategies as required so that relevant discharges to Goose Lake from the Goose Mine meet MDMER and relevant Water Licence discharge limits.

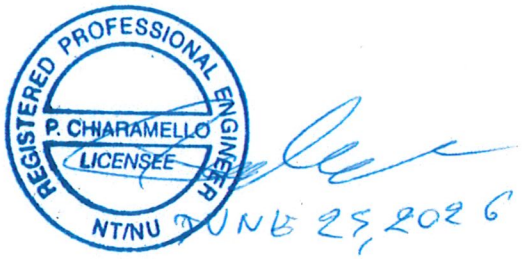
The Model should be updated as necessary for design purposes and as more operational data become available, or as directed by the Board in accordance with Type A Water License 2AM-BRP1831 Amendment No. 1 Part E, Item 16 and Part B, Item 2.

10.0 CLOSURE

We trust the above satisfies your requirements. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

BGC Engineering Inc.
per:



Paolo Chiaramello, P.Eng.
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Reviewed by:

Hamish Weatherly, M.Sc.
Principal Hydrological Consultant

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Principal Water Quality Consultant

PERMIT TO PRACTICE
BGC ENGINEERING INC.
Signature _____
Date JUNE 25, 2026
PERMIT NUMBER: P285
NT/NU Association of Professional Engineers and Geoscientists

PC/HW/TR/jtcs/mm

REFERENCES

B2Gold Back River Corp. (2026 June). *Goose Mine. Water Management Plan V.6.0*.

De Beers (De Beers Group). (2017). *2016 Annual report in support of the Aquatics Effects Monitoring Program Water Licence, Snap Lake Project*. Submitted to the Mackenzie Valley Land and Water Board. Yellowknife, NT, Canada.

Ferguson, K.D. & Leask, S.M. (1988). *The export of Nutrients from Surface Coal Mines*. Environment Canada, Conservation and Protection, Pacific and Yukon Region. Regional Program Report 87-12.

Golder Associates Ltd. (2019 July). *Back River Project – Aquatic Baseline Synthesis Report*. Appendix A to the Aquatic Effects Monitoring Program. Submitted to Sabina Gold & Silver Corp. Ref No. 18114181-047-RPT-Rev0.

Government of Canada. (2002). *Metal and Diamond Mining Effluent Regulations*. SOR/2002-222. Current to 5 May 2025. Last amended on 6 March 2025. https://laws-lois.justice.gc.ca/eng/regulations/sor-2002-222/index.html.

JDS (JDS Energy and Mining Inc). (2015, October 28). *Technical report for the initial project feasibility study on the Back River Gold Property, Nunavut, Canada*.

Keefe, M. (2022, February 4). Environmental Permitting Manager, Sabina Gold & Silver Corp. Representative process water characterization results. Email to Shadi Dayyani, Senior Water Quality Modeller, WSP Golder.

Morin, K.A. & Hutt, N.M. (2009). Mine-Water Leaching of Nitrogen Species from Explosive Residues. GeoHalifax: Halifax, NS.

Parkhurst, D.L. & Appelo, C.A.J. (2013). *Description of input and examples for PHREEQC version 3 - a computer program for speciation, batch-reaction, one-dimensional transport, and inverse geochemical calculations.* U.S. Geological Survey Techniques and Methods, Book 6, Chap. A43, 497 p., https://doi.org/10.3133/tm6A43

Rescan ERM. (2012 June). *Back River Project 2011 Freshwater Baseline Report*.

Sabina. (2017 October). *The Back River Project Main Application Document October 2017*. Submitted to the Nunavut Water Board.

Sabina. (2021 March). *National Instrument (NI) 43-101 Technical Report, 2021 Updated Feasibility Study for the Goose Project at the Back River Gold District Nunavut, Canada*.

SRK Consulting (Canada) Inc. (2004 March). *Colomac site enhanced natural removal program 2003 results* [Report]. Prepared for Indian and Northern Affairs Canada, NWT Region and Public Works and Government Services Canada, Western Region.

SRK Consulting (Canada) Inc. (2015 April). *Back River Project water and load balance report*.

SRK Consulting (Canada) Inc. (2015a November). *The Back River Project – Climate Change Projections for Use in Engineering Design*.

SRK Consulting (Canada) Inc. (2015b November). *The Back River Project – Hydrology Report*.

SRK Consulting (Canada) Inc. (2020 June). *Back River Project Water and Load Balance Report*. Appendix E to the Water Management Plan.

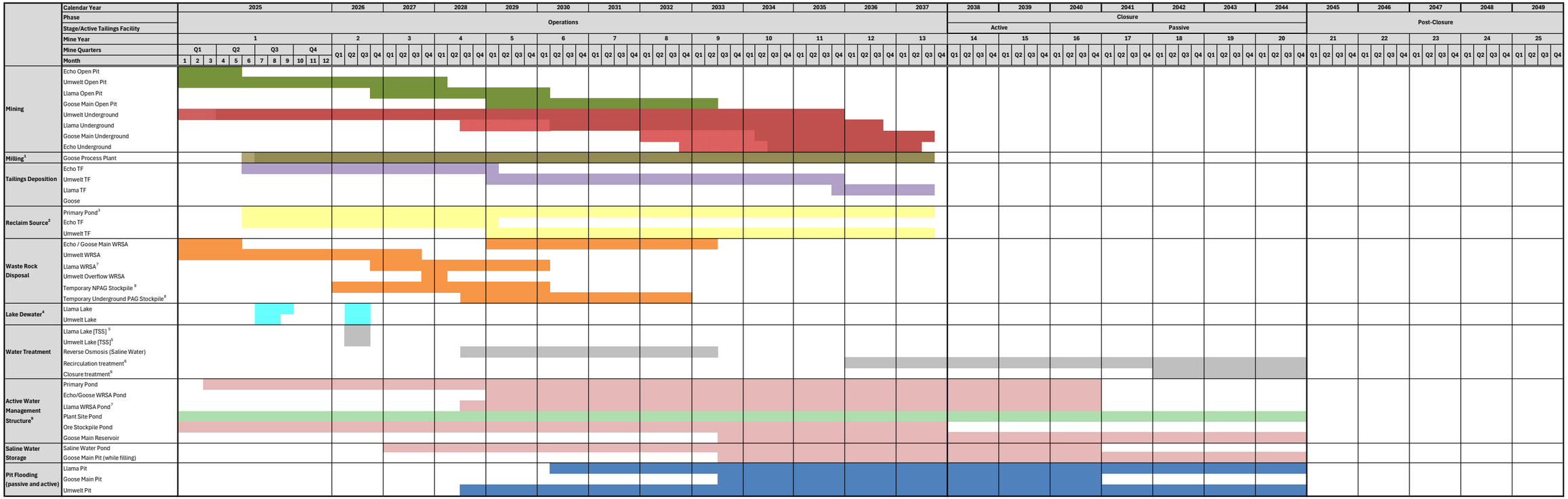
SRK Consulting (Canada) Inc. (2021, July 16). *Back River: Updated Feasibility Study – Hydrology Update*.

WSP Golder. (2022, August 30). *Back River Project Water and Load Balance Report*. Submitted to Sabina Gold & Silver Corp.

APPENDIX A
PROJECT TIMELINE

B2GOLD
GOOSE PROJECT

MINING, WASTE AND WATER MANAGEMENT SCHEDULE



NOTES

1. Milling ranged between 300 tpd and 2,300 tpd in Y1 (2025); milling is forecasted to continue incresasing in Year 2, reaching 4,000 tpd in Year 3 and for the remaining of the operations phase.
2. Llama TF considered as a contingency source of reclaim water.
3. Primary Pond is main source of contact water for the mill, supplemented in winter seasons by reclaim water from Echo TF and Umwelt TF.
4. Approximately 50% of both Llama Lake and Umwelt Lake was dewatered in Y1 (2025). Remaining volume in the lakes will be dewatered in Year 2, with approximately 80% of remaining water in Llama Lake and 50% in Umwelt Lake assumed to discharged to Goose Lake after TSS treatment with remaining water to be stored in Umwelt lake (Saline Water Pond).
5. Total Suspended Solids.
6. Water treatment plant to reduce loadings in Goose Main Reservoir and Umwelt Treatment Pond, as needed.
7. Until Y4, Q2 Llama waste rock material will be placed only within catchment LD2, with runoff intercepted by the berms around the Llama Pit and pumped to Primary Pond.
8. Temporary stockpiles expected to be removed. Will be removed during the operations phase for either used as construction material (Temporary NPAG Stockpile) or backfill of the undergound mines (Temporary Underground NPAG Stockpile).
9. Site contact water pond are expected to be mostly decommisioned within the first 3 years of closure. Llama WRSA Pond will likely be decommisioned during the operations phase.

COLOUR LEGEND

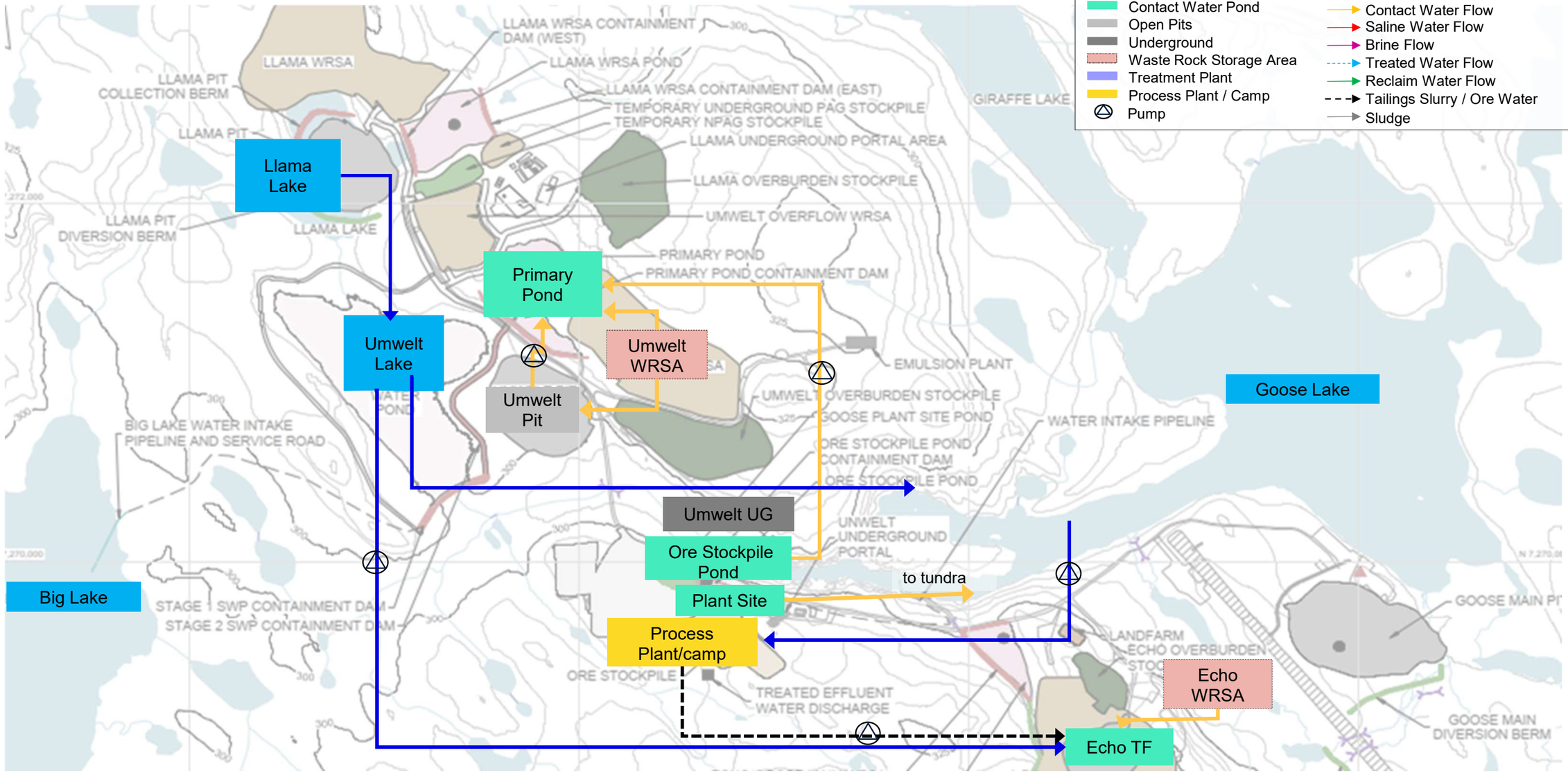
- Mining - Pits
- Mining - Underground
- Process Plant - Full Production
- Process Plant - Ramp-up and ramp-down
- Water Reclaim - For Mill
- Tailings Deposition
- Waste Rock Placement
- Lake Dewatering
- Water Treatment
- Contact water ponds
- Discharge to the tundra
- Passive filling
- Underground mine predevelopment

APPENDIX B
FLOW DIAGRAMS

https://ibgcengineering.sharepoint.com/:f:/s/1829001-BackRiverWBM/IgASxHDdROOgQaiLiutrXQiNAagx4xWkmIUc1pBLCDdyjF4?e=Xt3ISs

Year 1 (Q3)

Operations



NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, TSS = total suspended solids, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 1 (Q3)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-1

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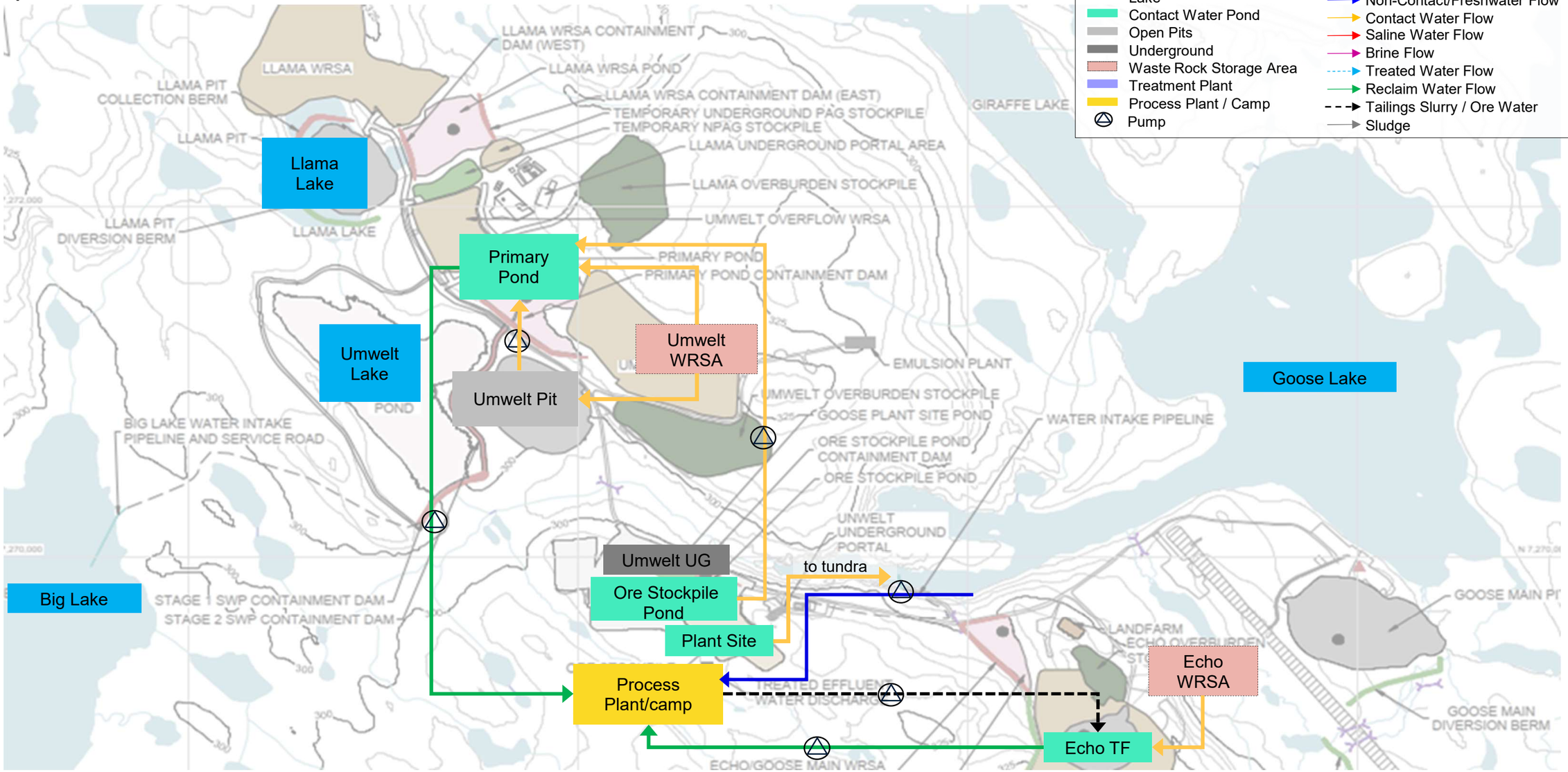
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Year 1 (Q4) - Y2 (Q2)

Operations

LEGEND

- Lake
- Contact Water Pond
- Open Pits
- Underground
- Waste Rock Storage Area
- Treatment Plant
- Process Plant / Camp
- Pump
- Non-Contact/Freshwater Flow
- Contact Water Flow
- Saline Water Flow
- Brine Flow
- Treated Water Flow
- Reclaim Water Flow
- Tailings Slurry / Ore Water
- Sludge



NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 1 (Q4) TO YEAR 2 (Q2)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-2

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BGC Engineering

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Year 2 (Q3)

Operations

LEGEND

- Lake
- Contact Water Pond
- Open Pits
- Underground
- Waste Rock Storage Area
- Treatment Plant
- Process Plant / Camp
- Pump
- Non-Contact/Freshwater Flow
- Contact Water Flow
- Saline Water Flow
- Brine Flow
- Treated Water Flow
- Reclaim Water Flow
- Tailings Slurry / Ore Water
- Sludge

Llama Lake
Untreatable (high TSS)
Treatable
TSS Treatment
Treatable
Non-treatable
Temporary NPAG Stockpile
Primary Pond
Umwelt Lake
Umwelt WRSA
Umwelt Pit
Goose Lake
Umwelt UG
Ore Stockpile Pond
to tundra
Plant Site
Process Plant/camp
Big Lake
Echo WRSA
Echo TF

NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, TSS = total suspended solids, UG = underground, WRSA = waste rock storage area
3. Drainage from Temporary NPAG Stockpile conservatively assumed to be conveyed to Primary Pond. Drainage will be discharged to the environment if water quality meets discharge limits

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 2 (Q3)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-3

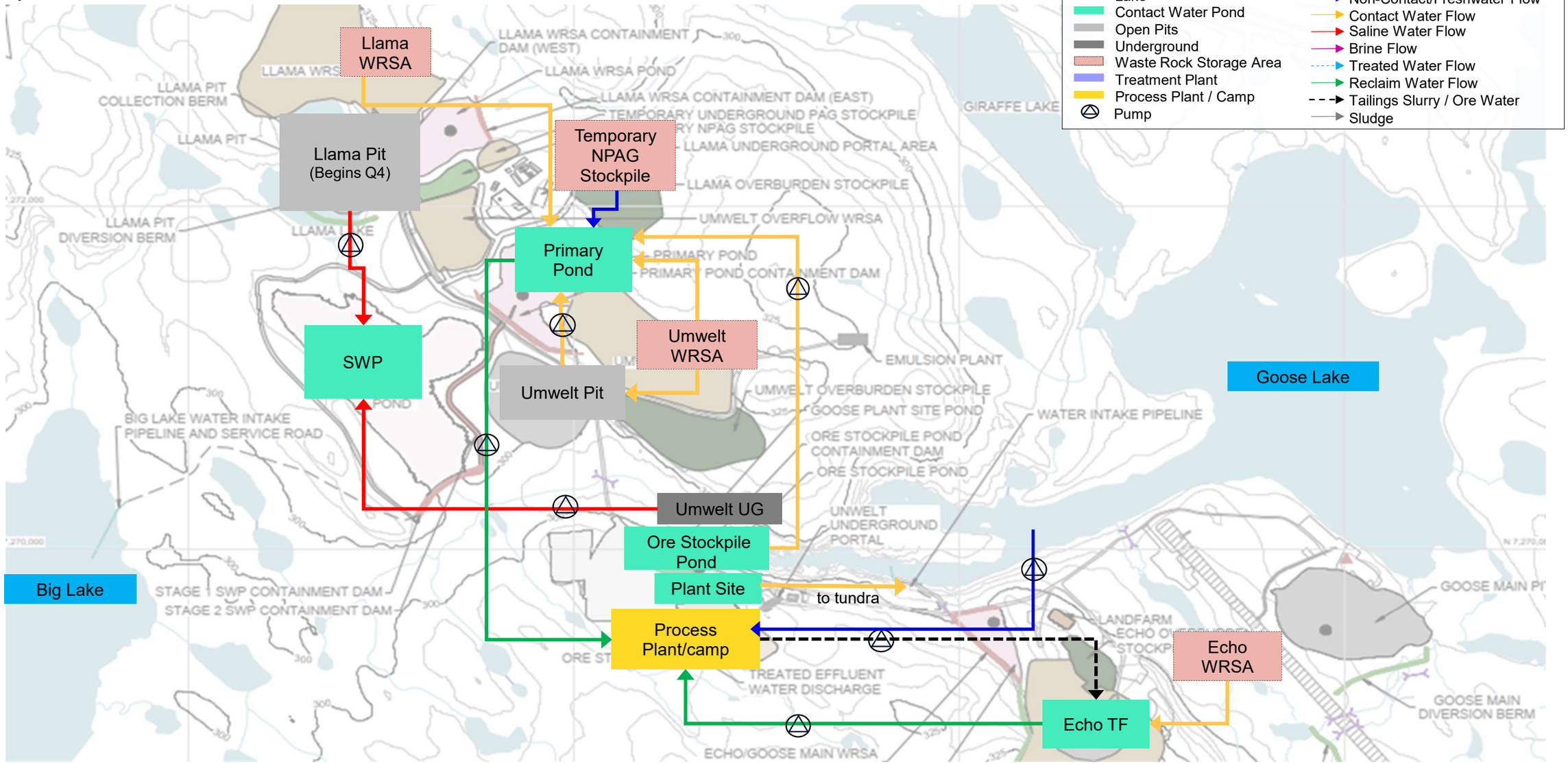
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Year 2 (Q4) -Year 4 (Q2)

Operations



NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 2 (Q4) TO YEAR 4 (Q2)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-4

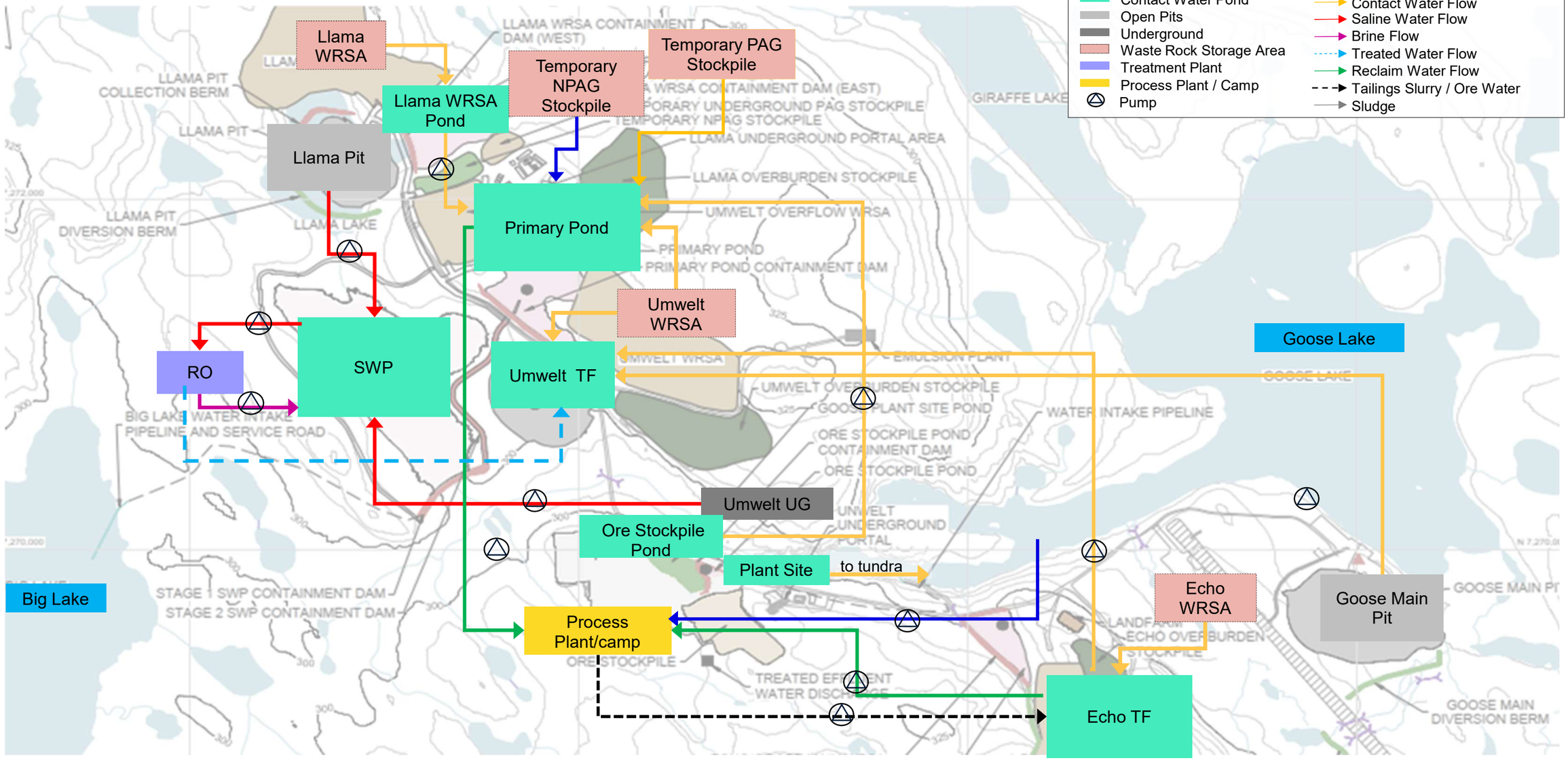
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Year 4 (Q3) - Year 5 (Q1)

Operations



LEGEND

- Lake
- Contact Water Pond
- Open Pits
- Underground
- Waste Rock Storage Area
- Treatment Plant
- Process Plant / Camp
- Pump
- Non-Contact/Freshwater Flow
- Contact Water Flow
- Saline Water Flow
- Brine Flow
- Treated Water Flow
- Reclaim Water Flow
- Tailings Slurry / Ore Water
- Sludge

NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 4 (Q4) TO YEAR 5 (Q1)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-5

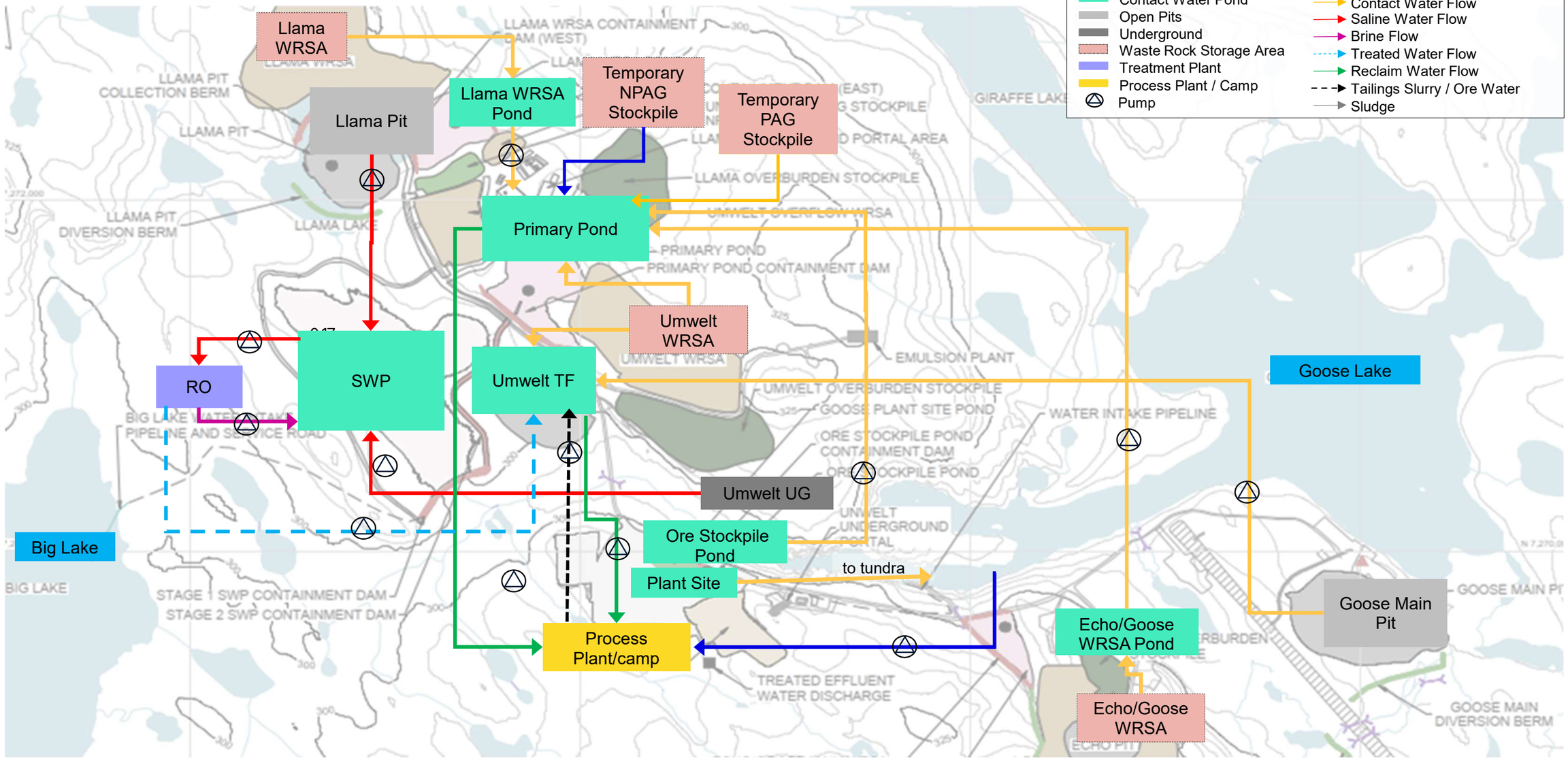
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Year 5 (Q2) - Year 6 (Q1)

Operations



LEGEND

- Lake
- Contact Water Pond
- Open Pits
- Underground
- Waste Rock Storage Area
- Treatment Plant
- Process Plant / Camp
- Pump
- Non-Contact/Freshwater Flow
- Contact Water Flow
- Saline Water Flow
- Brine Flow
- Treated Water Flow
- Reclaim Water Flow
- Tailings Slurry / Ore Water
- Sludge

NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 5 (Q2) TO YEAR 6 (Q1)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-6

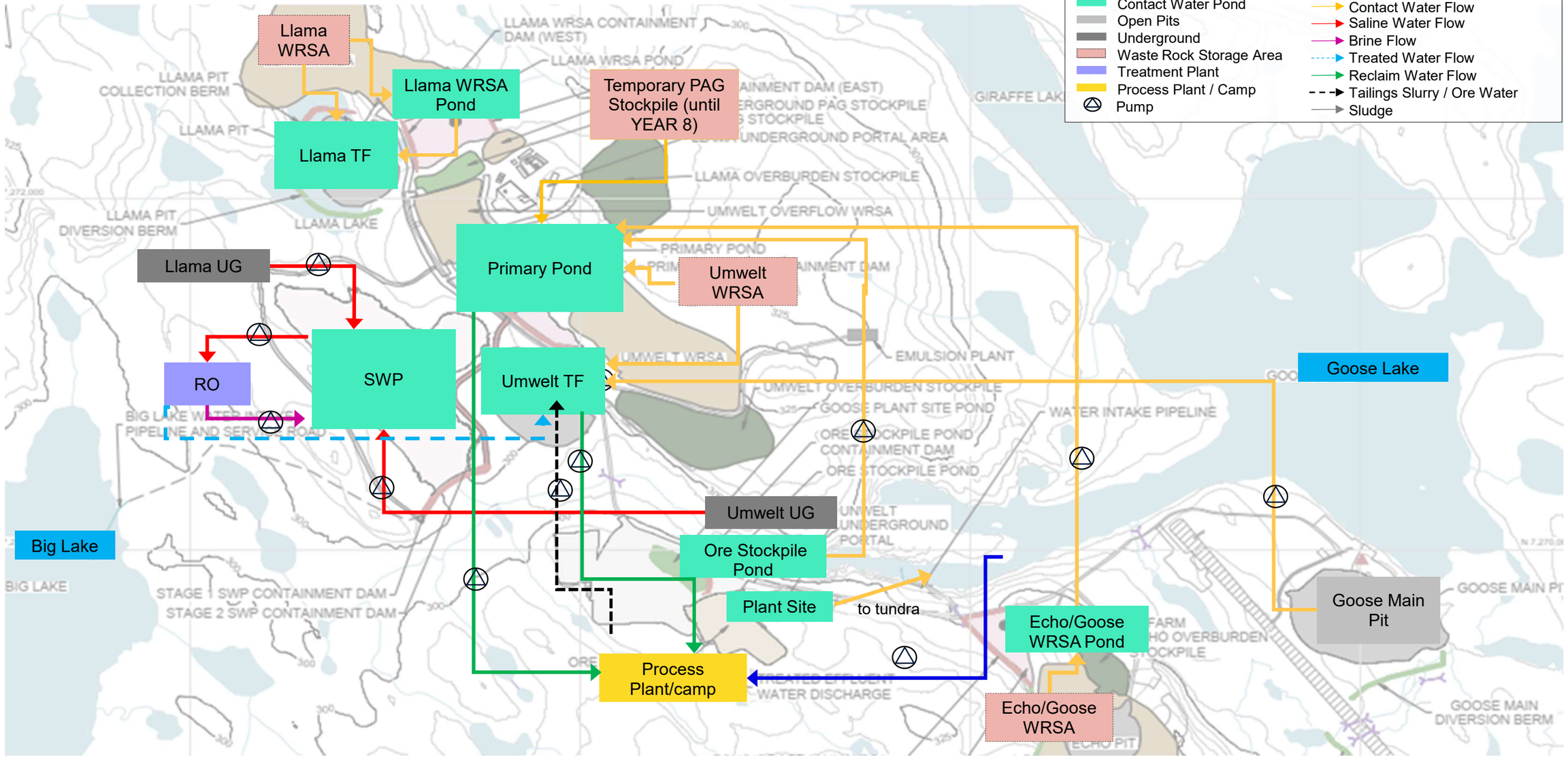
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Year 6 (Q2) - Year 9 (Q2)

Operations



NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 6 (Q2) - YEAR 9 (Q2)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-7

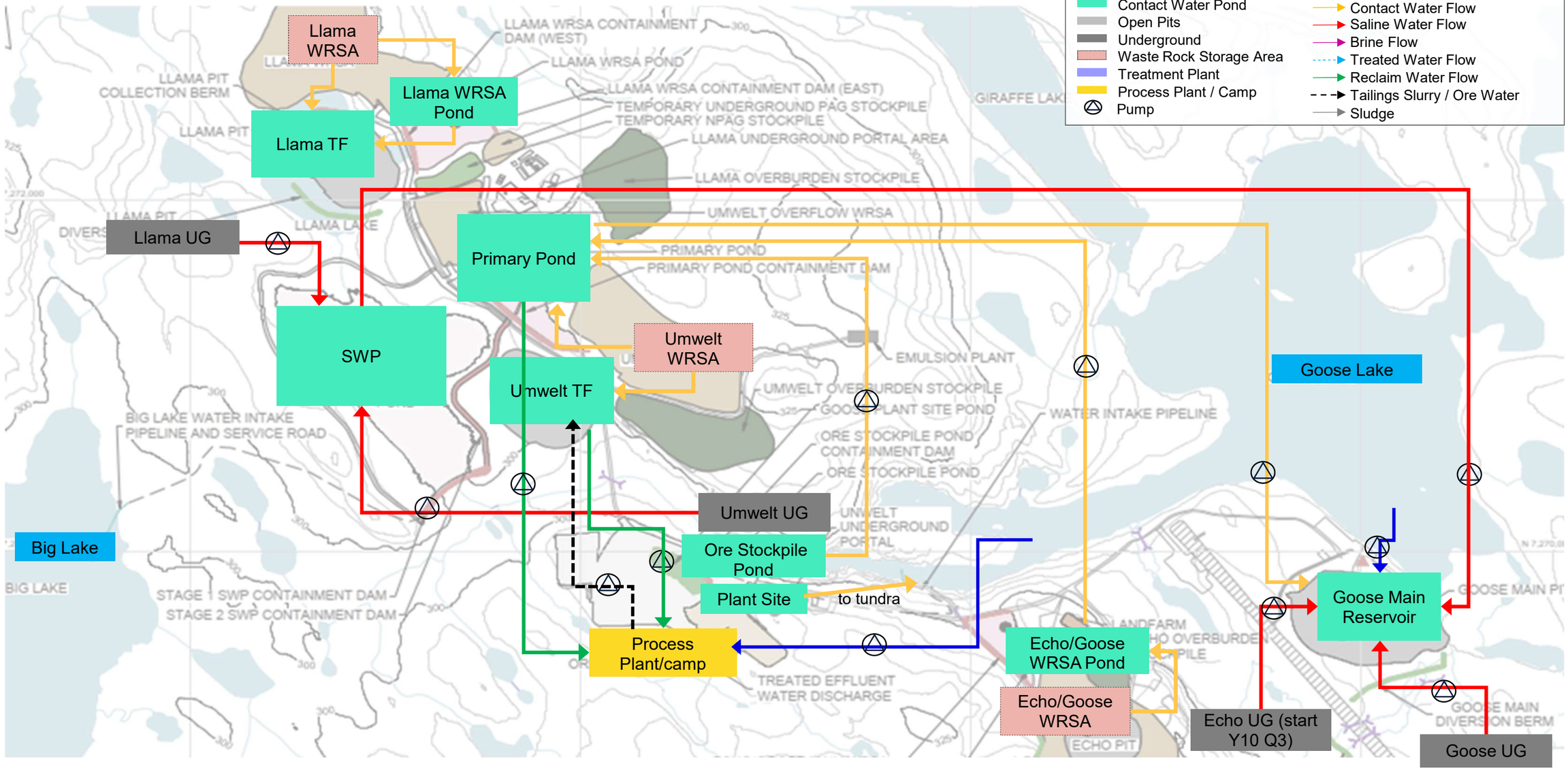
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Year 9 (Q3) - Year 11 (Q3)

Operations



NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 9 (Q3) - YEAR 11 (Q3)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-8

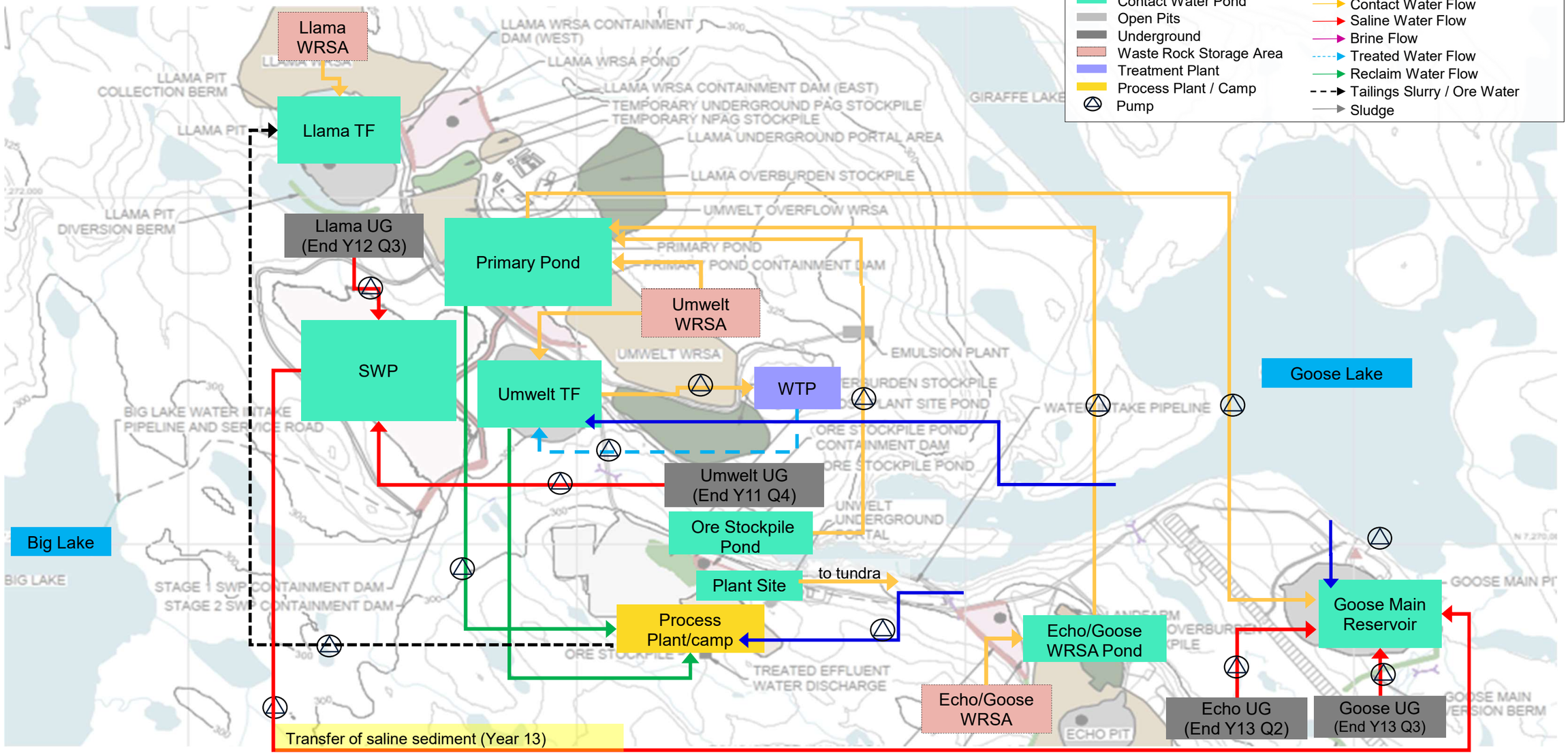
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Year 11 (Q4) - Year 13 (Q3)

Operations



NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM OPERATION: YEAR 11 (Q4) - YEAR 14 (Q3)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-9

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Year 14 - 20

Closure

LEGEND

- Lake
- Contact Water Pond
- Open Pits
- Underground
- Waste Rock Storage Area
- Treatment Plant
- Process Plant / Camp
- Pump
- Non-Contact/Freshwater Flow
- Contact Water Flow
- Saline Water Flow
- Brine Flow
- Treated Water Flow
- Reclaim Water Flow
- Tailings Slurry / Ore Water
- Sludge

Llama WRSA

Llama Reservoir

WTP

Primary Pond

WTP

Umwelt Treatment Pond

Umwelt WRSA

Umwelt Reservoir

to overflow if treatment is not needed

WTP (as needed)

Big Lake

Plant Site

to tundra

Process Plant/camp

Goose Lake

WTP (as needed)

Goose Main Reservoir

Echo/Goose WRSA Pond

Echo/Goose WRSA

LLAMA WRSA CONTAINMENT DAM (WEST)

LLAMA COLLECTION BERM

LLAMA PIT

LLAMA WRSA CONTAINMENT DAM (EAST)

UNWELT OVERFLOW WRSA

PRIMARY POND CONTAINMENT DAM

LLAMA LAKE

DIVERSION BERM

GIRAFFE LAKE

EMULSION PLANT

GOOSE PLANT SITE

BIG LAKE WATER INTAKE PIPELINE AND SERVICE ROAD

WATER INTAKE PIPELINE

UMWELT UNDERGROUND PORTAL

STAGE 1 SWP CONTAINMENT DAM

STAGE 2 SWP CONTAINMENT DAM

LANDFARM

ECHO OVERBURDEN

GOOSE MAIN PIT

ECHO/GOOSE MAIN WRSA CONTAINMENT DAM

TREATED EFFLUENT WATER DISCHARGE

GOOSE MAIN DIVERSION BERM

PIT

NOTES:

1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area
3. Treatment of Goose Main Reservoir (if needed) to start in approximately Year 17 when Goose Main Reservoir reaches capacity. Treatment continues as required based on Goose Main Reservoir water quality.
4. Umwelt Treatment Pond passive outflows treated as needed based on its water quality.

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM CLOSURE: YEAR 14 - 20		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-10

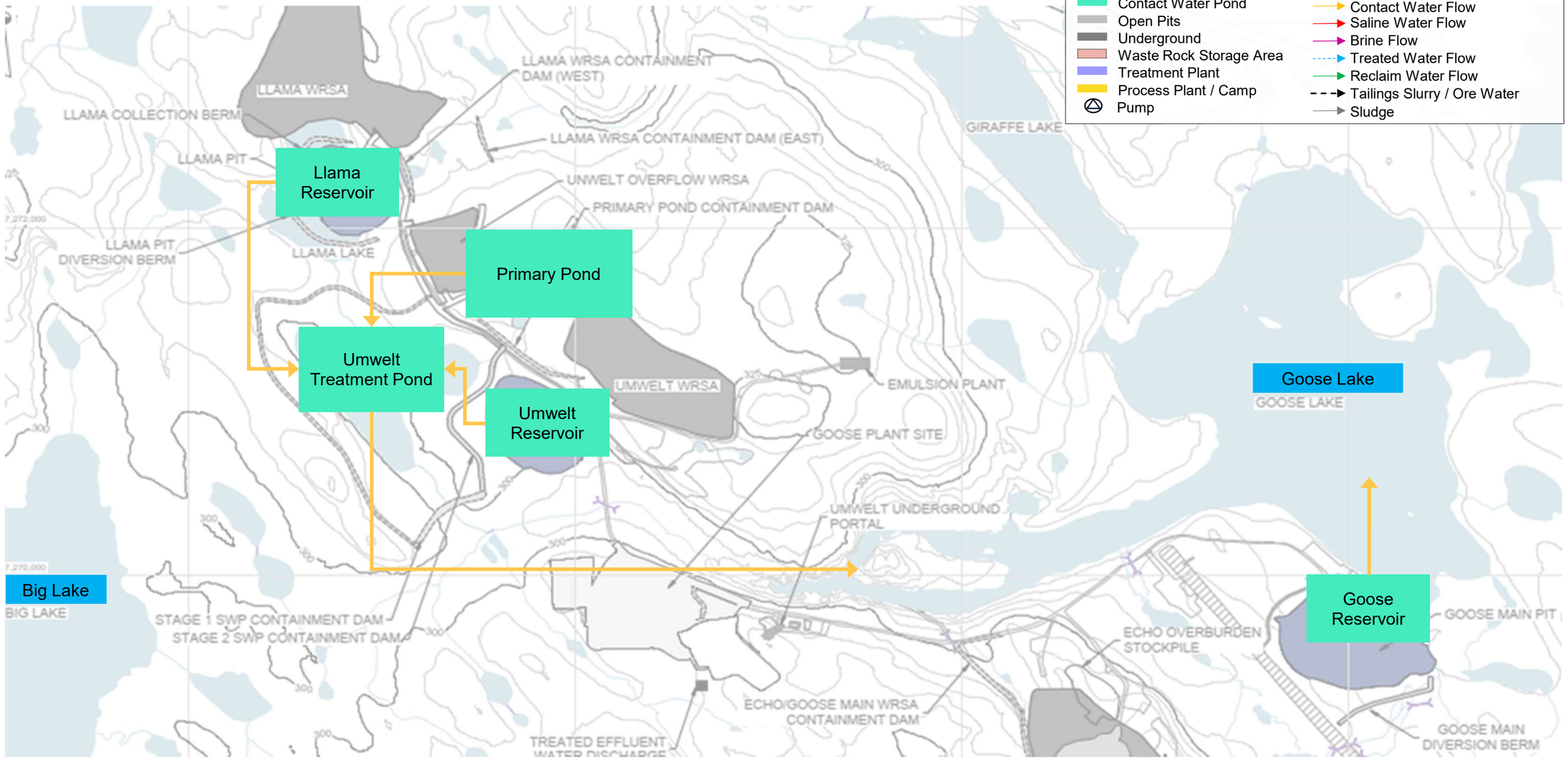
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Year 21 and beyond

Post-Closure



NOTES:
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. TF = tailings facility, UG = underground, WRSA = waste rock storage area

PREPARED BY: IC	FIGURE TITLE: FLOW DIAGRAM POST CLOSURE (YEAR 21 AND BEYOND)		
CHECKED BY: HW	CLIENT: B2Gold Back River Corporation		
APPROVED BY: PC	SCALE: N/A	PROJECT NO: 1829001	FIGURE NO: B-11

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APPENDIX C
UPDATED PREDICTIONS OF GROUNDWATER INFLOWS



Back River Water and Load Balance Update and Water Treatment Evaluation

Groundwater Inflow Estimate Update

Presented by:

Isabelle Cheff, M.A.Sc., P.Eng. (ON)

Water Resources Engineer

Date:

March 26, 2026

Groundwater Inflow Estimate Update

General Assumptions

- Groundwater inflow rates and associated total dissolved solids (TDS) for the Current (2026) Mine Plan were updated using predictions that WSP Golder previously made for the Sabina Mine Plan
  - WSP Golder (August 30, 2022). *Back River Project – Water and Load Balance Report*. Prepared for Sabina Gold and Silver Corp.
- The WSP Golder groundwater model was not used for this update; rather previous inflow predictions were scaled by comparing the timing and depth of the mine openings in both mine plans
- Assumptions incorporated into WSP Golder's predictions (e.g., K and TDS vs depth profiles) were assumed to be valid for the Current (2026) Mine Plan
  - Inflow scaling was completed for Scenario 1 and Scenario 2 as defined in WSP Golder 2022 report.
- Mining depths for the Sabina Mine Plan used in WSP Golder's analyses and the updated Current (2026) Mine Plan were provided by B2Gold
- Inflow predictions do not account for backfilling of the mine openings after mining is completed (e.g., natural flooding of underground mines, water/tailings backfilling of Llama Open Pit).

Groundwater Inflow Estimate Update

Inflow Scaling Assumptions

- Open pits:
  - Similar depths of mining for all open pits. Assume inflow predictions from WSP Golder are unchanged for Umwelt, Goose, and Echo pits. For Llama pit, base Year 1 inflow and TDS on WSP Golder Scenario 2b.
    - Note: Approach may under-estimate inflows to Llama pit prior to development of the Llama underground. WSP Golder noted that Llama pit is under drained by the Llama underground. Under the Sabina Mine Plan, the mining elevation of the Llama underground is always lower than the Llama pit.
- Underground:
  - General approach was to scale groundwater inflows and TDS based on mining elevation.
    - Note: Approach neglects differences in the mining rate between the Sabina Mine Plan and Current Plan which may lead to both under- and over-estimation of groundwater inflows and TDS.
  - Umwelt underground: Minimum mining elevation is 10 m lower in Current Plan (2026) relative to Sabina Mine Plan
  - Echo underground: Minimum Mining elevation are 55 m higher in Current Plan relative to Sabina Mine Plan
    - Same constant inflows were assumed as WSP Golder predictions.
  - Goose underground: Mining elevation extends 50 m lower in Current (2026) Mine Plan relative to Sabina Mine Plan
    - Below -100 m elevation, base TDS on Sabina Mine Plan Umwelt underground
  - Llama underground: Mining elevation extends 280 m lower in Current (2026) Mine Plan relative to Sabina Mine Plan
    - Below -80 m elevation, base groundwater inflows and TDS on Sabina Mine Plan Umwelt underground
  - Different timing of mine progression in the Current (2026) Mine Plan relative to the Sabine Mine Plan affects evolution of inflow TDS

Scenario 1

	Mining Plus UG Depths - Sabina Mine Plan																	
Year	Llama Pit			Llama UG			Umwelt Pit	Umwelt UG			Goose Main Pit	Goose Main UG			Echo Pit	Echo UG		
	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)
-2							280								265			
-1							225								215			
1	280	<50	<10,000	90	130	6,400	175	215	0	0								
2	240	<50	<10,000	-80	100	17,200		5	70	25,600								
3	195	<50	<10,000	-80	70	22,900		-145	160	39,700	270							
4	145	<50	<10,000	-80	60	26,100		-385	170	55,200	245							
5	115	<50	<10,000	-80	50	29,500		-495	140	63,100	190							
6				-80	50	31,100		-495	130	68,400	190							
7				-80	50	32,300		-495	130	71,900	190	105	10	26,400				
8				-80	50	33,400		-495	130	75,100	190	-30	50	25,600				
9				-80	50	34,300		-495	120	79,500	185	-100	<50	32,300				
10				-80	50	33,800		-495	120	79,000	160	-100	<50	33,800				
11				-80	50	34,700		-495	120	82,600	130	-100	<50	35,900				
12				-80	50	37,100		-495	120	89,400	95	-100	<50	39,000				
13				-80	50	38,000		-495	110	93,100		-100	<50	40,400				
14				-80	50	38,800		-495	110	96,600		-100	<50	41,600		135	<50	15,900
15				-80	50	39,500		-495	110	99,800		-100	<50	42,700		-25	<50	20,200

SCENARIO 1

	Current (2026 LOM plan)																	
Year	Llama Pit			Llama UG			Umwelt Pit	Umwelt UG			Goose Main Pit	Goose Main UG			Echo Pit	Echo UG		
	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/L)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/L)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/L)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/L)
-2															300			
-1															240			
1							270	20	0	0					210			
2	300	75	<10,000				230	-90	130	34,500								
3	280	<50	<10,000				170	-160	160	40,700								
4	230	<50	<10,000	225	0	0	150	-250	160	46,500								
5	170	<50	<10,000	60	120	8,300		-330	170	51,600	260							
6	140	<50	<10,000	-40	110	14,700		-390	170	55,600	230							
7				-150	160	40,000		-440	160	59,200	210							
8				-260	160	47,100		-505	140	63,100	160	125	10	26,400				
9				-360	170	51,100		-505	130	68,400	100	-60	50	26,400		120	<50	20,200
10				-360	160	55,100		-505	130	71,900		-90	<50	29,000		30	<50	20,200
11				-360	160	59,100		-505	130	75,100		-150	<50	36,000		30	<50	20,200
12				-360	160	63,100						-150	<50	39,000		30	<50	20,200
13												-150	<50	41,000		30	<50	20,200
14																		
15																		

Scenario 2

	Mining Plus UG Depths - Sabina Mine Plan																	
Year	Llama Pit			Llama UG			Umwelt Pit	Umwelt UG			Goose Main Pit	Goose Main UG			Echo Pit	Echo UG		
	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)
-2							280								265			
-1							225								215			
1	280	<50	<10,000	90	190	2,900	175	215	0	0								
2	240	<50	<10,000	-80	130	11,300		5	120	16,600								
3	195	<50	<10,000	-80	100	15,200		-145	350	32,200	270							
4	145	<50	<10,000	-80	90	17,500		-385	410	47,300	245							
5	115	<50	<10,000	-80	80	19,500		-495	350	54,800	190							
6				-80	80	20,600		-495	330	59,300	190							
7				-80	80	21,600		-495	310	62,700	190	105	10	14,900				
8				-80	80	22,800		-495	300	66,100	190	-30	80	15,900				
9				-80	80	23,800		-495	290	70,000	185	-100	70	19,500				
10				-80	80	24,700		-495	280	73,300	160	-100	70	21,500				
11				-80	70	25,700		-495	280	76,300	130	-100	70	23,000				
12				-80	70	26,500		-495	270	78,700	95	-100	70	24,300				
13				-80	70	27,400		-495	270	81,700		-100	60	25,400				
14				-80	70	28,200		-495	260	83,700		-100	60	26,300		135	<50	9,200
15				-80	70	28,900		-495	260	85,700		-100	60	27,200		-25	<50	10,700

SCENARIO 2

	Current (2026 LOM plan)																	
Year	Llama Pit			Llama UG			Umwelt Pit	Umwelt UG			Goose Main Pit	Goose Main UG			Echo Pit	Echo UG		
	Bottom El. (m)	Flow (m^3/d)	TDS (mg/l)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/L)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/L)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/L)	Bottom El. (m)	Bottom El. (m)	Flow (m^3/d)	TDS (mg/L)
-2															300			
-1															240			
1							270	20	0	0					210			
2	300	75	<10,000				230	-90	270	26,500								
3	280	<50	<10,000				170	-160	350	33,100								
4	230	<50	<10,000	225	0	0	150	-250	380	38,800								
5	170	<50	<10,000	60	180	4,400		-330	400	43,800	260							
6	140	<50	<10,000	-40	140	9,300		-390	410	47,600	230							
7				-150	350	32,500		-440	380	51,100	210							
8				-260	380	39,400		-505	350	54,800	160	125	10	21,000				
9				-360	400	45,700		-505	330	50,000	100	-60	80	21,000		120	<50	10,700
10				-360	380	49,400		-505	310	46,600		-90	70	26,000		30	<50	10,700
11				-360	370	53,100		-505	300	43,200		-150	70	31,000		30	<50	10,700
12				-360	360	56,800						-150	70	33,000		30	<50	10,700
13												-150	70	34,500		30	<50	10,700
14																		
15																		

Closing

This presentation required a number of complex issues to be reduced to general concepts in a series of concise bullet points, photographs, and/or diagrams. The content of this presentation is not intended for design decisions or construction. This presentation is for general informational purposes only. BGC Engineering Inc.'s report(s) may contain more specific details concerning the issues identified in this presentation. Please consult BGC for further clarification if you have any questions or concerns.

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Date:

March 26, 2026

APPENDIX D
SOURCE TERM CONCENTRATIONS

Table D-1 Model Input Source Term Concentrations

Constituent	Unit	Baseline	Groundwater	Process Water	Sewage[a]	Pad	Ore Stockpile - Operations[b,c]	Ore Stockpile - Closure[b,c]	WR-Umwelt Operations Max[b,c]	WR-Umwelt Closure Max[b,c]	WR-Llama Operations Max[b,c]	WR-Llama Closure Max[b,c]	WR-Echo/ Goose Operations Max[b,c]	WR-Echo/ Goose Closure Max[b,c]	PW Umwelt Max[c]	PW Llama Max[c]	PW Echo Max[c]	PW Goose Max[c]	HW Umwelt Max[c]	HW Llama Max[c]	HW Goose Max[c]
Alkalinity	mg/L	2.0	13	35	0.5	25	0.096	0.096	0.092	62	2.0	87	0.091	63	55	65	52	62	23	17	14
Aluminum	mg/L	0.011	0.082	0.5	0	1.7	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.13	0.39	0.38	0.39	0.23	0.39	0.39	0.39
Ammonia	mg-N/L	0.005	0.2	5.1	78.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Antimony	mg/L	0.00005	0.0044	0.0018	0	0.001	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.00082	0.00062	0.00023
Arsenic	mg/L	0.0002	0.0071	2.4	0	0.044	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.21	0.15	0.13	0.15	0.10	0.15	0.11	0.043
Barium	mg/L	0.0051	6.1	0.011	0	0.0089	0.0094	0.0094	0.0027	0.022	0.020	0.021	0.0024	0.011	0.021	0.021	0.021	0.016	0.051	0.069	0.038
Beryllium	mg/L	0.0002	0.0011	0.00015	0	0	0.0010	0.0010	0.0012	0.0012	0.0022	0.00025	0.0024	0.000032	0.00020	0.00020	0.00020	0.00020	0.00053	0.00063	0.00032
Bismuth	mg/L	0.0005	0.044	0.00022	0	0.000004	0.00058	0.00058	0.15	0.00050	0.36	0.00050	0.068	0.00050	0.0026	0.0015	0.00070	0.00072	0.00050	0.00050	0.00050
Boron	mg/L	0.005	3.9	0.026	0	0.0003	1.6	1.6	3.6	3.6	7.1	0.73	6.7	2.1	0.20	0.20	0.20	0.16	0.18	0.20	0.12
Cadmium	mg/L	0.00001	0.00089	0.00002	0	0.000001	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.000032
Calcium	mg/L	2.1	16000	42	0	16	73	73	73	73	73	65	73	51	33	45	30	46	23	44	33
Chloride	mg/L	1.0	Depth dependent[c]	5.5	96.7	0.25	94	94	198	198	362	112	397	15	16	13	19	4.5	2.6	3.2	2.1
Chromium	mg/L	0.00015	0.0062	0.0058	0	0.003	0.0037	0.0037	0.015	0.015	0.030	0.0018	0.019	0.0049	0.00064	0.00055	0.00051	0.00038	0.00069	0.00070	0.00033
Cobalt	mg/L	0.00012	0.0089	0.013	0	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.0042	0.018	0.018	0.0044
Copper	mg/L	0.0014	0.0081	0.1	0	0.0036	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.0041	0.0029	0.0044	0.0015	0.011	0.011	0.0024
Cyanate	mg/L	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fluoride	mg/L	0.02	0	0	0.067	0.02	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.22	0.22	0.22	0.17	0.26	0.24	0.12
Free Cyanide	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardness	mg/L	11	45000	110	0	0	4135	4135	3803	614	9551	421	5914	906	131	167	122	160	92	169	122
Iron	mg/L	0.014	3.8	3.1	0	2.1	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.31	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Lead	mg/L	0.00005	0.0044	0.019	0	0.00012	0.0027	0.0027	0.018	0.018	0.030	0.0028	0.030	0.0043	0.0010	0.00072	0.0010	0.00029	0.0035	0.0022	0.00024
Lithium	mg/L	0.005	7.1	0.003	0	0	0.12	0.12	2.0	2.0	3.8	0.041	1.6	0.14	0.066	0.045	0.037	0.022	0.021	0.017	0.0076
Magnesium	mg/L	1.3	1000	1.6	0	4.4	11	11	11	11	11	11	11	11	11	11	11	11	8.6	11	10
Manganese	mg/L	0.0019	2.9	0.011	0	0.15	0.47	0.47	0.47	0.47	0.47	0.25	0.47	0.47	0.21	0.19	0.23	0.12	0.32	0.47	0.45
Mercury	mg/L	0.00001	0.00001	0.000005	0	0.00001	0.000050	0.000050	0.0000050	0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.000050	0.000050	0.000050	0.000050	0.000038	0.000041	0.000024
Molybdenum	mg/L	0.00005	0.042	0.0083	0	0.00081	0.0051	0.0051	0.0051	0.0052	0.0052	0.0052	0.0051	0.0051	0.0030	0.0025	0.0027	0.0016	0.0012	0.00093	0.00039
Nickel	mg/L	0.0033	0.011	0.0035	0	0.059	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.057	0.058	0.058	0.058	0.039	0.058	0.055	0.012
Nitrate	mg-N/L	0.0065	0.5	0.12	81.5	0	4.8	4.8	8.5	1.7	11	1.3	13	2.3	0.30	0.25	0.35	0.12	0.13	0.12	0.077
Nitrite	mg-N/L	0.001	0.1	0.008	16.8	0	1.2	1.2	23	0.42	53	0.31	13	0.58	0.44	0.27	0.18	0.13	0.031	0.029	0.019
Orthophosphate	mg-P/L	0.001	0.062	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phosphate	mg-P/L	0	0.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phosphorus	mg/L	0.0019	3.3	0.1	5.7	0.01	0.57	0.57	0.63	0.17	1.1	0.13	1.0	0.23	0.021	0.021	0.021	0.016	0.017	0.019	0.012
Potassium	mg/L	0.34	240	11	0	0.35	118	118	237	237	442	35	440	108	15	13	16	8.6	9.2	13	8.3
Selenium	mg/L	0.0001	0.0089	0.0012	0	0.00033	0.0020	0.0020	0.0020	0.0020	0.0020	0.0017	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.00079	0.00088	0.00054
Silicon	mg/L	0.28	0.56	2.9	0	5.5	39	39	38	40	38	28	38	40	7.3	7.2	7.7	5.3	12	15	9.0
Silver	mg/L	0.00001	0.00089	0.00017	0	0.000015	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000040	0.000021	0.000024	0.000014
Sodium	mg/L	0.66	6800	69	0	0.25	253	253	950	950	2102	22	1385	32	4.4	5.3	4.3	4.7	1.5	1.5	0.83
Strontium	mg/L	0.0094	330	0.13	0	0.00028	0.80	0.80	9.2	9.2	7.7	0.17	8.6	0.62	0.56	0.36	0.21	0.19	0.062	0.10	0.073
Sulphate	mg/L	4.1	50.0	150	110	36	846	846	2244	2244	4681	113	3119	218	109	134	105	121	187	356	236

Constituent	Unit	Baseline	Groundwater	Process Water	Sewage[a]	Pad	Ore Stockpile - Operations[b,c]	Ore Stockpile - Closure[b,c]	WR-Umwelt Operations Max[b,c]	WR-Umwelt Closure Max[b,c]	WR-Llama Operations Max[b,c]	WR-Llama Closure Max[b,c]	WR-Echo/ Goose Operations Max[b,c]	WR-Echo/ Goose Closure Max[b,c]	PW Umwelt Max[c]	PW Llama Max[c]	PW Echo Max[c]	PW Goose Max[c]	HW Umwelt Max[c]	HW Llama Max[c]	HW Goose Max[c]
TDS	mg/L	23	Depth dependent[d]	414	919	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tellurium	mg/L	0.002	0	0.0003	0	0	0.0023	0.0023	0.0024	0.0020	0.0043	0.0020	0.0038	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Thallium	mg/L	0.00005	0.0044	0.000015	0	0.000004	0.00023	0.00023	0.00044	0.00044	0.00081	0.000085	0.00092	0.00033	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thiocyanate	mg/L	0	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thorium	mg/L	0	0	0.00017	0	0	0.00064	0.00064	0.0014	0.00019	0.0029	0.00014	0.0014	0.00026	0.000036	0.000029	0.000027	0.000019	0.000035	0.000036	0.000017
Tin	mg/L	0.0001	0.0089	0.00026	0	0	0.0077	0.0077	0.018	0.018	0.037	0.0035	0.031	0.011	0.00094	0.00098	0.00091	0.00082	0.00080	0.00084	0.00051
Titanium	mg/L	0.01	0.11	0.0095	0	0.052	0.067	0.067	0.074	0.019	0.13	0.015	0.12	0.027	0.010	0.010	0.010	0.010	0.010	0.010	0.010
TOC	mg/L	4.0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Cyanide	mg/L	0.0023	0	0.77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TSS	mg/L	3.0	0	16	23.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Uranium	mg/L	0.00001	0.00089	0.0003	0	0.000025	0.050	0.050	0.045	0.045	0.078	0.015	0.11	0.057	0.0035	0.0024	0.0039	0.00088	0.0033	0.0023	0.00061
Vanadium	mg/L	0.000053	0.033	0.0013	0	0.00088	0.044	0.044	0.27	0.27	0.54	0.014	0.27	0.054	0.0089	0.0064	0.0047	0.0041	0.0023	0.0019	0.0021
WAD Cyanide	mg/L	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zinc	mg/L	0.003	0.3	0.0088	0	0.015	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.015	0.016	0.015	0.016	0.0040	0.016	0.016	0.0078
Zirconium	mg/L	0.0004	0	0.0003	0	0	0.011	0.011	0.015	0.0031	0.031	0.0023	0.021	0.0043	0.00046	0.00043	0.00042	0.00040	0.00040	0.00040	0.00040

Note:

(a) Sewage treatment plant effluent concentrations are the 95th percentile from water quality testing conducted between July 2024 and February 2026 (received from B2Gold, Chris LeGoffe, personal communication. March 04, 2026). Limited suite of parameters were tested, parameters not tested assumed to be 0 mg/L.

(b) Calculated as the maximum of the PHREEQC modelling and the maximum concentrations calculated from each mining phase as described in Section 4.2.3.1

(c) Ore stockpile, WR, and PW source terms are calculated based on “live” amounts of material in the piles (i.e., exposed), therefore they have changing values over the model period. Maximum values for phases where they are active are included.

(d) For TDS concentrations see Appendix C. Chloride concentrations = 60% of TDS Concentrations

WR = waste rock; PW = pit wall; HW = high wall; TDS = total dissolved solids; TOC = total organic carbon; TSS = total suspended solids; WAD = weak acid dissociable; mg/L = milligrams per litre; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre

APPENDIX E
INITIAL LAKE WATER QUALITY

Table E-1 Initial lake water quality applied in the load balance Model.

Constituent	Unit	Umwelt Lake	Llama Lake	Goose Lake
Alkalinity	mg/L	33	9.9	8.3
Aluminum	mg/L	0.0075	0.0054	0.021
Ammonia	mg-N/L	0.067	0.013	0.041
Antimony	mg/L	0.0005	0.00005	0.000028
Arsenic	mg/L	0.00057	0.0003	0.00044
Barium	mg/L	0.042	0.013	0.0099
Beryllium	mg/L	0.0002	0.0002	0.0000051
Bismuth	mg/L	0.0005	0.0005	0.0000031
Boron	mg/L	0.008	0.0073	0.005
Cadmium	mg/L	0.00001	0.00001	0.0000063
Calcium	mg/L	18	6.2	5.1
Chloride	mg/L	23	9.4	3.9
Chromium	mg/L	0.00025	0.00015	0.00015
Cobalt	mg/L	0.00012	0.00012	0.000096
Copper	mg/L	0.0031	0.0017	0.0028
Cyanate	mg/L	0	0	0
Fluoride	mg/L	0.037	0.024	0.031
Free Cyanide	mg/L	0	0	0
Hardness	mg/L	82	27	27
Iron	mg/L	0.014	0.014	0.013
Lead	mg/L	0.00005	0.00005	0.000013
Lithium	mg/L	0.005	0.005	0.0012
Magnesium	mg/L	9.2	2.9	3.3
Manganese	mg/L	0.015	0.0021	0.0042
Mercury	mg/L	0.00001	0.00001	0.0000022
Molybdenum	mg/L	0.000062	0.000062	0.000015
Nickel	mg/L	0.0073	0.0026	0.0082
Nitrate	mg-N/L	0.053	0.059	0.046
Nitrite	mg-N/L	0.001	0.001	0.001
Orthophosphate	mg-P/L	0.0005	0	0
Phosphate	mg-P/L	0.01	0.0028	0
Phosphorus	mg/L	0.0039	0.0039	0.0039
Potassium	mg/L	2.2	0.97	0.58

Constituent	Unit	Umwelt Lake	Llama Lake	Goose Lake
Selenium	mg/L	0.0001	0.0001	0.000036
Silicon	mg/L	1.5	0.61	0.99
Silver	mg/L	0.00001	0.00001	0
Sodium	mg/L	3.8	1.3	1.2
Strontium	mg/L	0.082	0.047	0
Sulphate	mg/L	13	7.2	14
TDS	mg/L	94	36	43
Tellurium	mg/L	0	0	0
Thallium	mg/L	0.00005	0.00005	0
Thiocyanate	mg/L	0	0	0
Thorium	mg/L	0	0	0
Tin	mg/L	0.0001	0.0001	0
Titanium	mg/L	0.01	0.01	0
TOC	mg/L	11	4.1	6.8
Total Cyanide	mg/L	0	0	0
TSS	mg/L	2.4	1.5	3.0
Uranium	mg/L	0.00001	0.00001	0
Vanadium	mg/L	0.000053	0.000053	0
WAD Cyanide	mg/L	0	0	0
Zinc	mg/L	0.003	0.003	0
Zirconium	mg/L	0	0	0

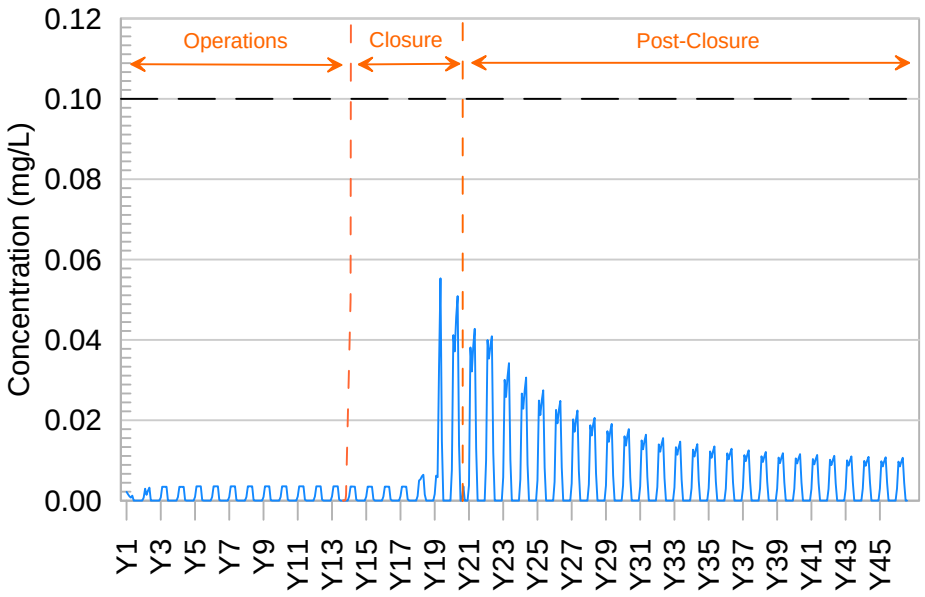
Note:

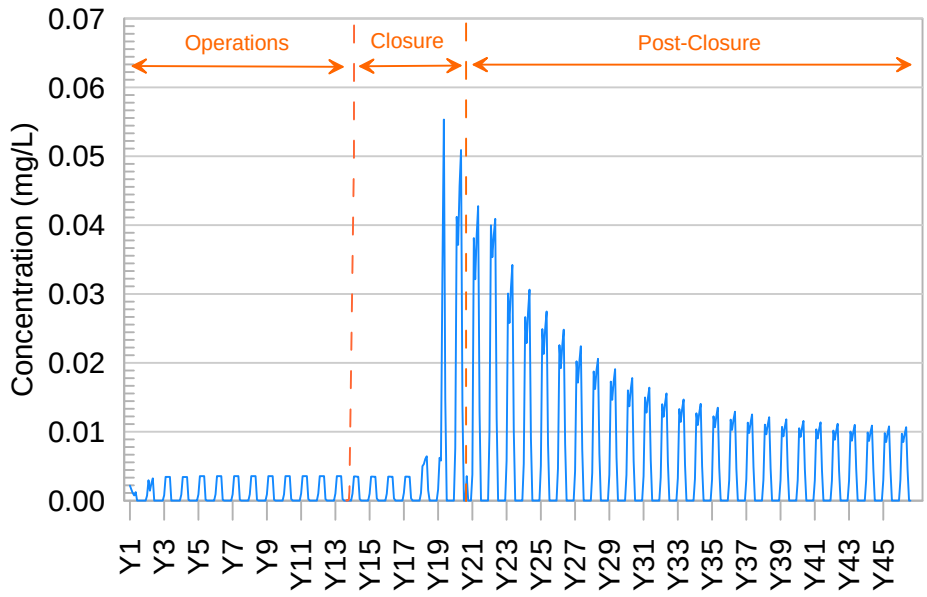
Metals are dissolved concentrations

TDS = total dissolved solids; TOC = total organic carbon; TSS = total suspended solids; WAD = weak acid dissociable; mg/L = milligrams per litre; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre

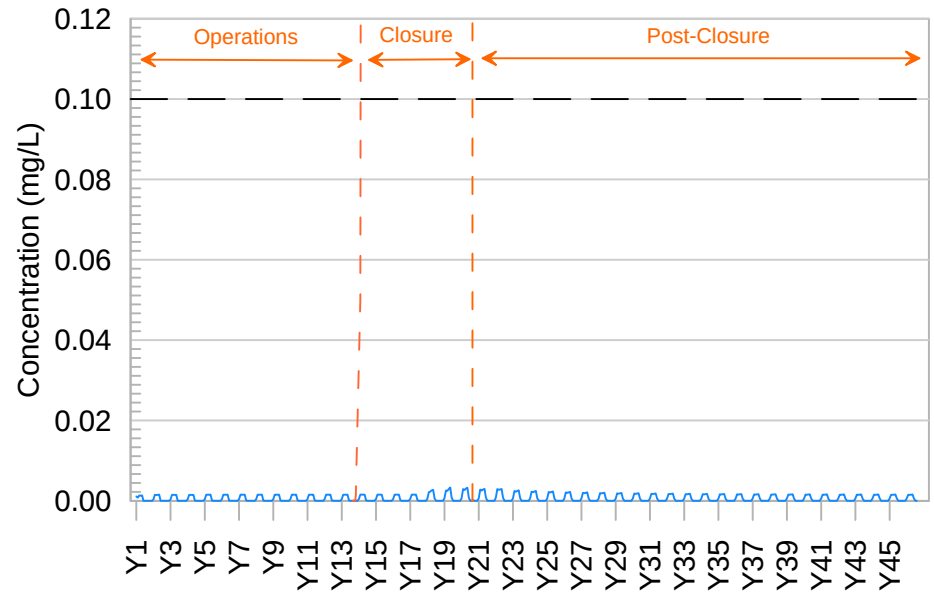
APPENDIX F
TIMESERIES OF PREDICTED MONTHLY AVERAGE CONSTITUENT CONCENTRATIONS AT THE PREDICTION NODES UNDER AVERAGE HYDROLOGICAL CONDITIONS

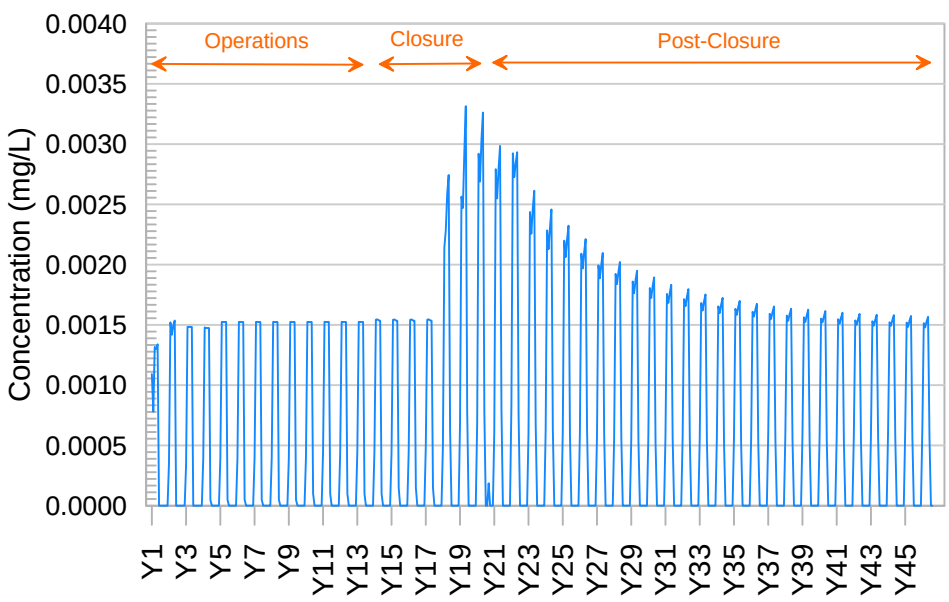
Arsenic - PN04



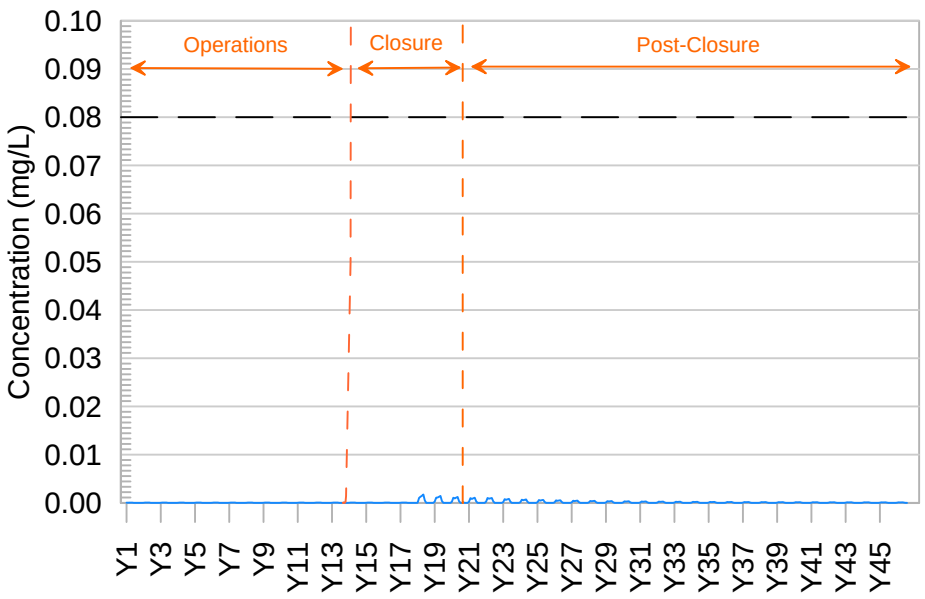


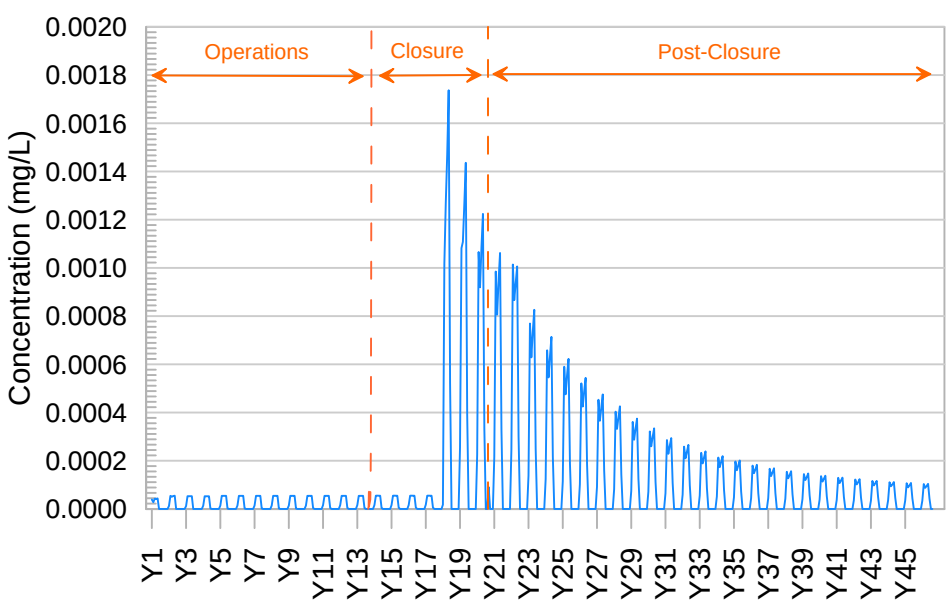
Copper - PN04



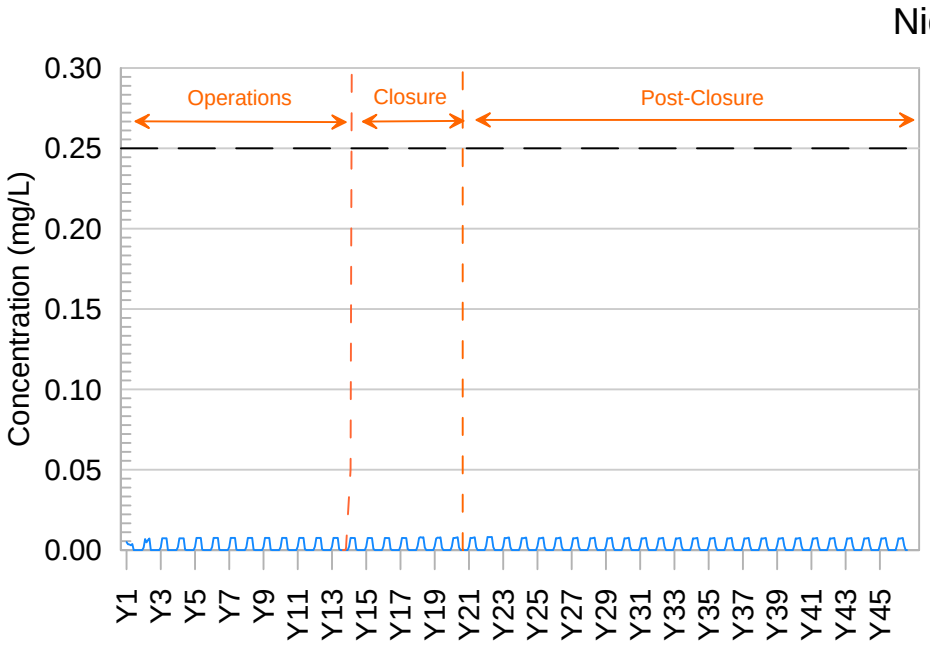


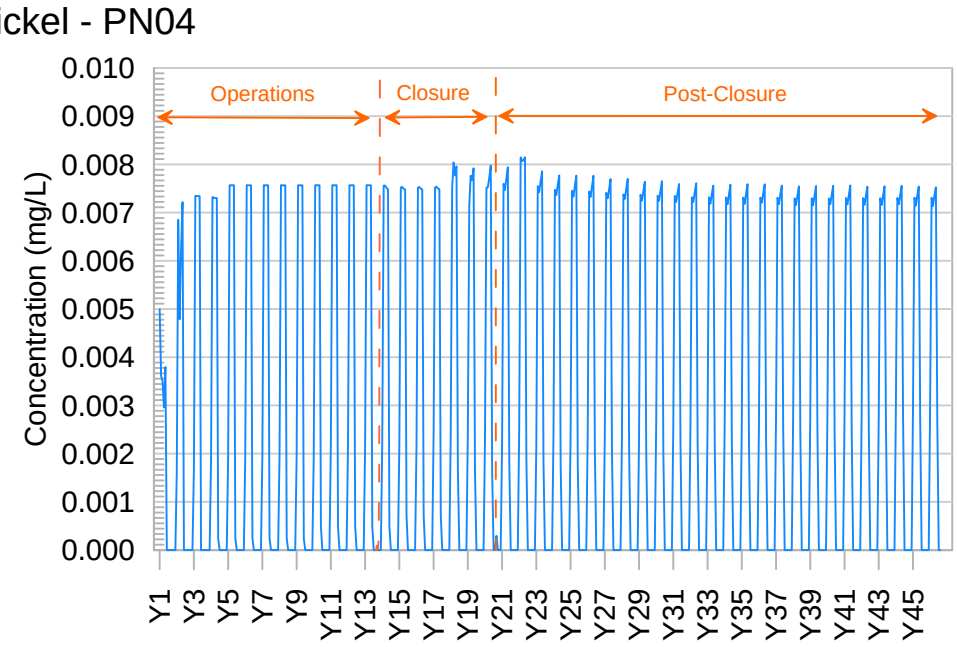
Lead - PN04





Nickel - PN04





Monthly Mean — — MDMER

NOTES:

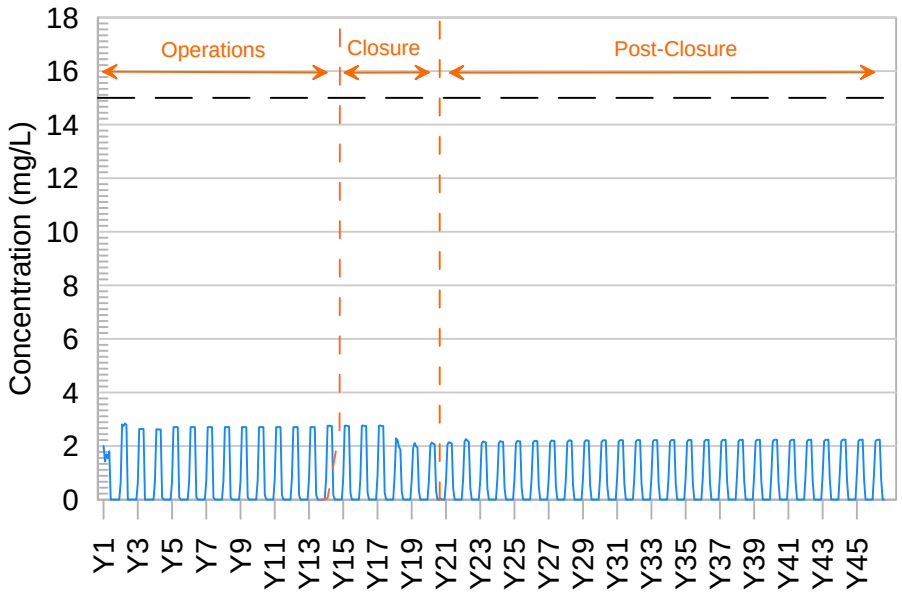
1. This Figure should be read in conjunction with BGC's report titled "2026 Goose Project 2026 Water and Load Balance Report", and dated March 2026.
2. The seasonal zero values are added to the plot to represent winter frozen conditions.
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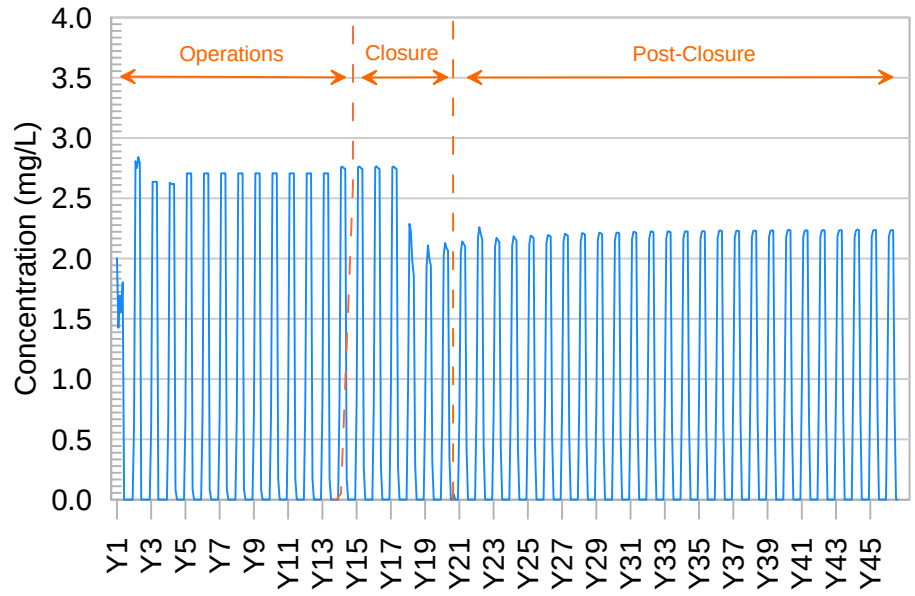
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ZMM	PREDICTED CONCENTRATIONS AT PN04 (PART 1)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-1

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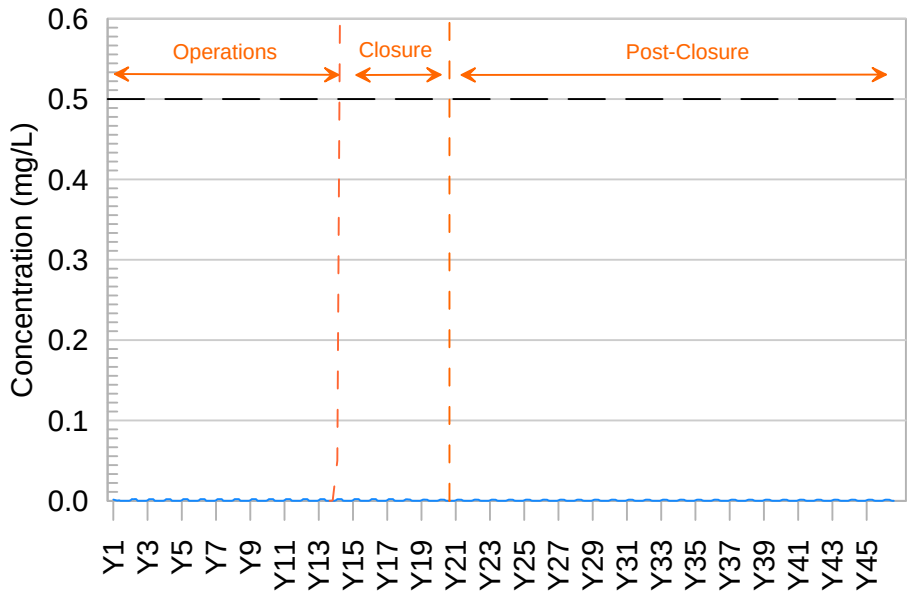
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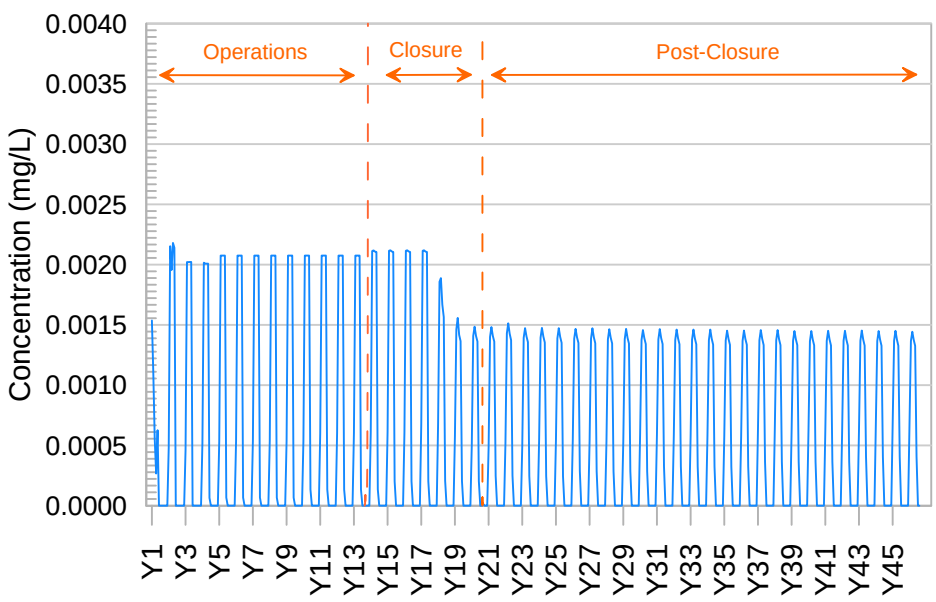
TSS - PN04



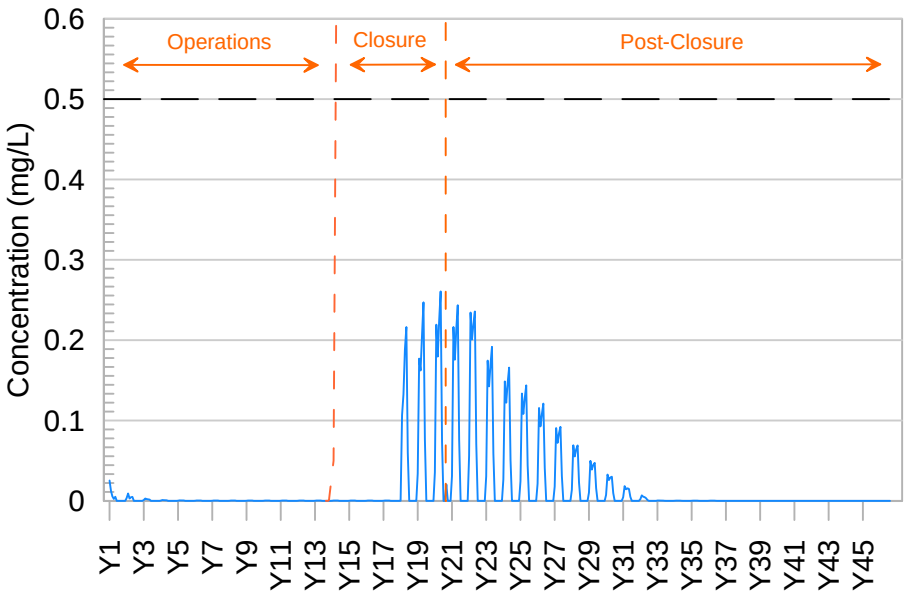


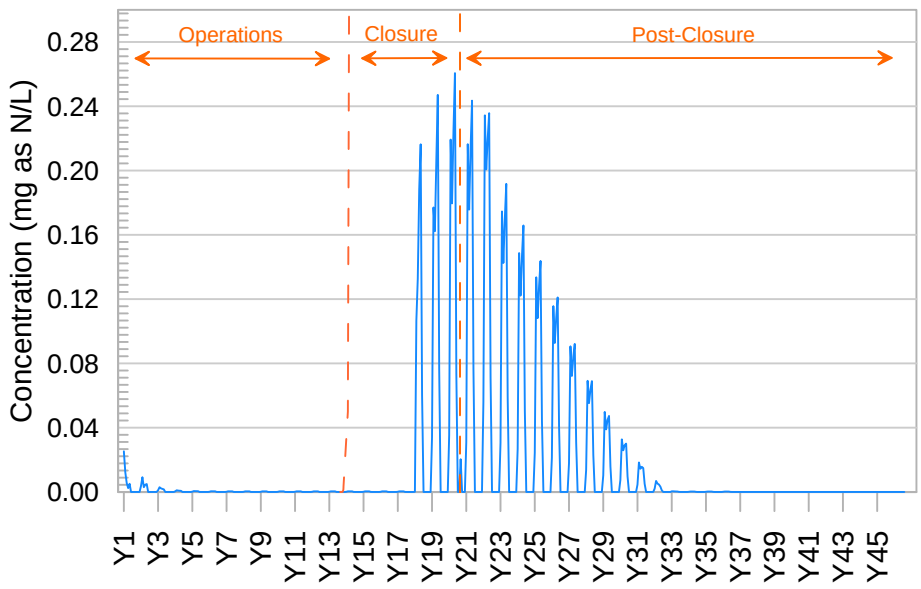
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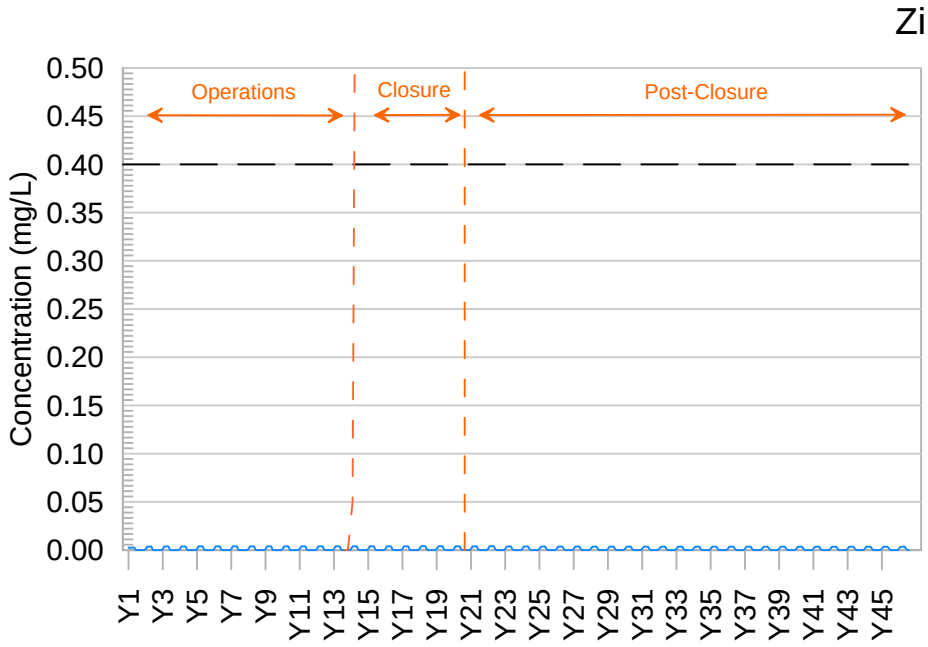


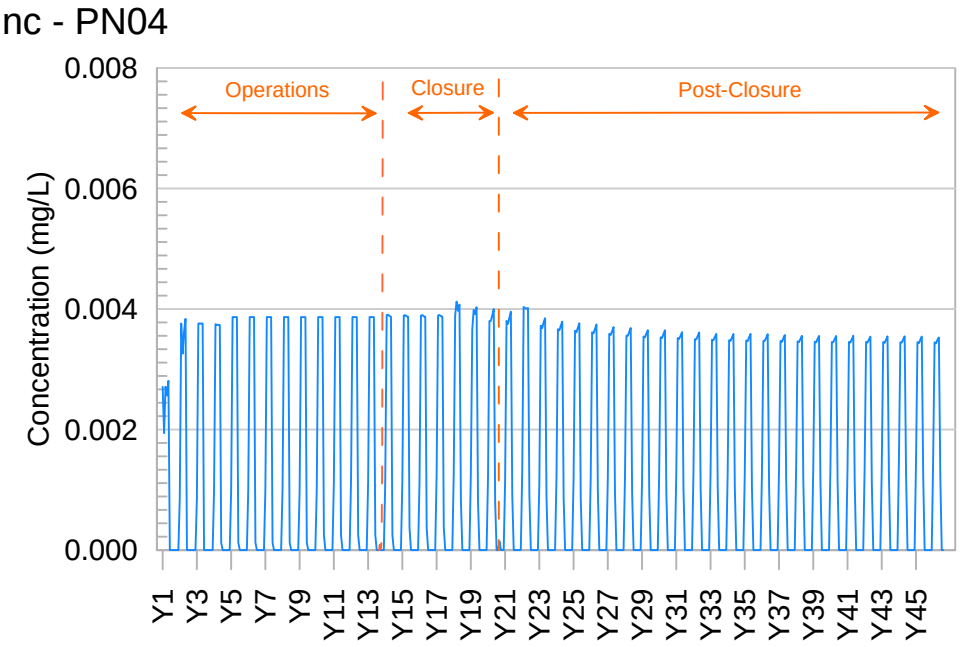
Un-ionized Ammonia - PN04





Zinc - PN04





Monthly Mean — — MDMER

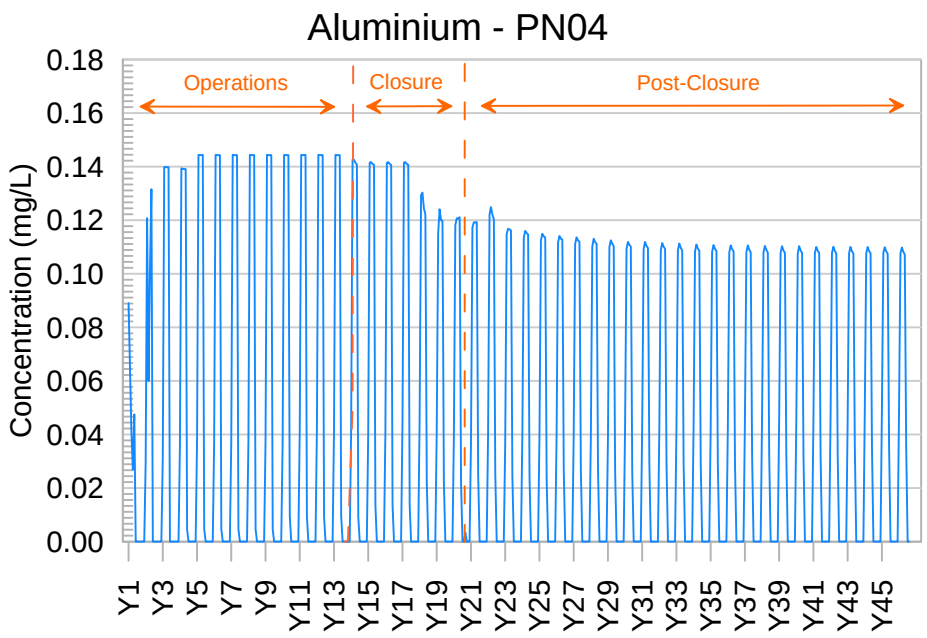
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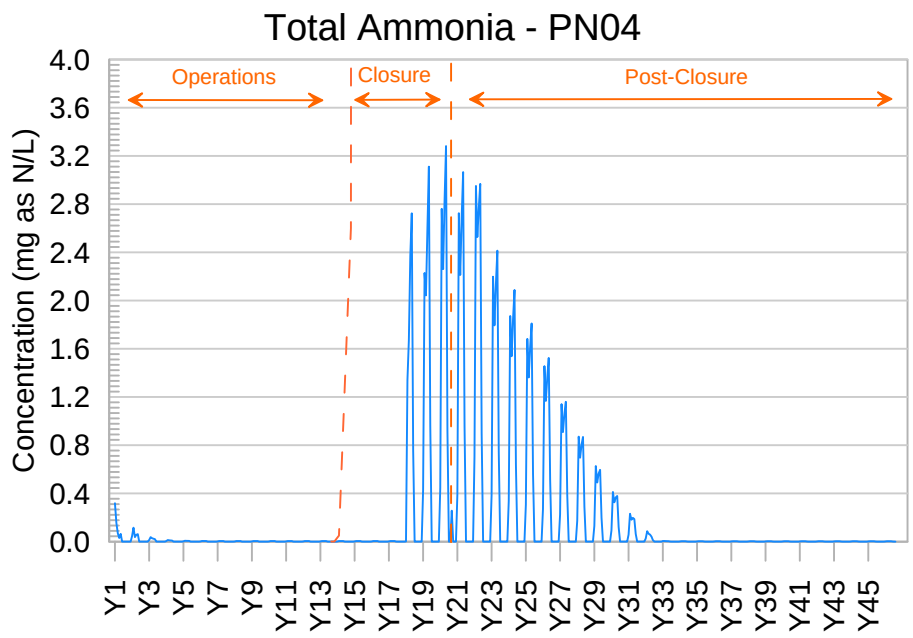
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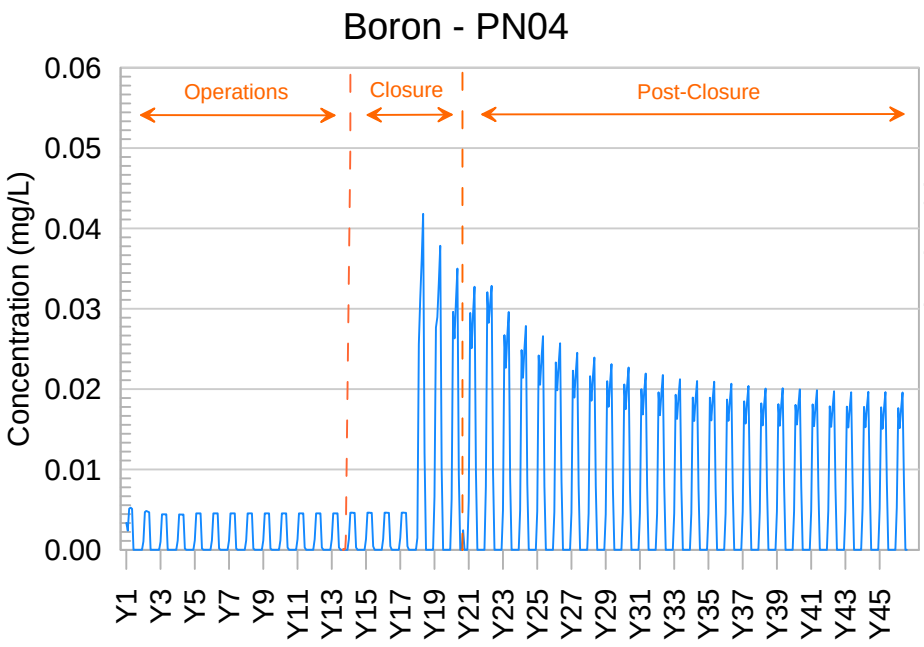
PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN04 (PART 2)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-2

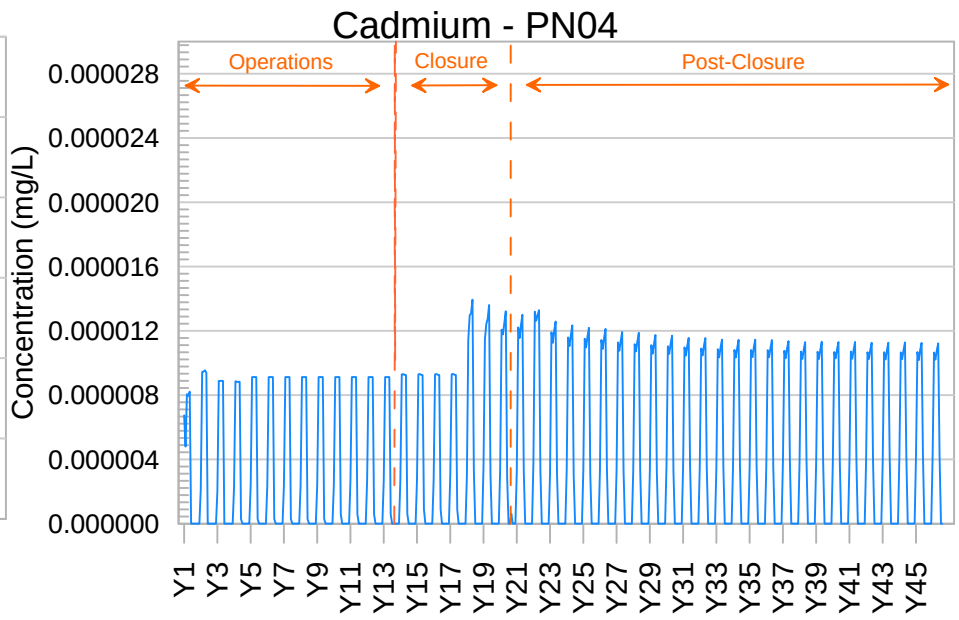
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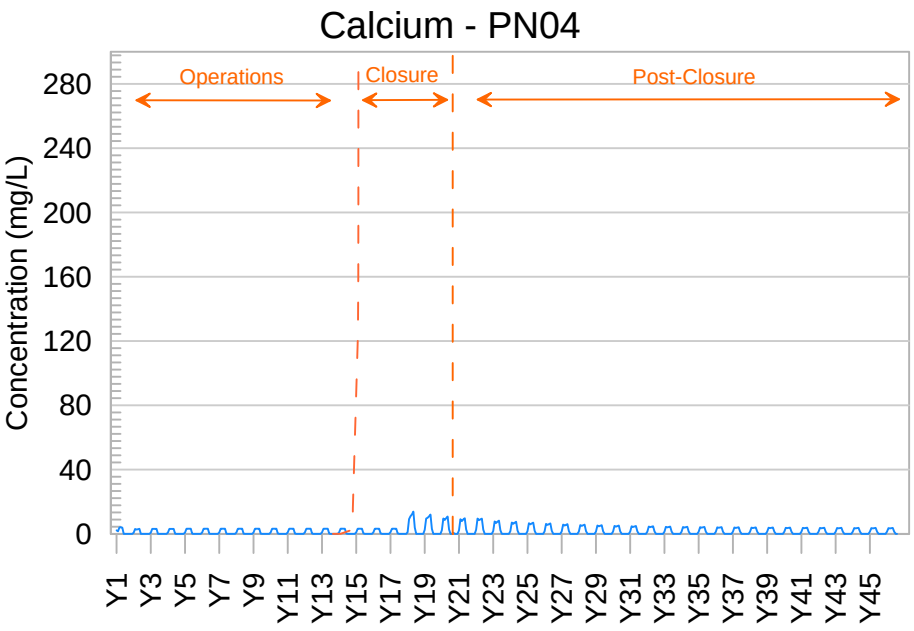
BGC Engineering

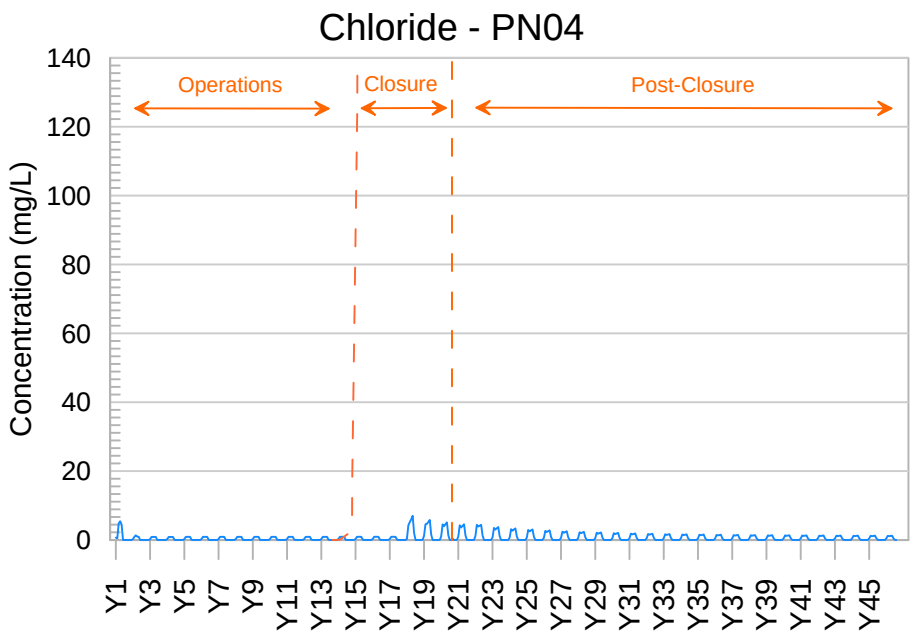


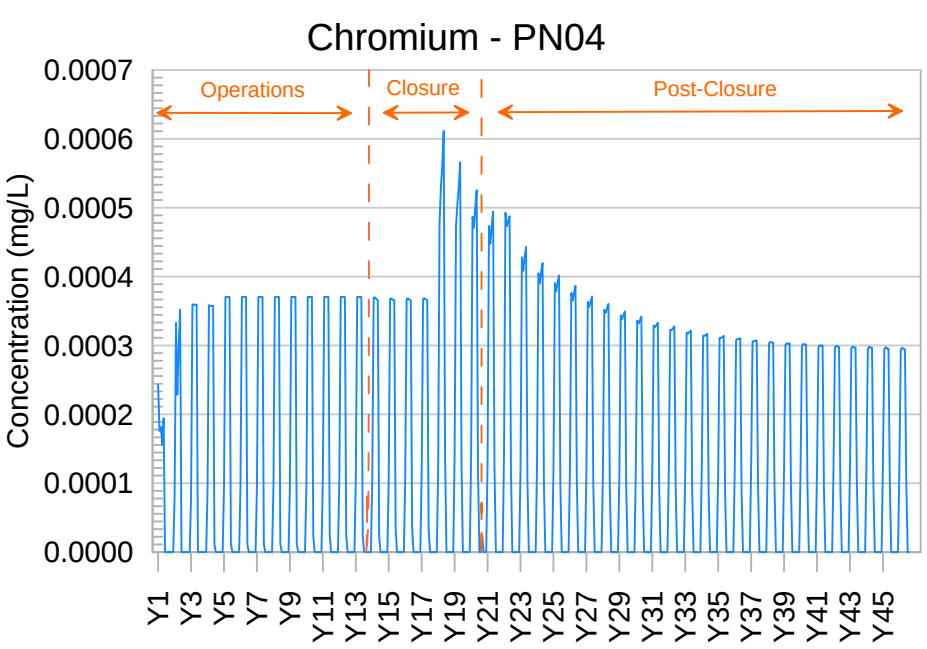


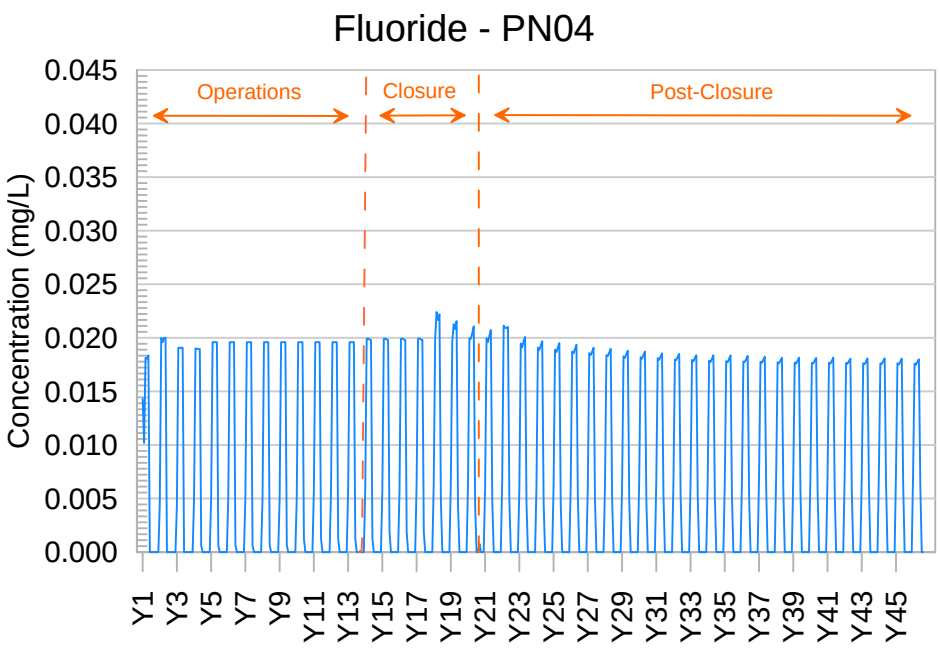












Monthly Mean

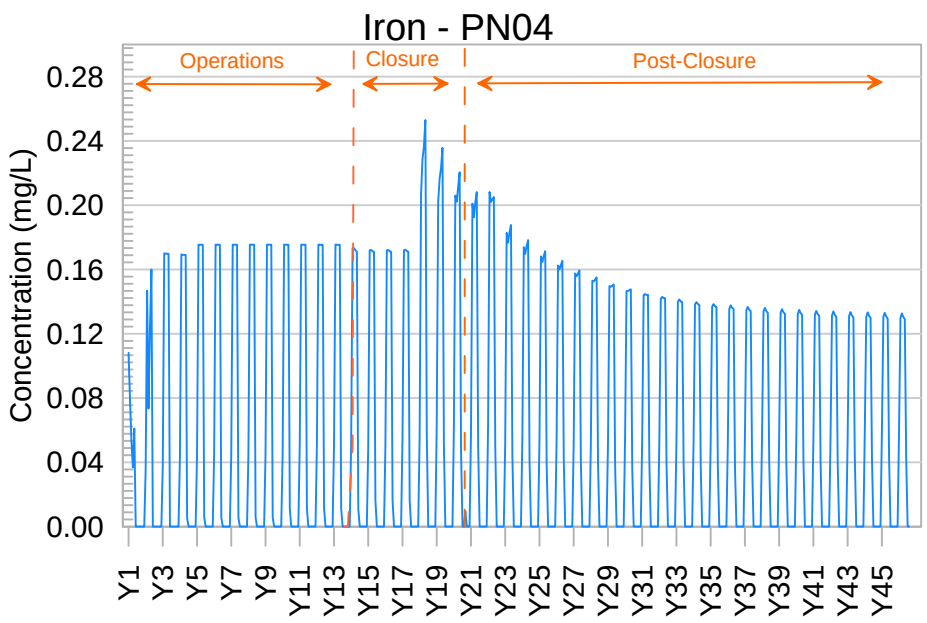
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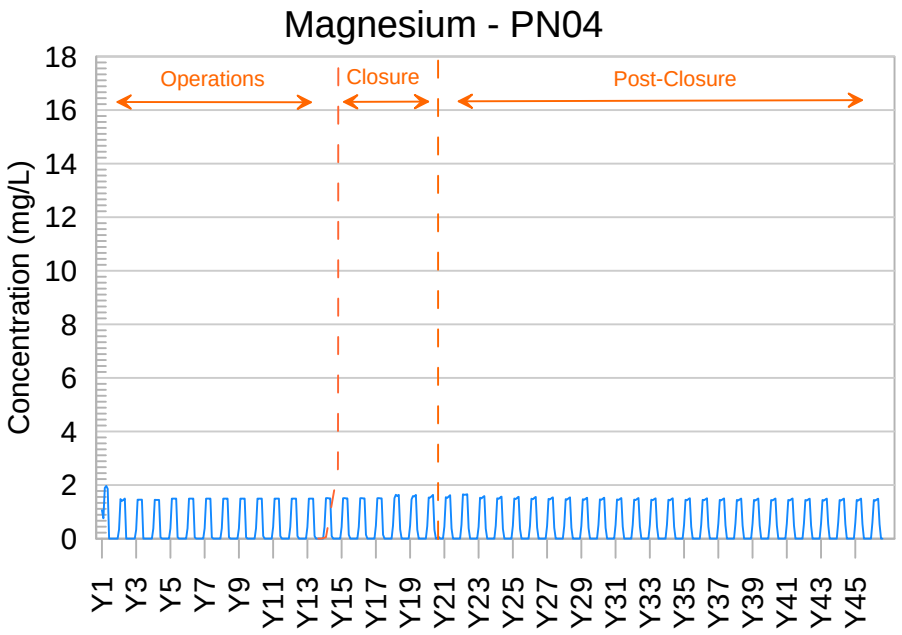
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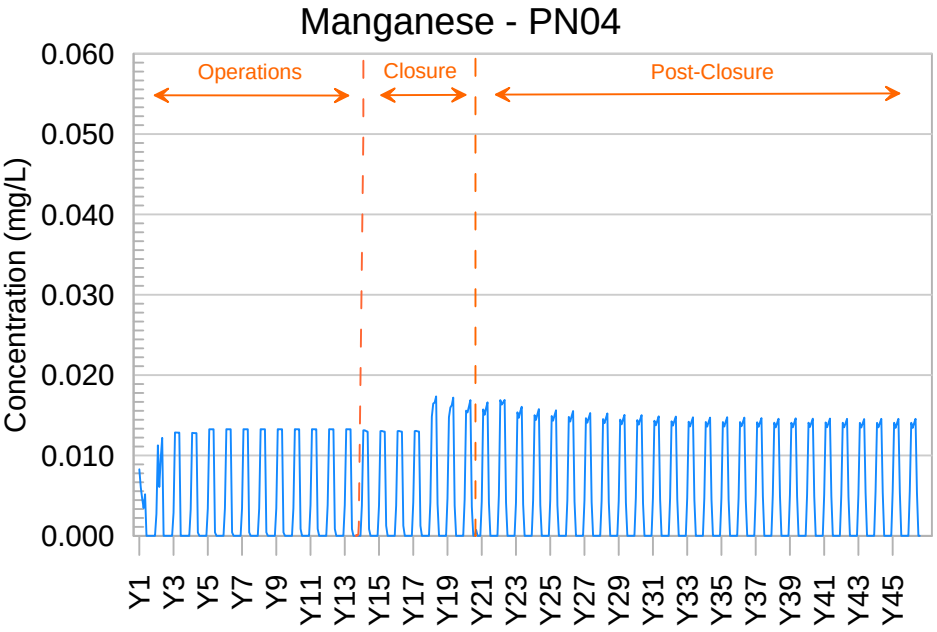
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ZMM	PREDICTED CONCENTRATIONS AT PN04 (PART 3)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-3

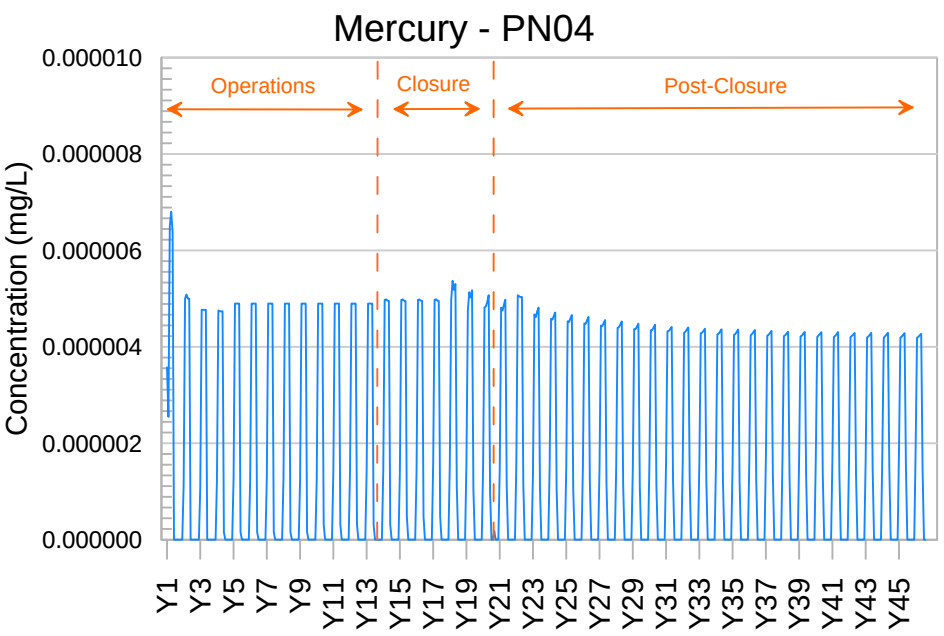
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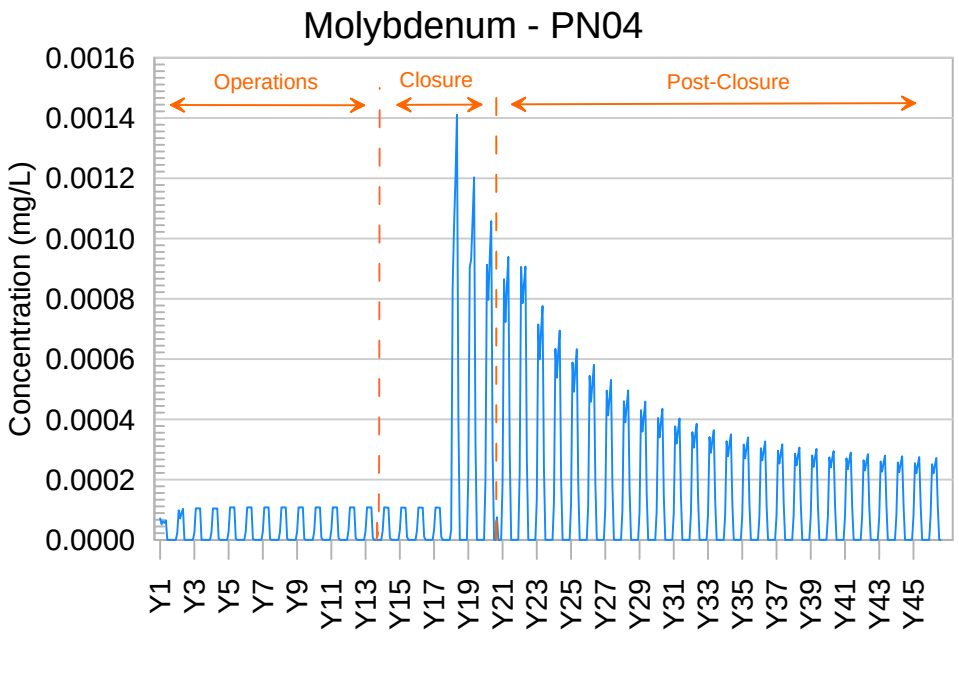
BGC Engineering

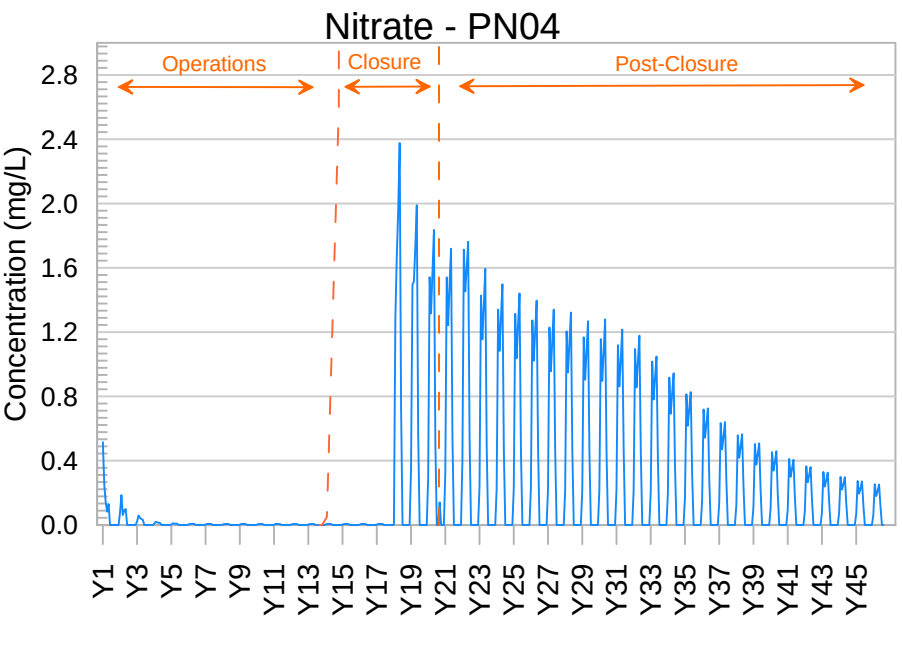


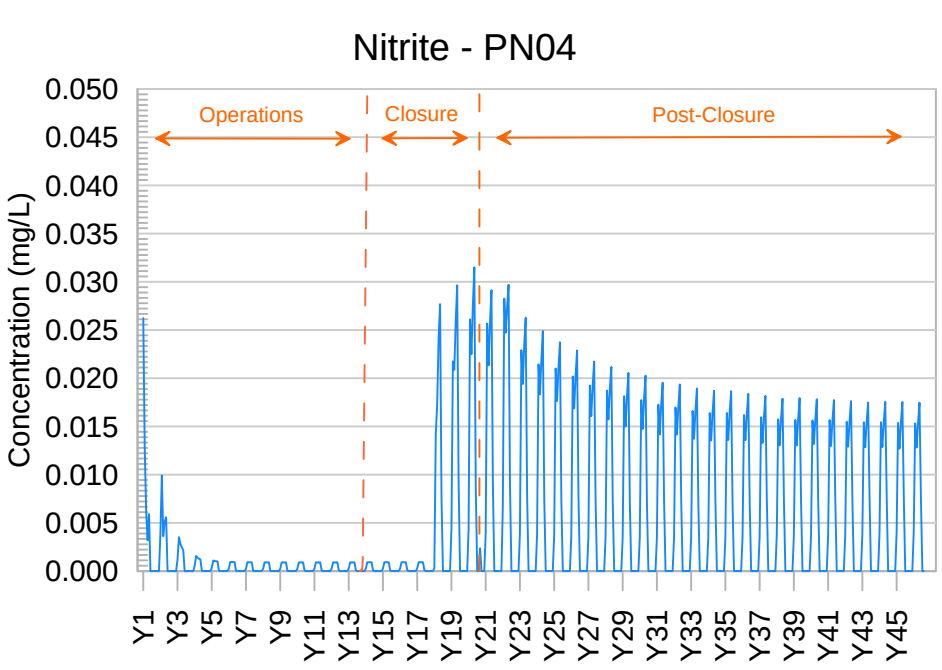


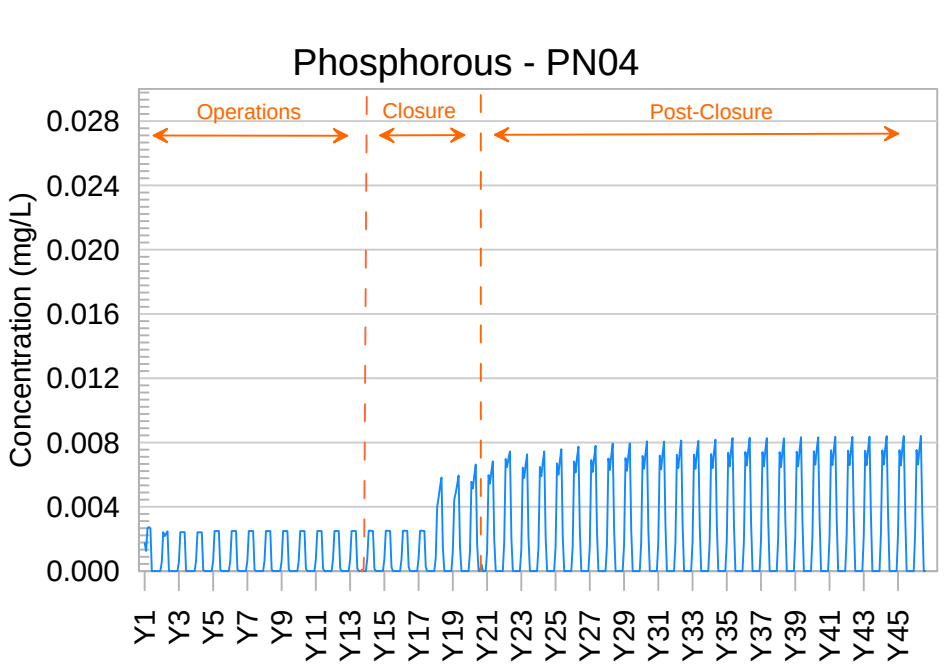












Monthly Mean

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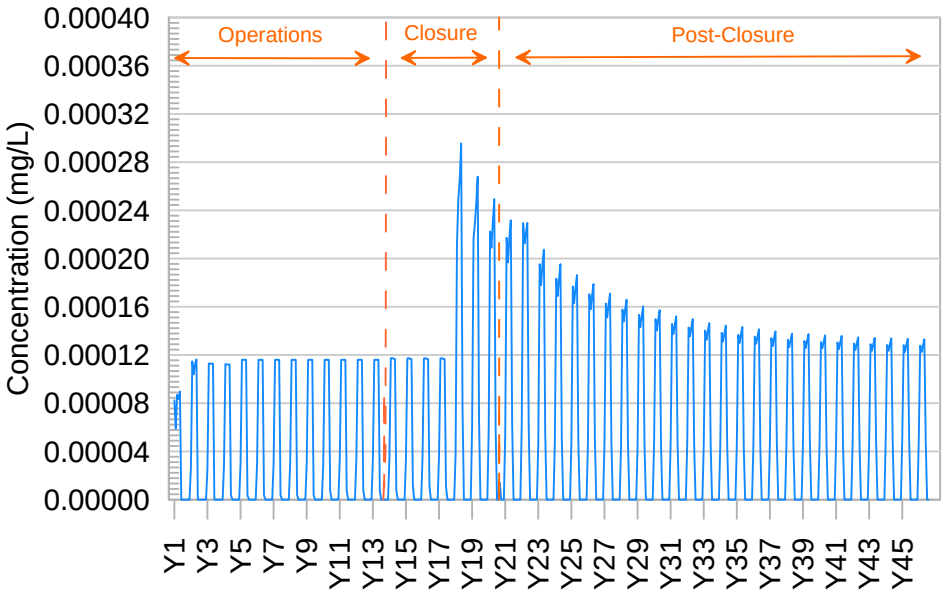
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PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN04 (PART 4)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-4

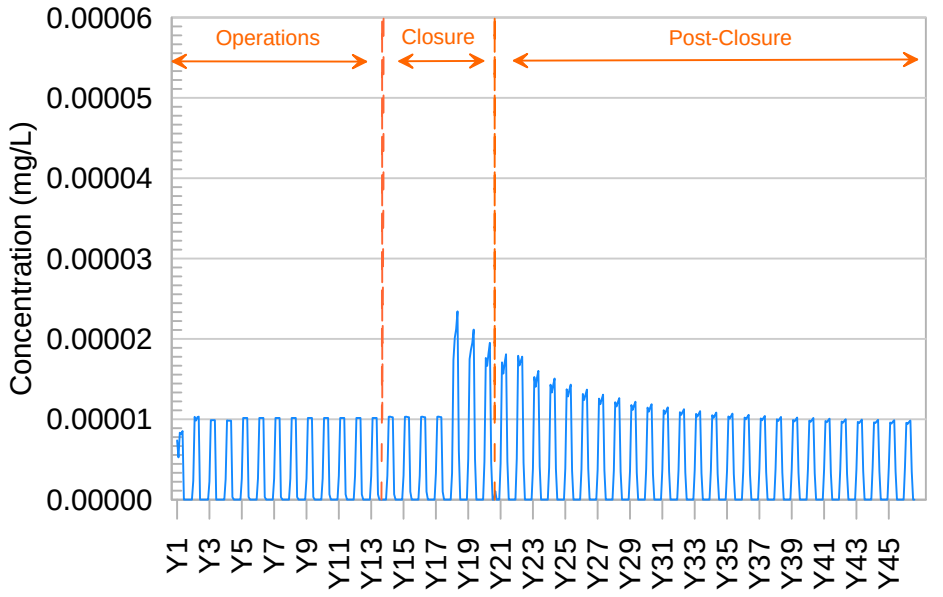
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BGC Engineering

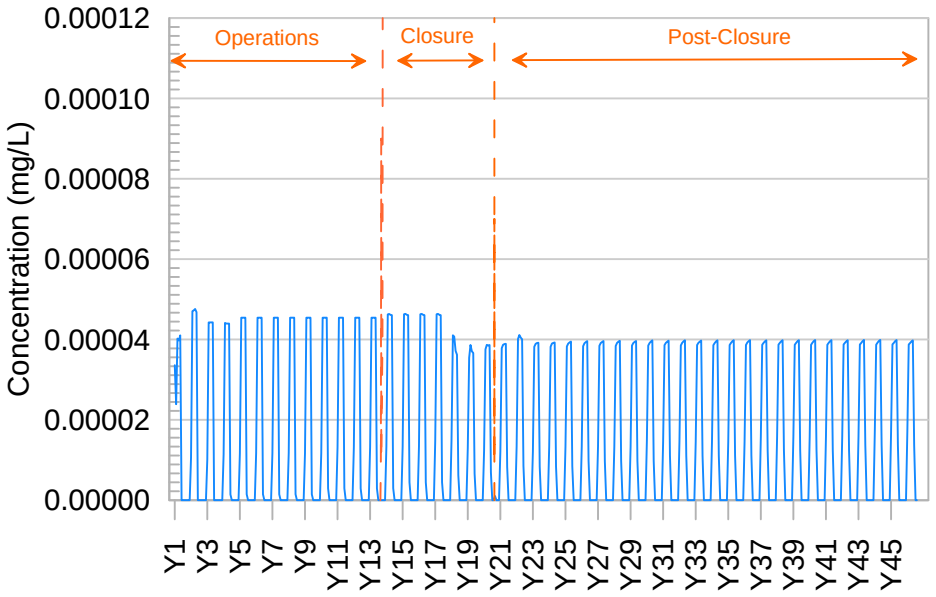
Selenium - PN04



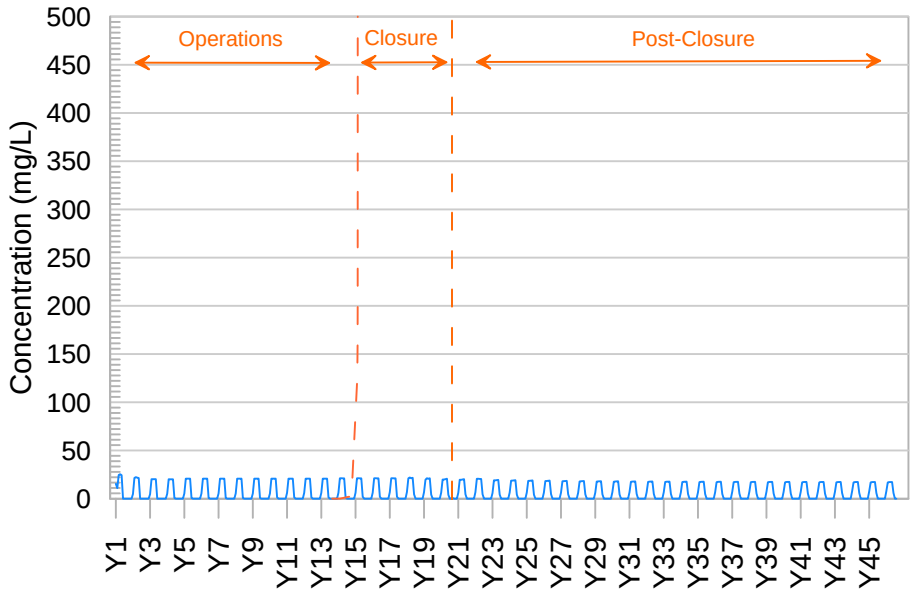
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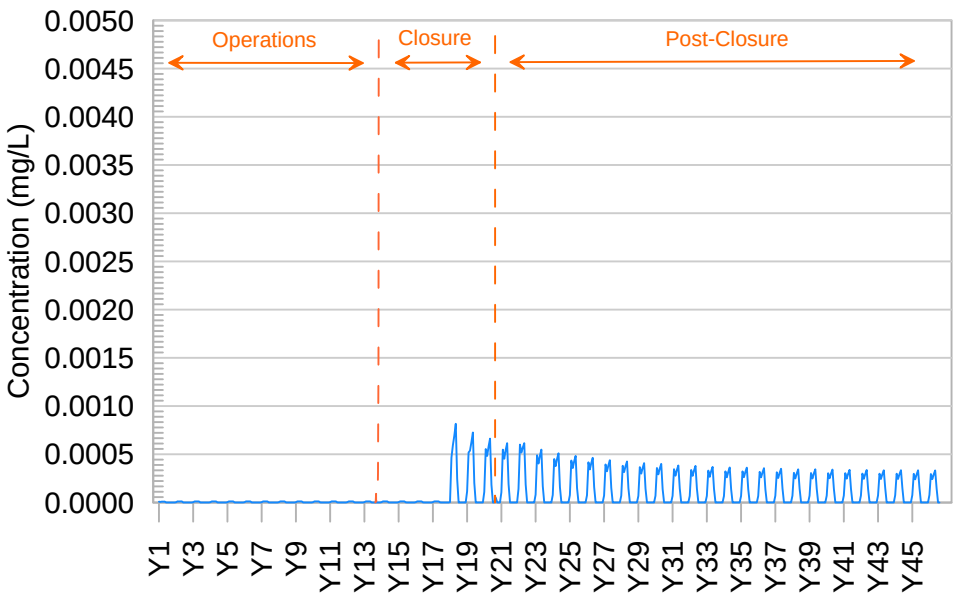
Thallium - PN04



TDS - PN04



Uranium - PN04



Monthly Mean

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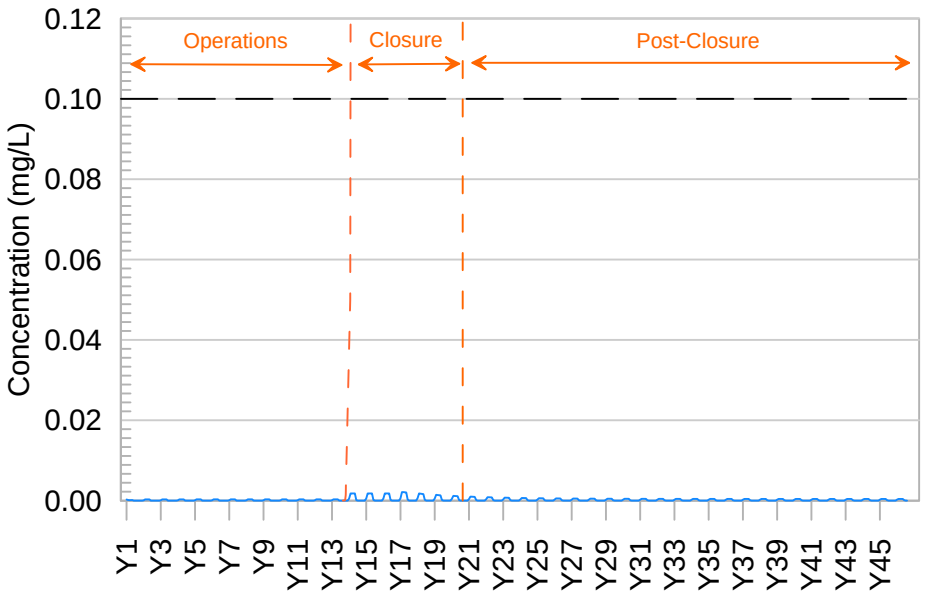
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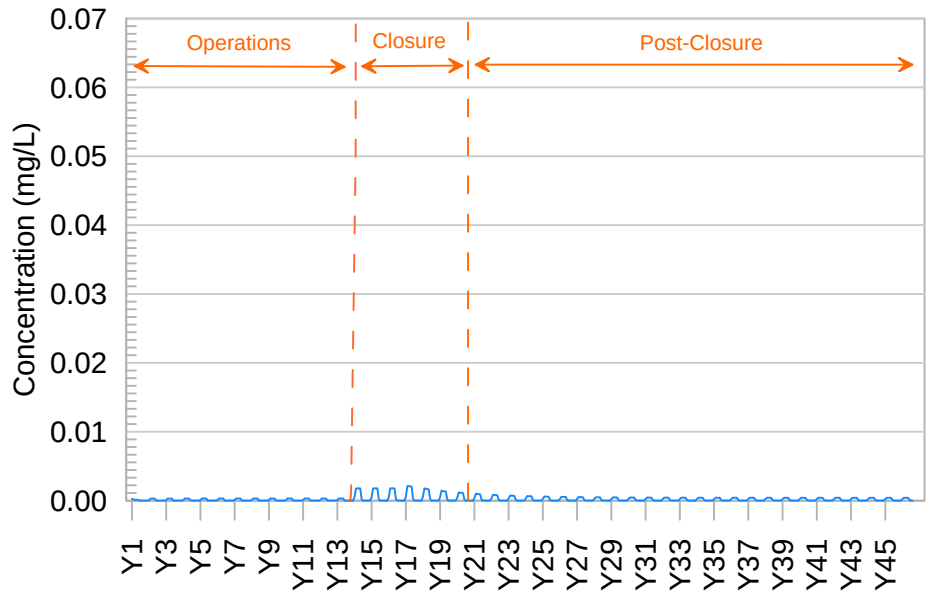
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CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-5

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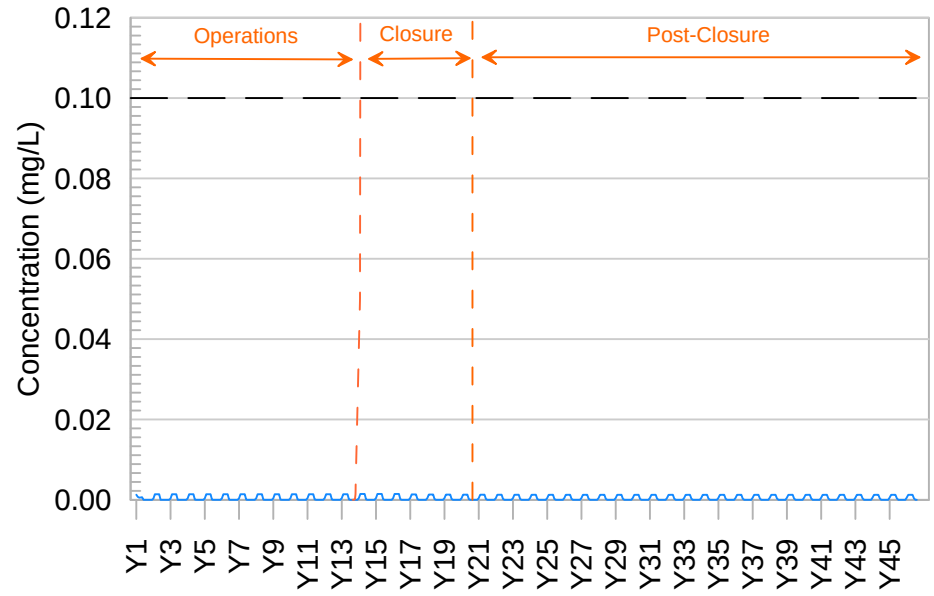
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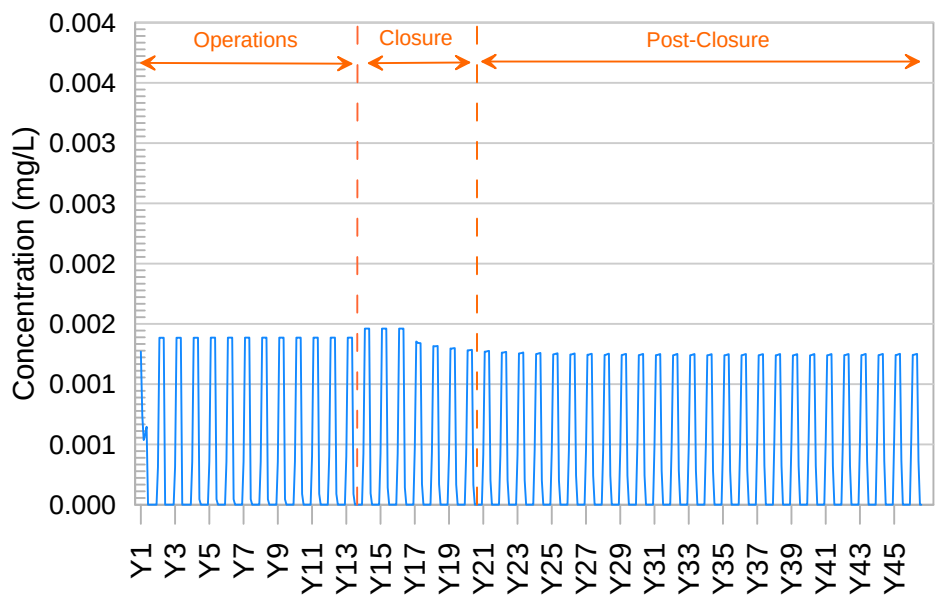
Arsenic - PN05



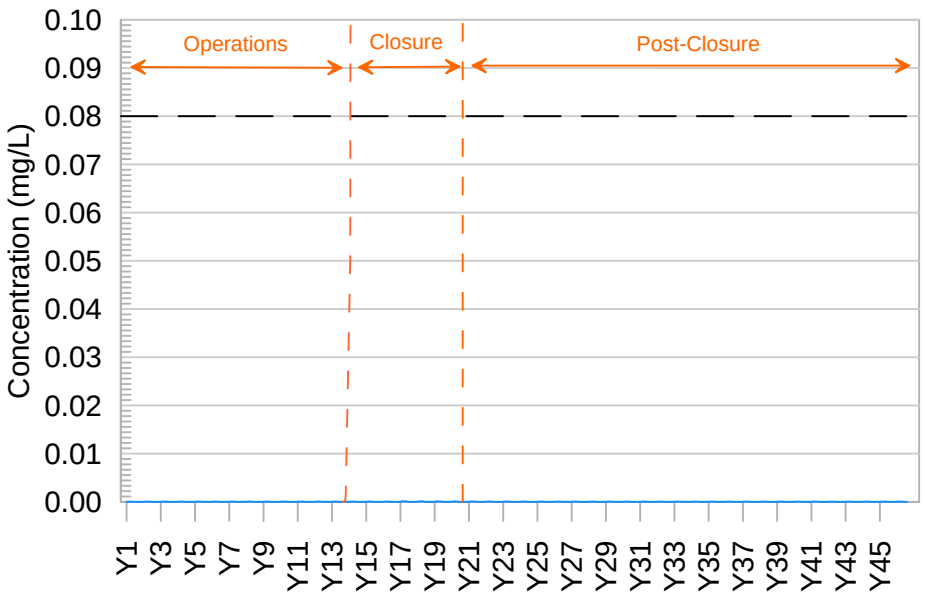


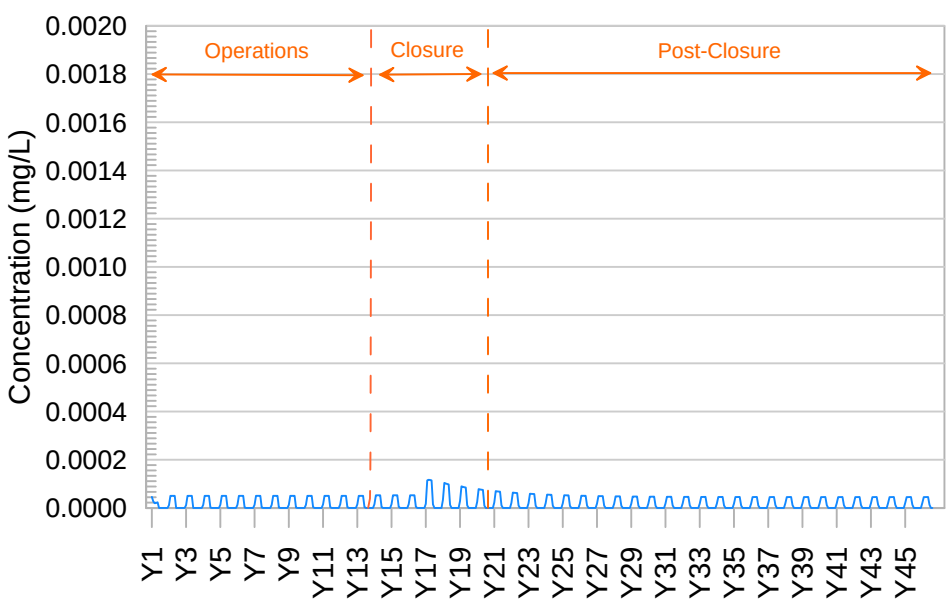
Copper - PN05



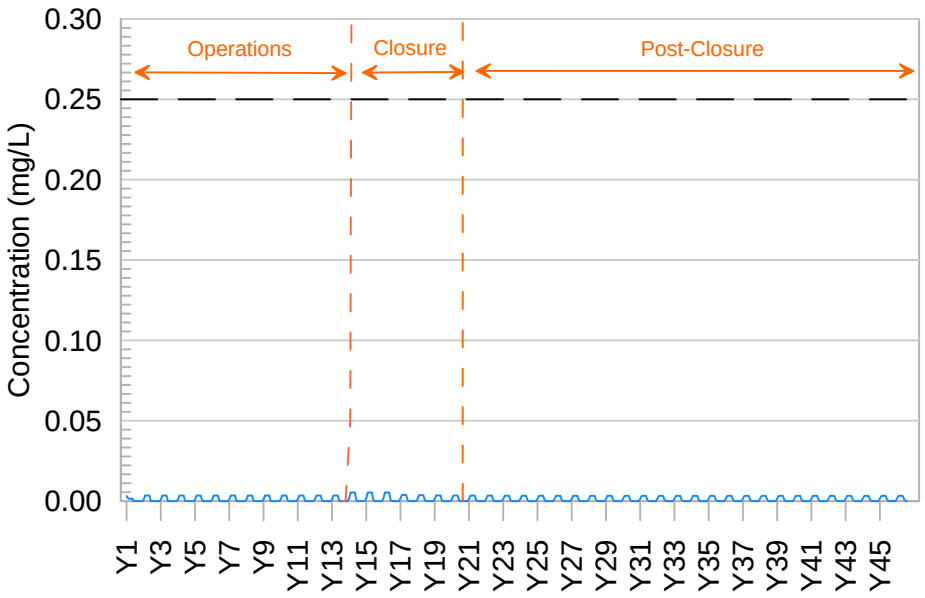


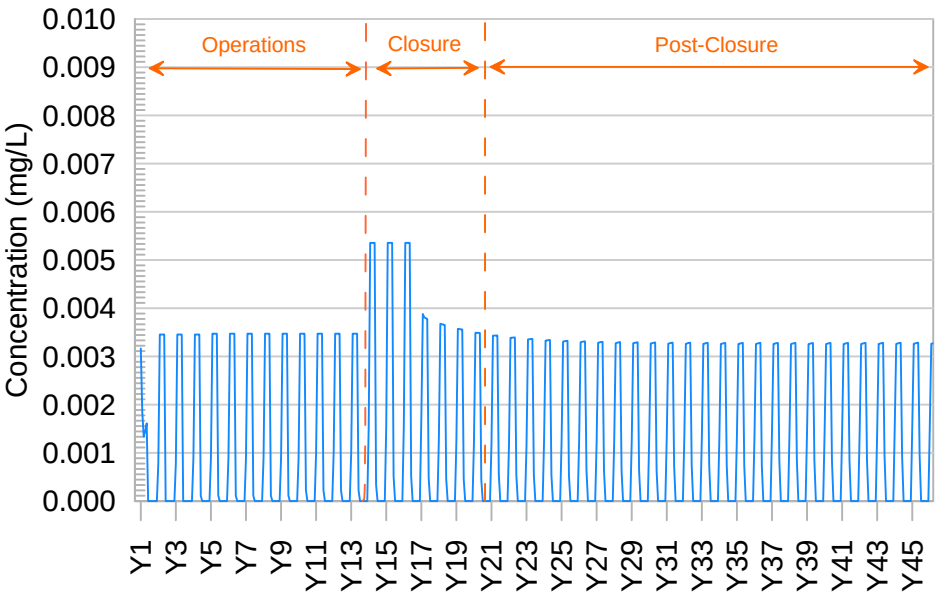
Lead - PN05





Nickel - PN05





Monthly Mean — — MDMER

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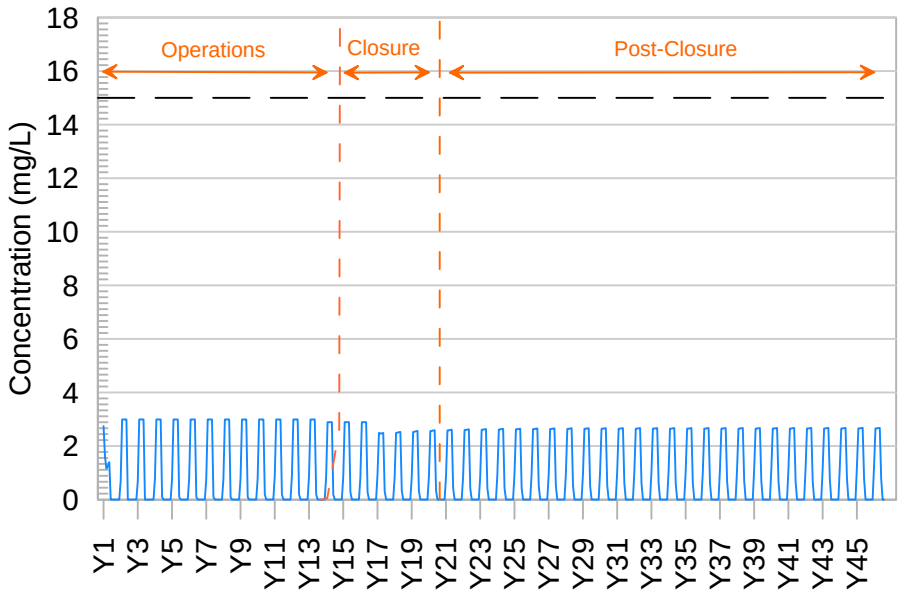
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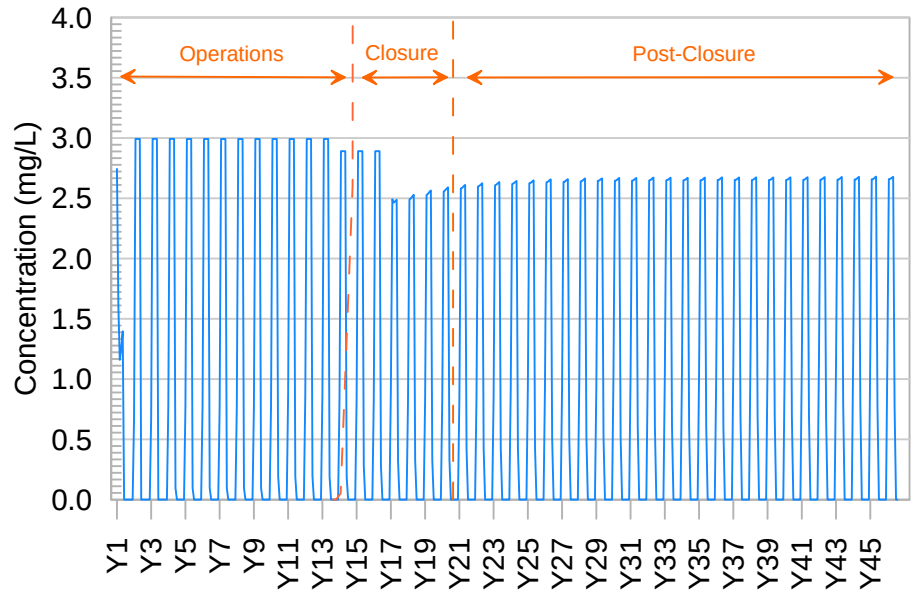
PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN05 (PART 1)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-6

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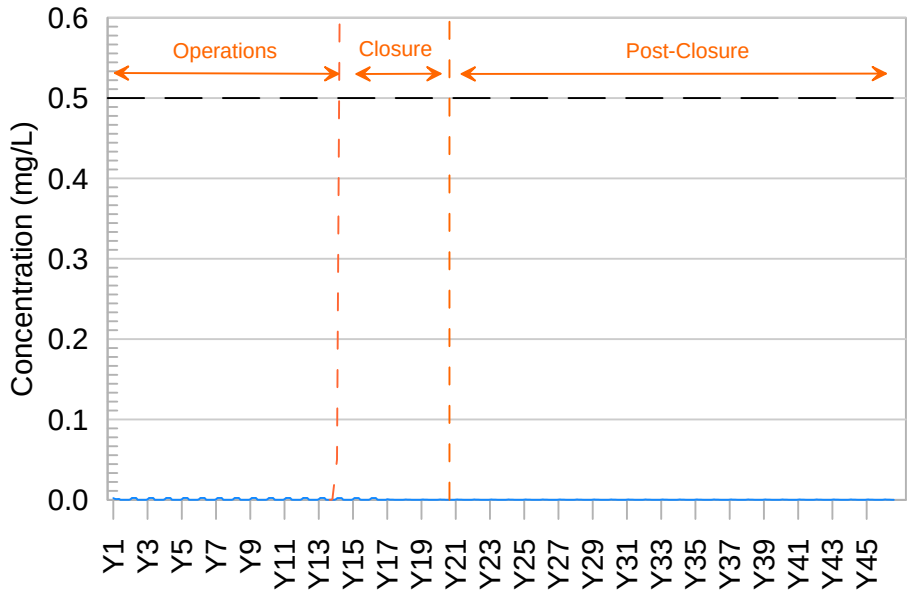
BGC Engineering

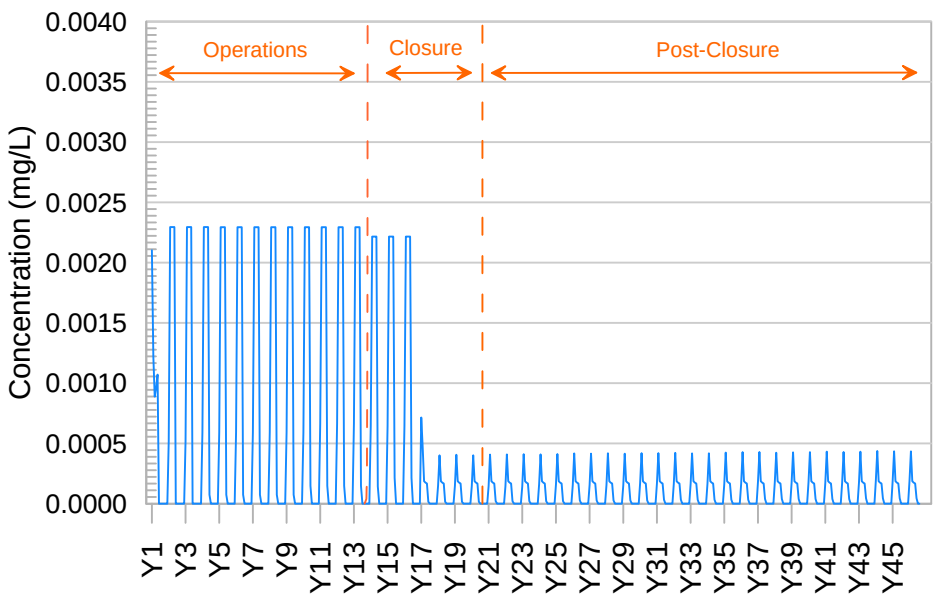
TSS - PN05



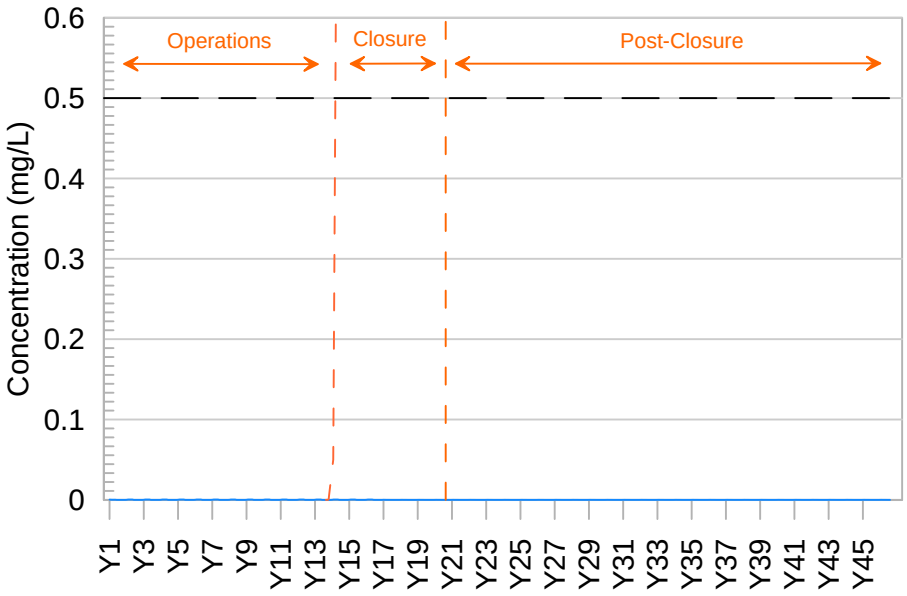


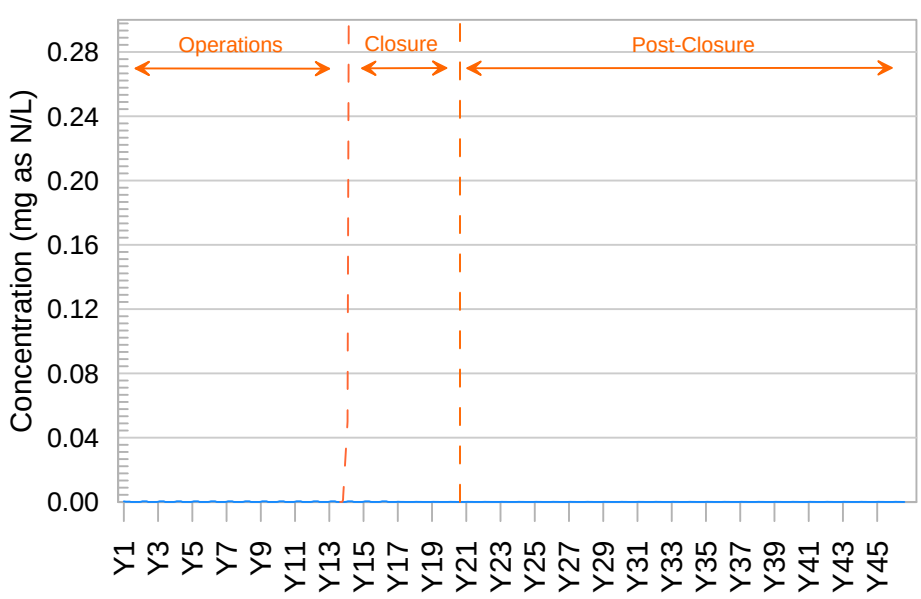
Total CN - PN05



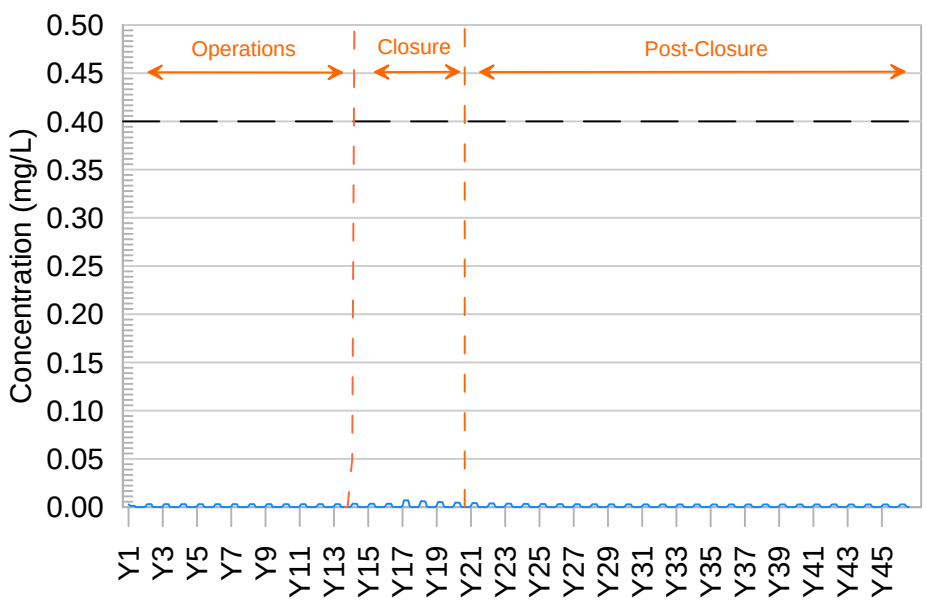


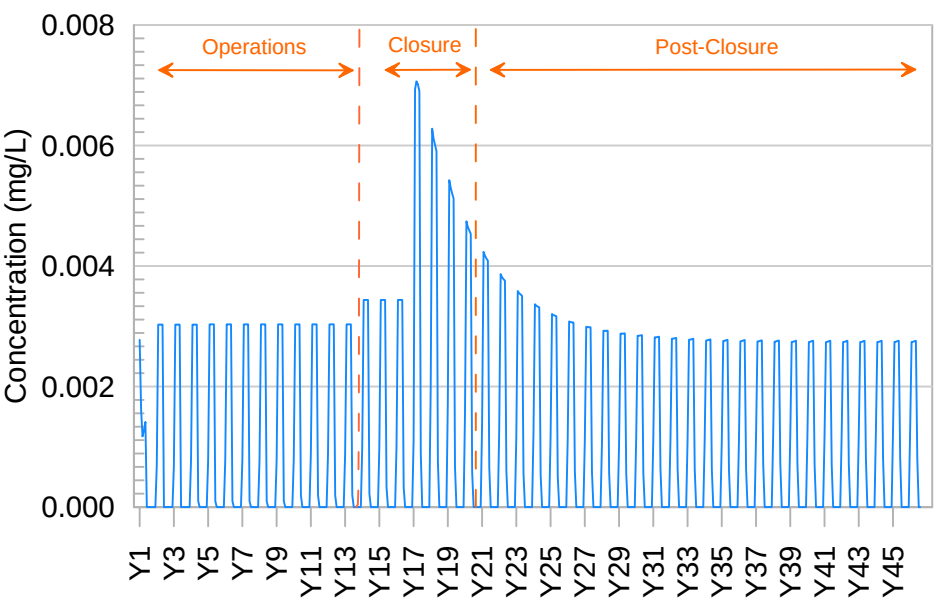
Un-ionized Ammonia - PN05





Zinc - PN05





Monthly Mean — — MDMER

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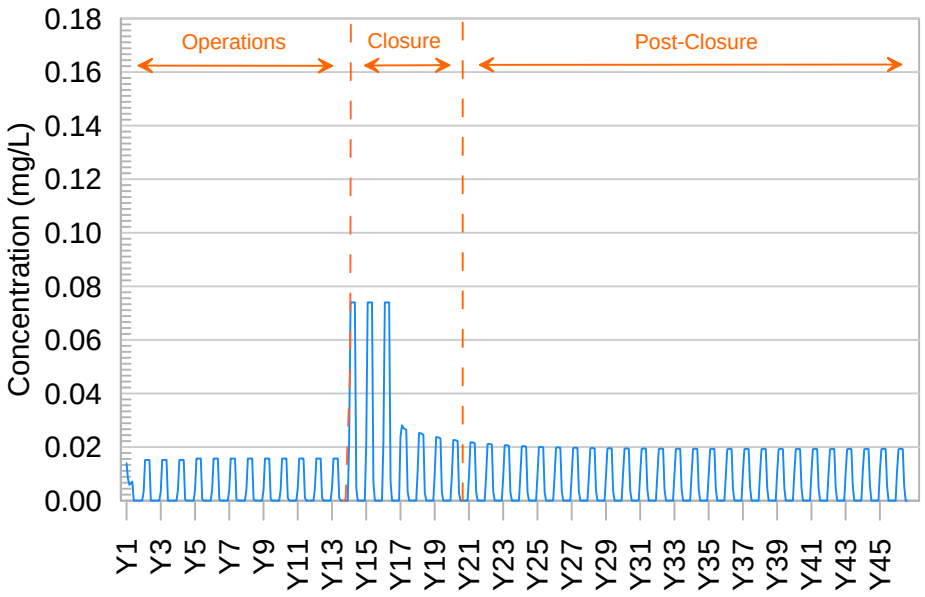
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PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN05 (PART 2)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-7

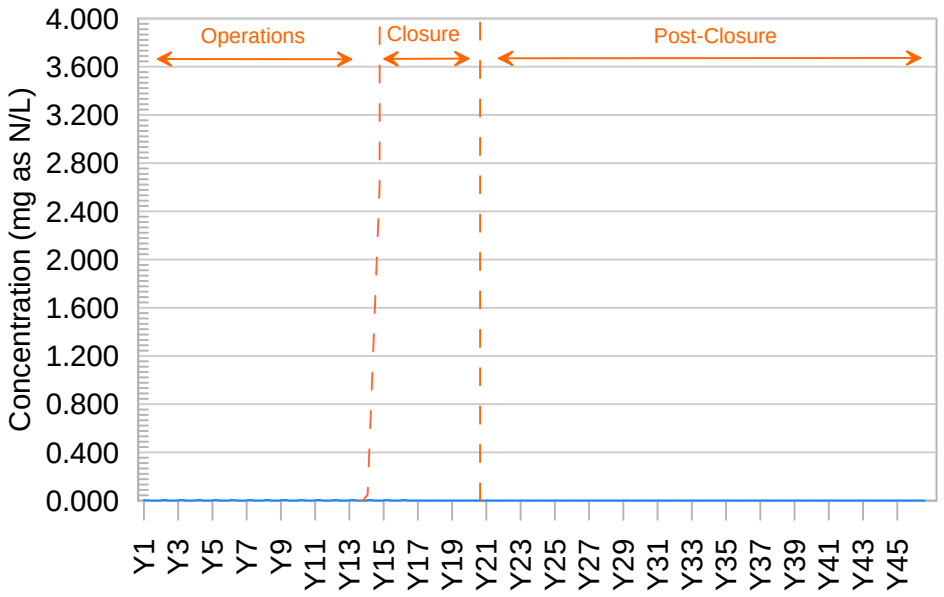
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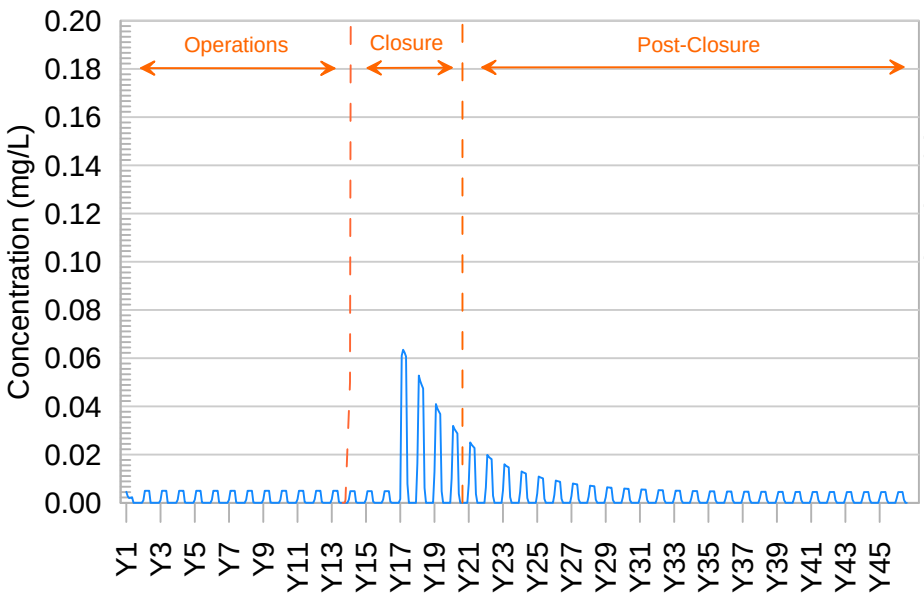
Aluminium - PN05



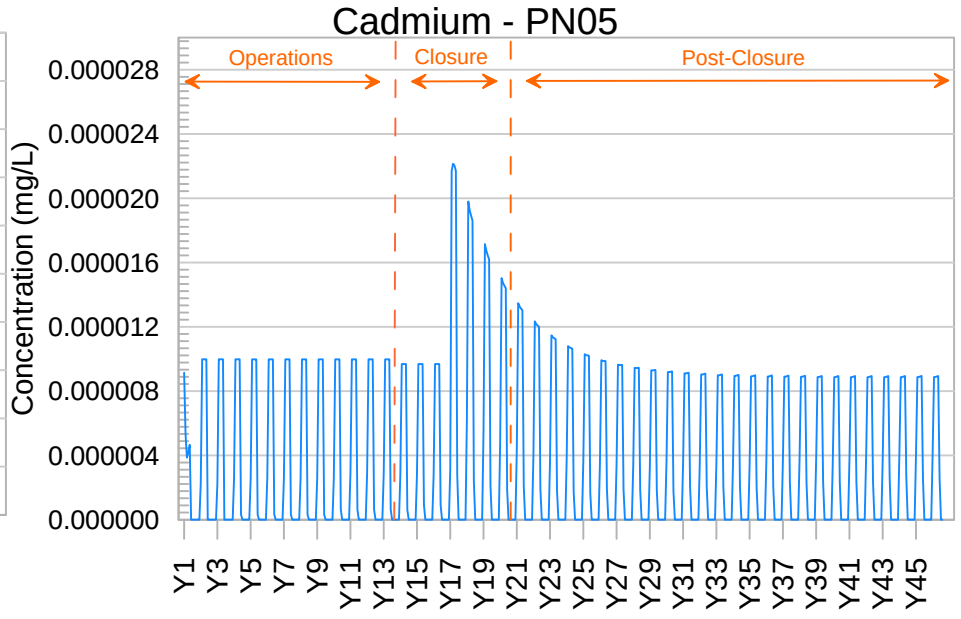
Total Ammonia - PN05



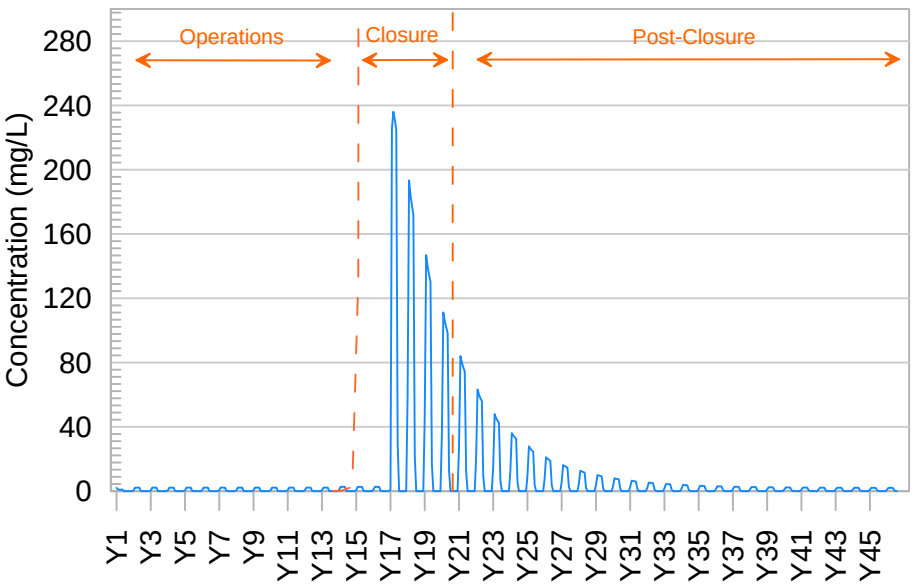
Boron - PN05



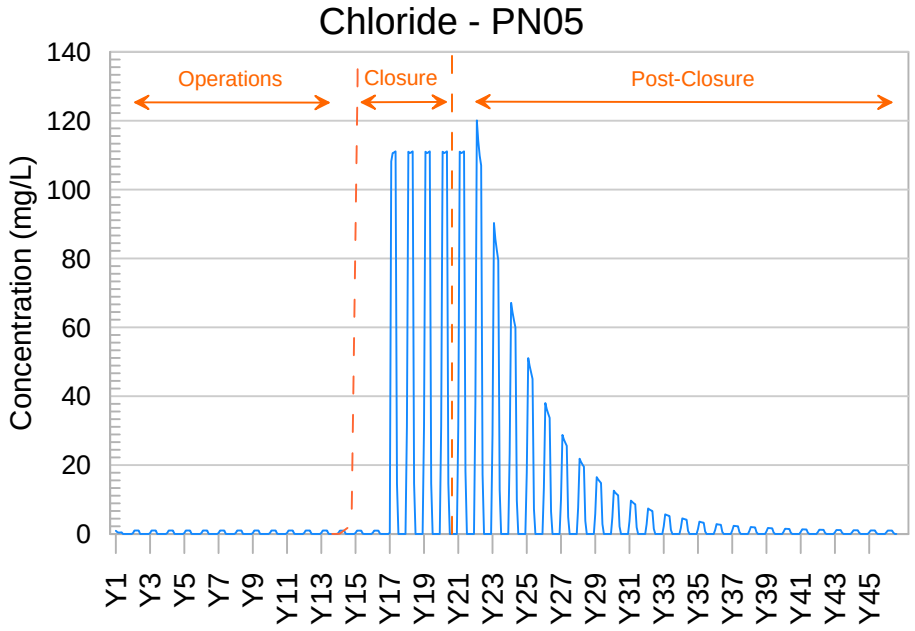
Cadmium - PN05



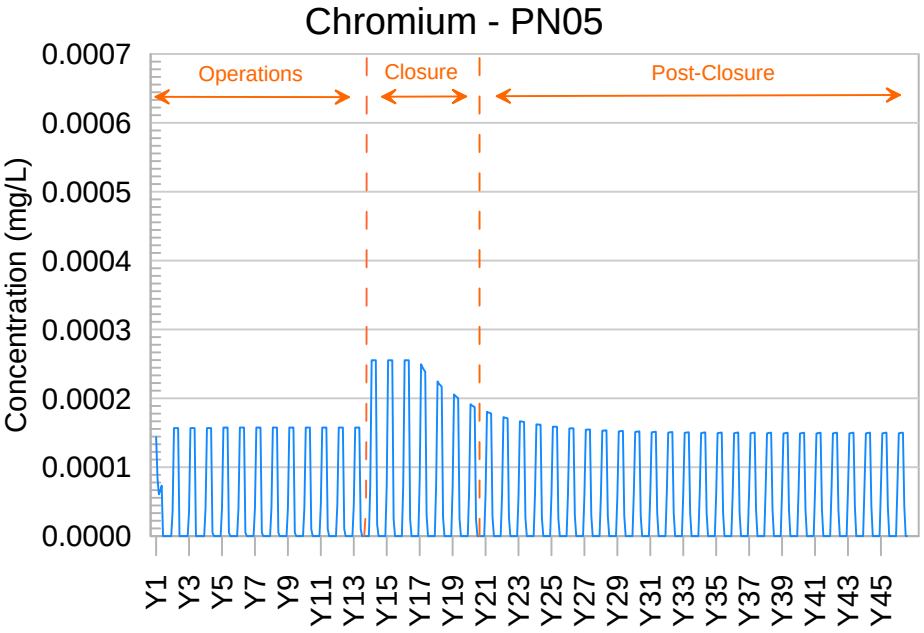
Calcium - PN05



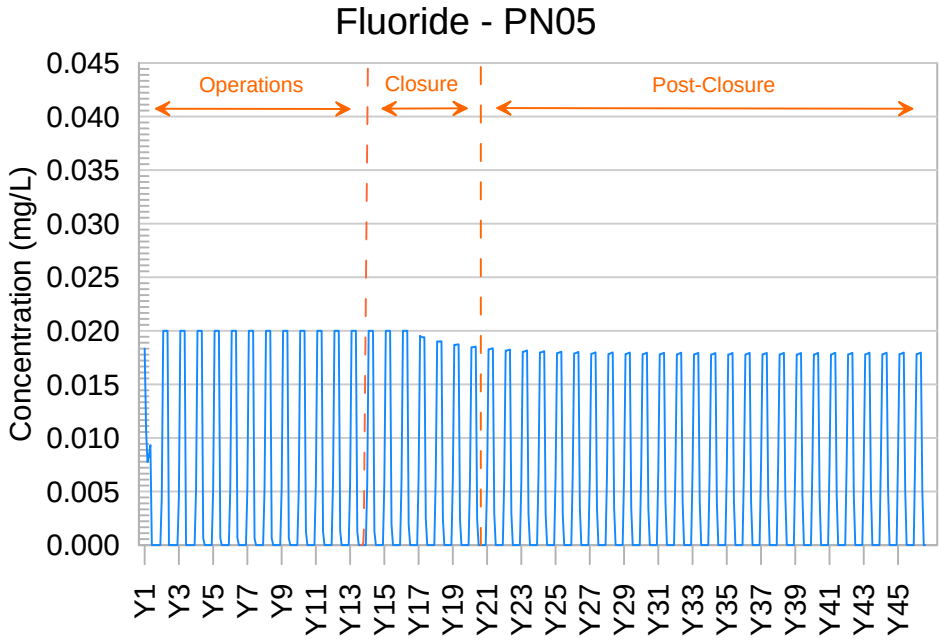
Chloride - PN05



Chromium - PN05



Fluoride - PN05



Monthly Mean

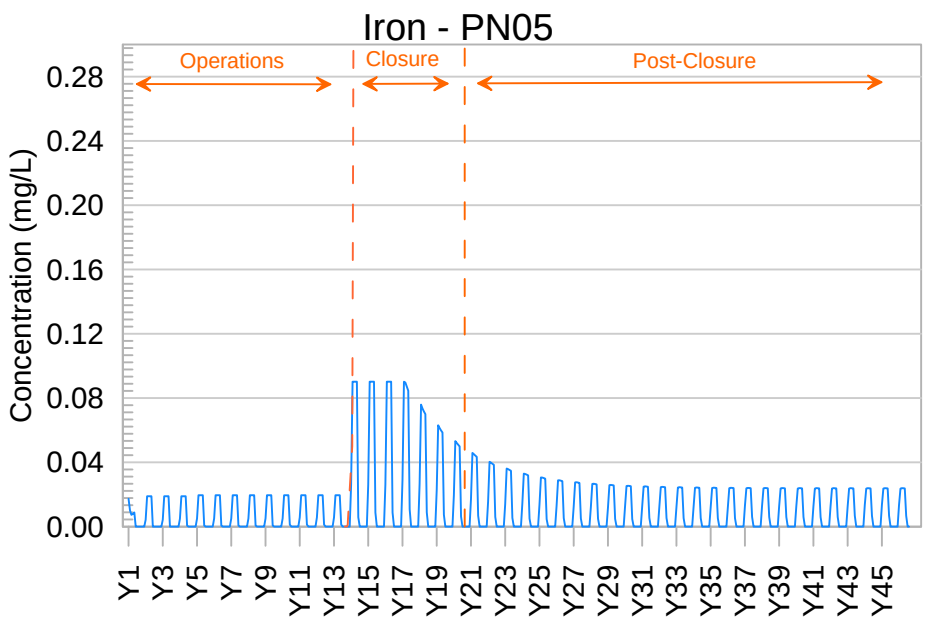
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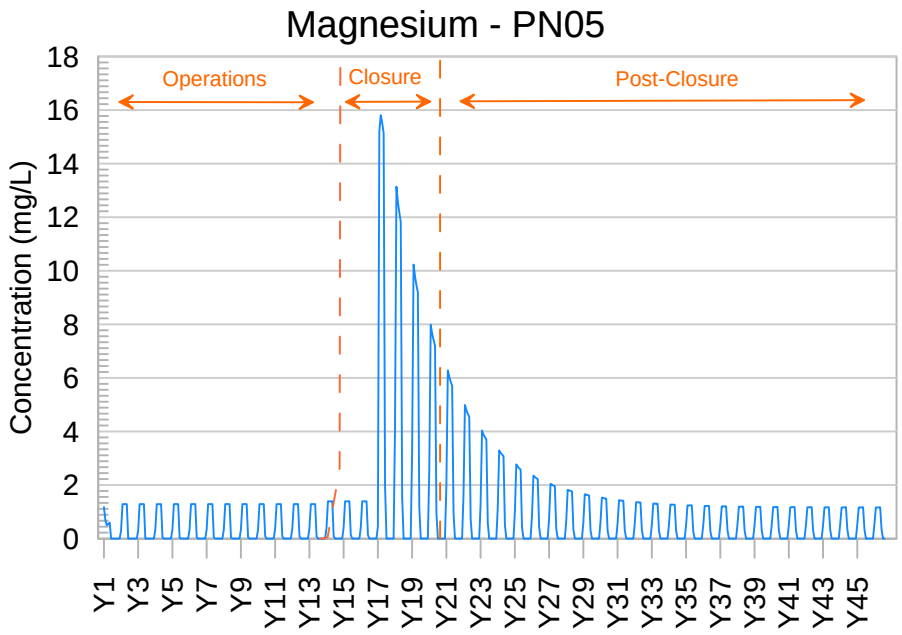
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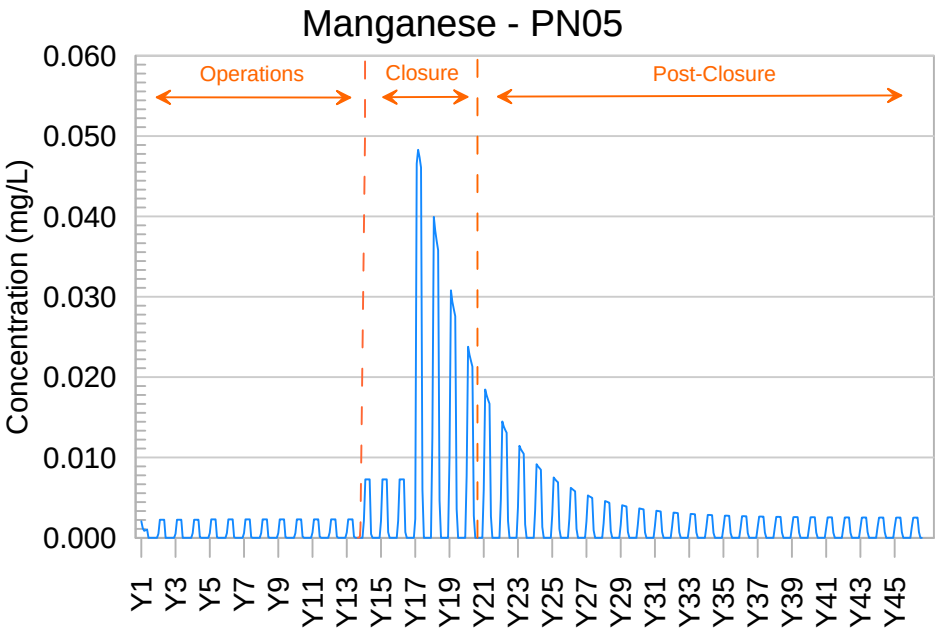
PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN05 (PART 3)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-8

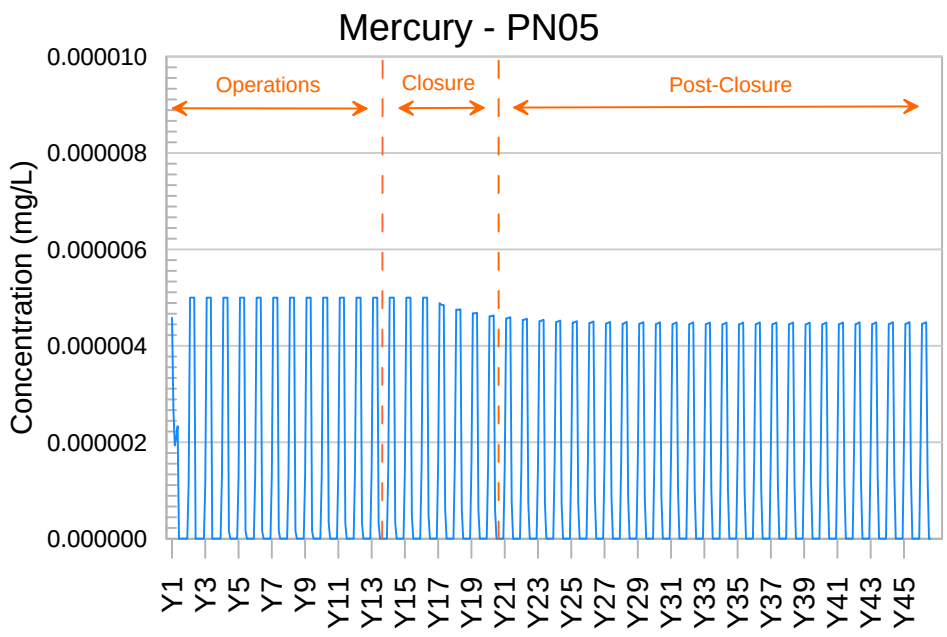
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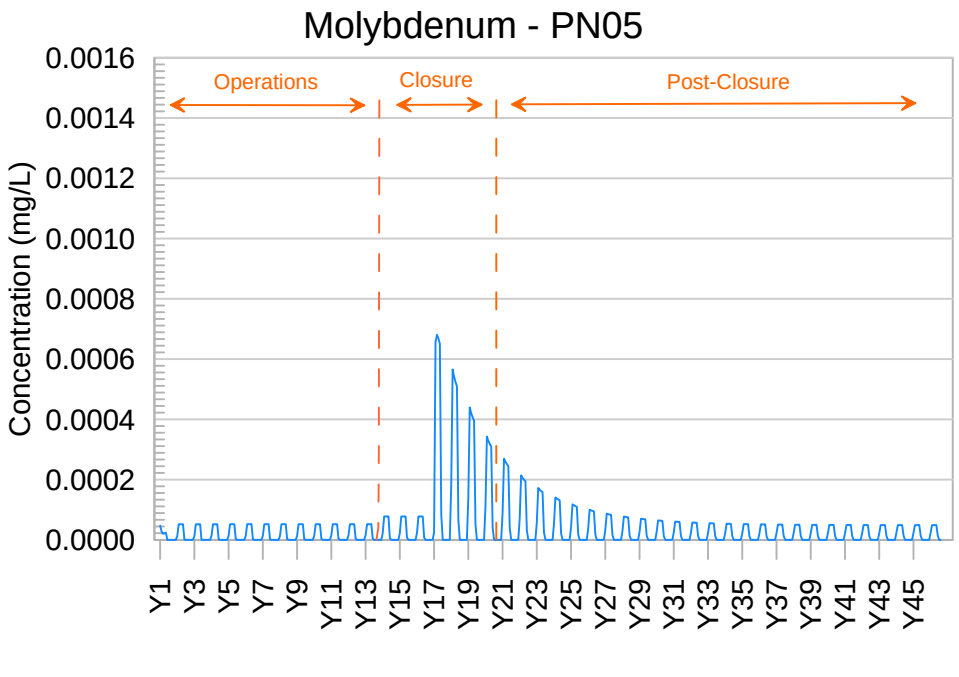
BGC Engineering

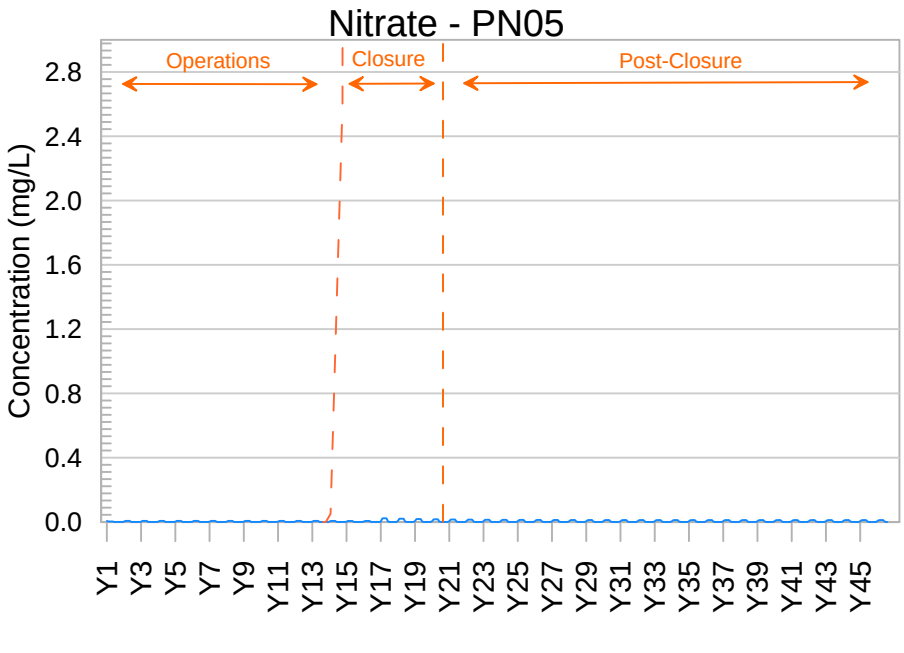


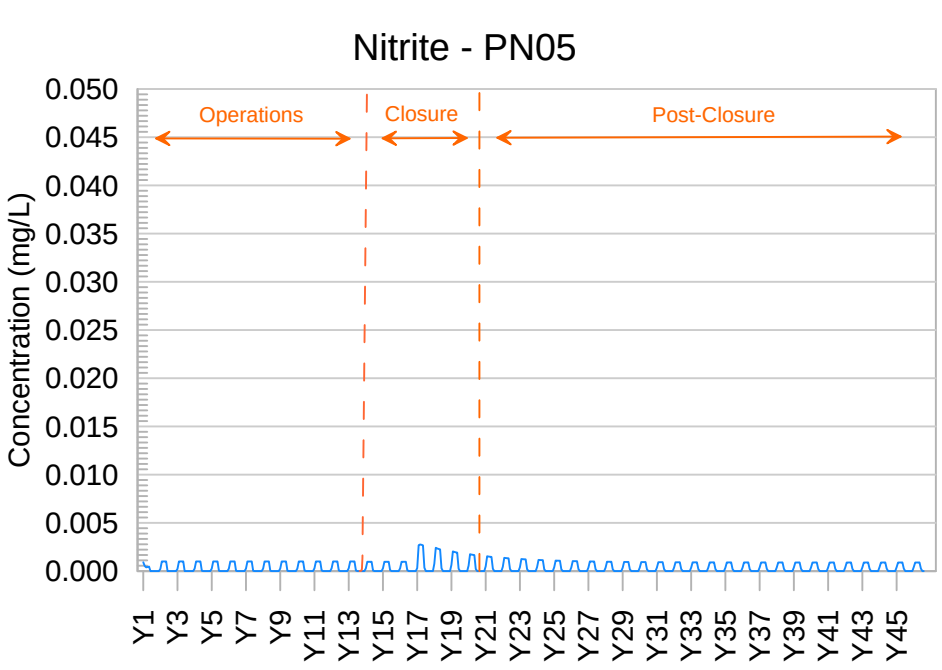


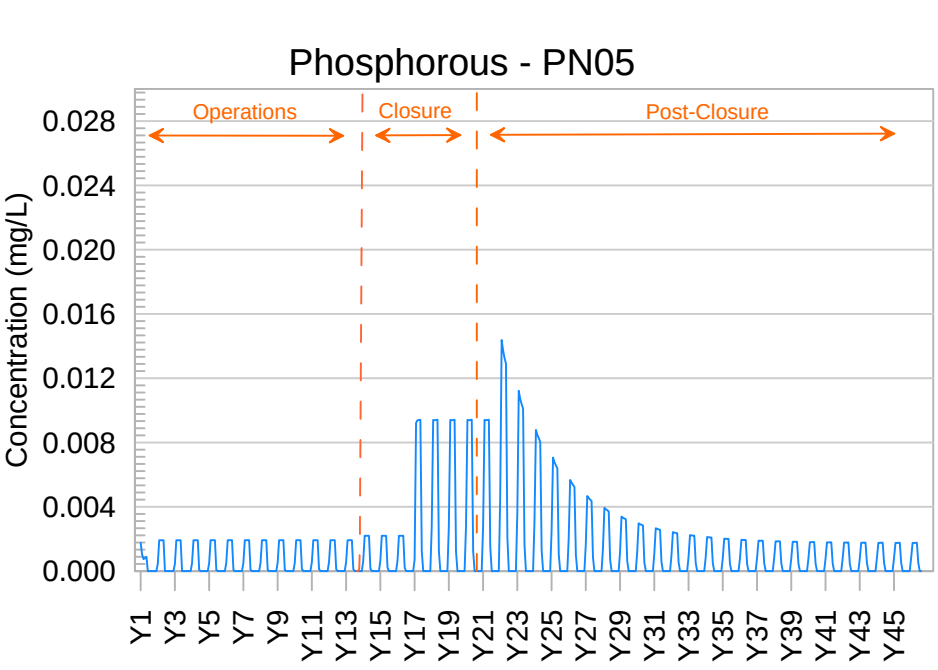












Monthly Mean

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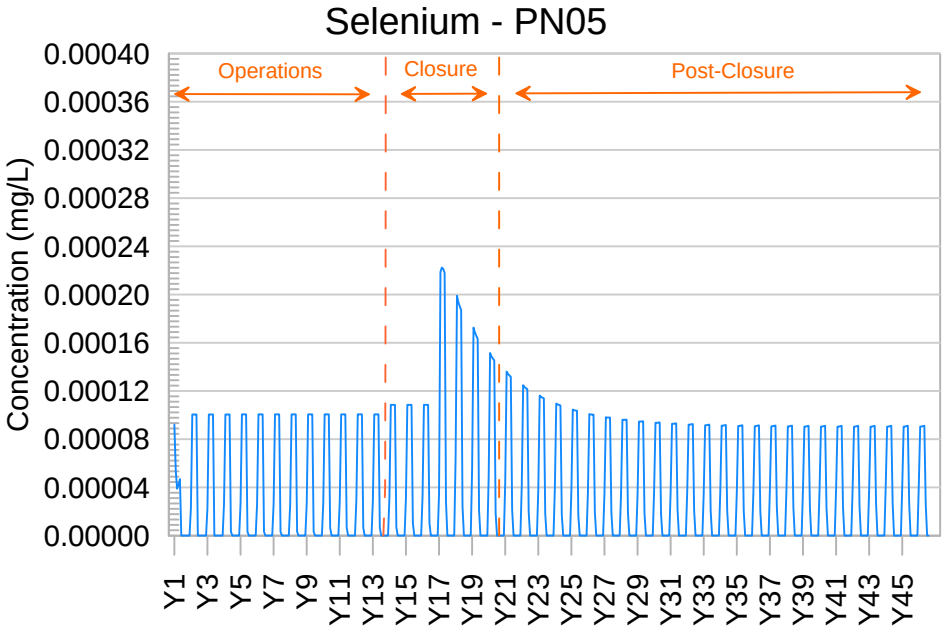
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PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN05 (PART 4)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-9

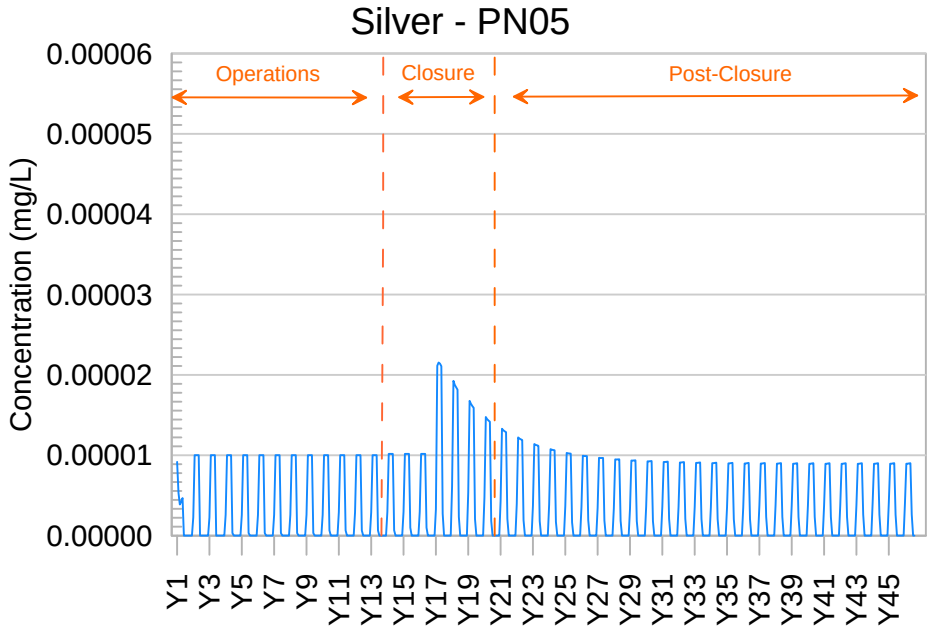
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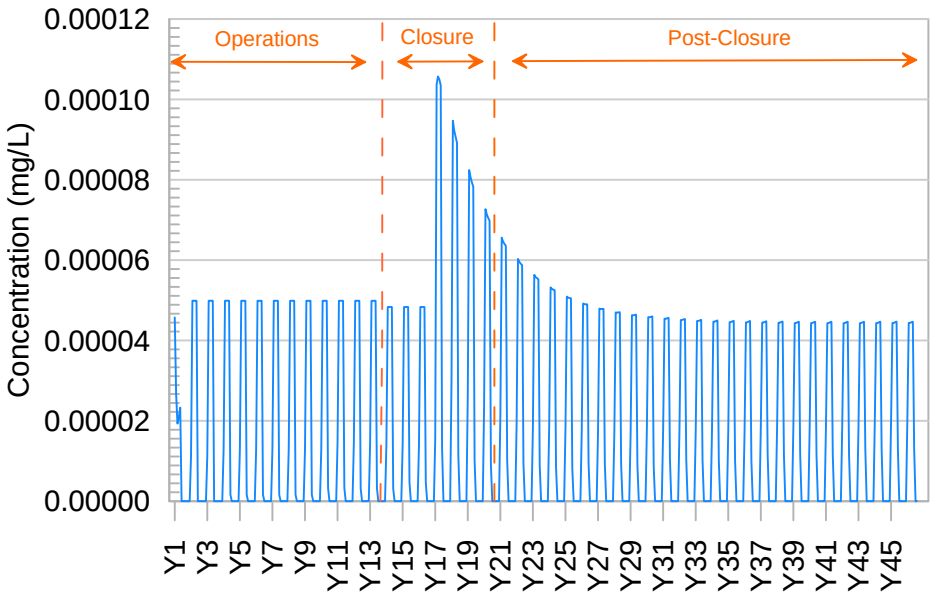
Selenium - PN05



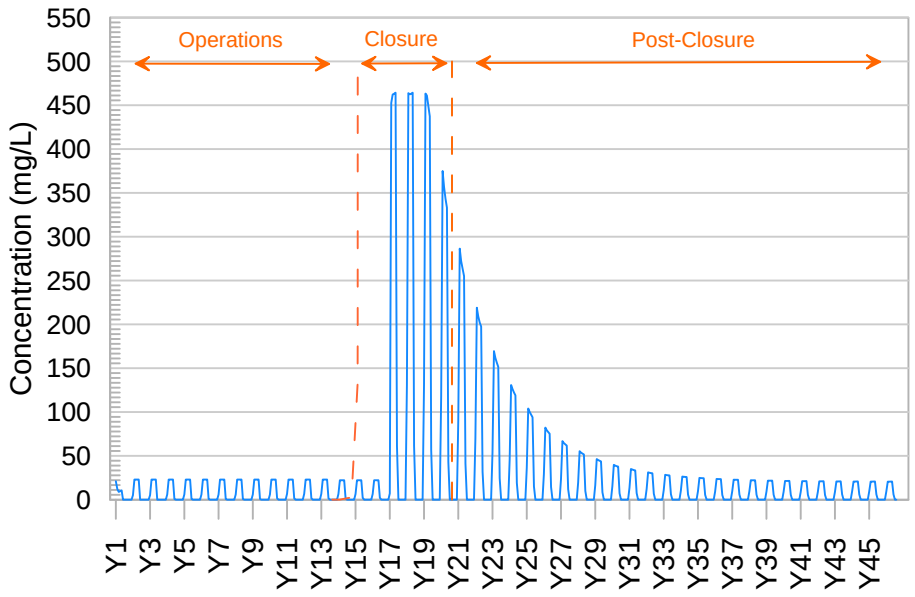
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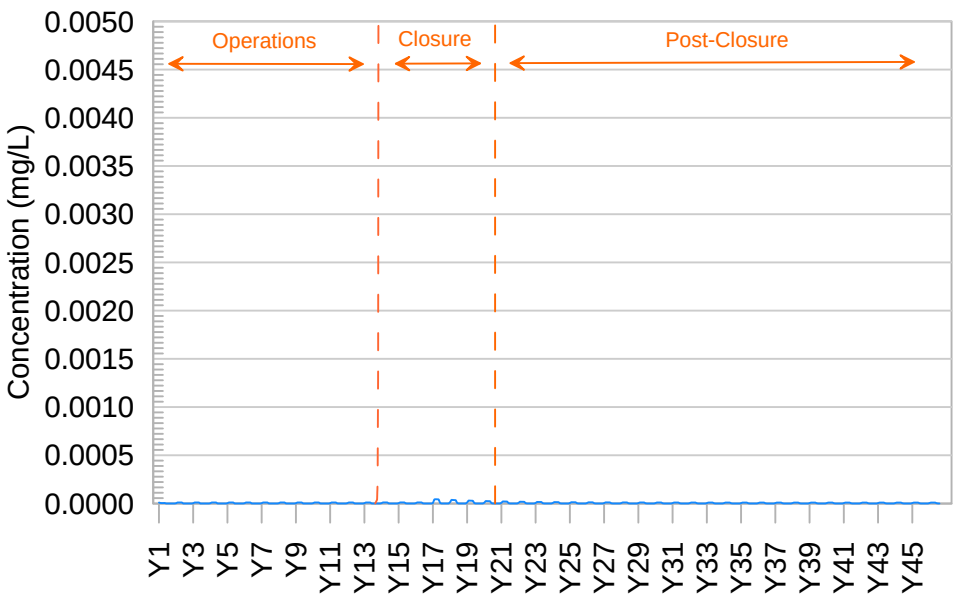
Thallium - PN05



TDS - PN05



Uranium - PN05



Monthly Mean

NOTES:

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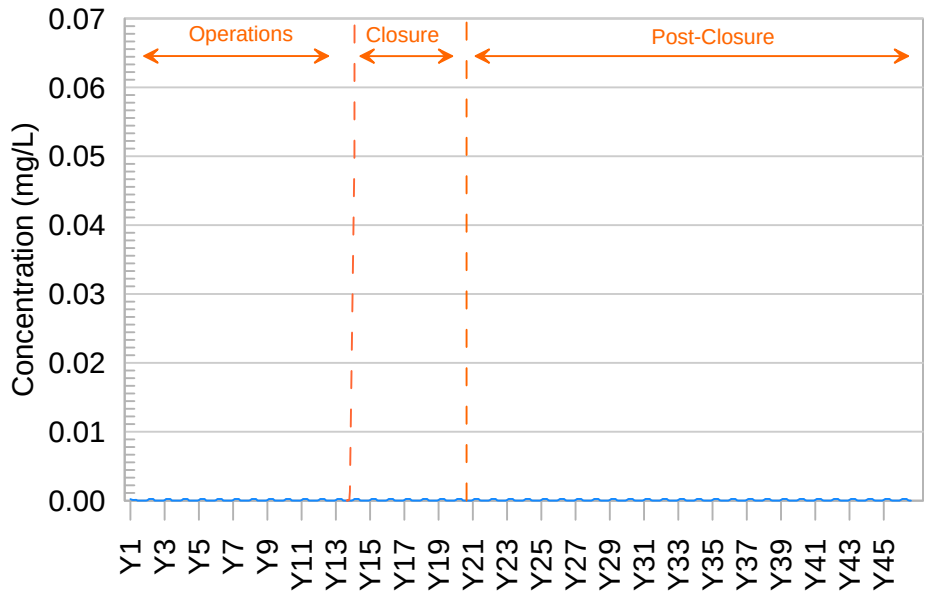
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CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-10

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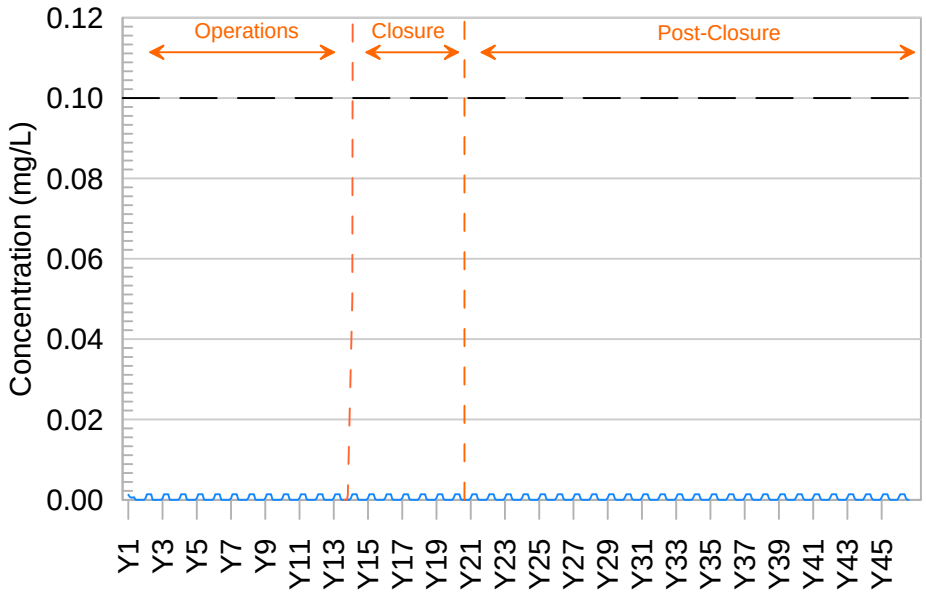
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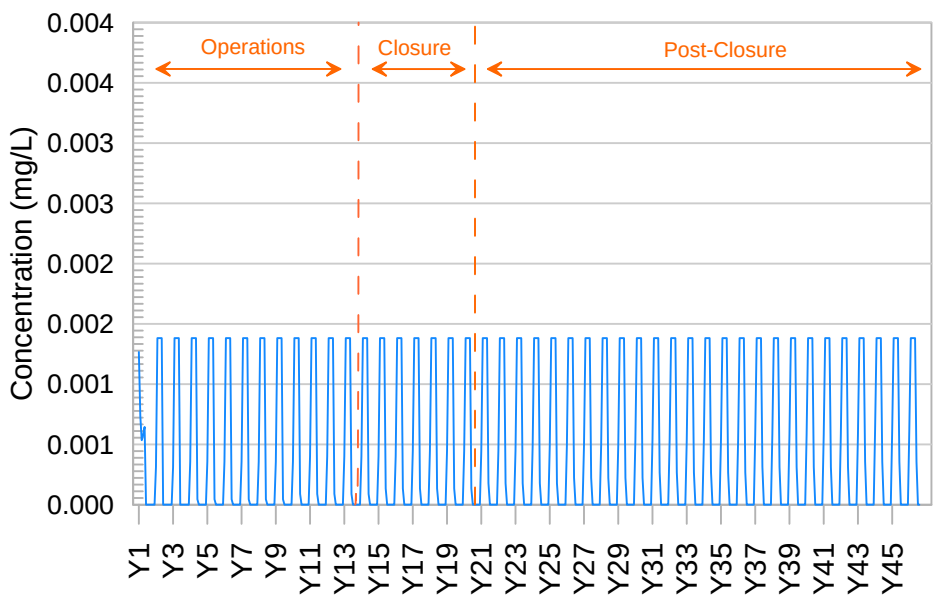
Arsenic - PN06



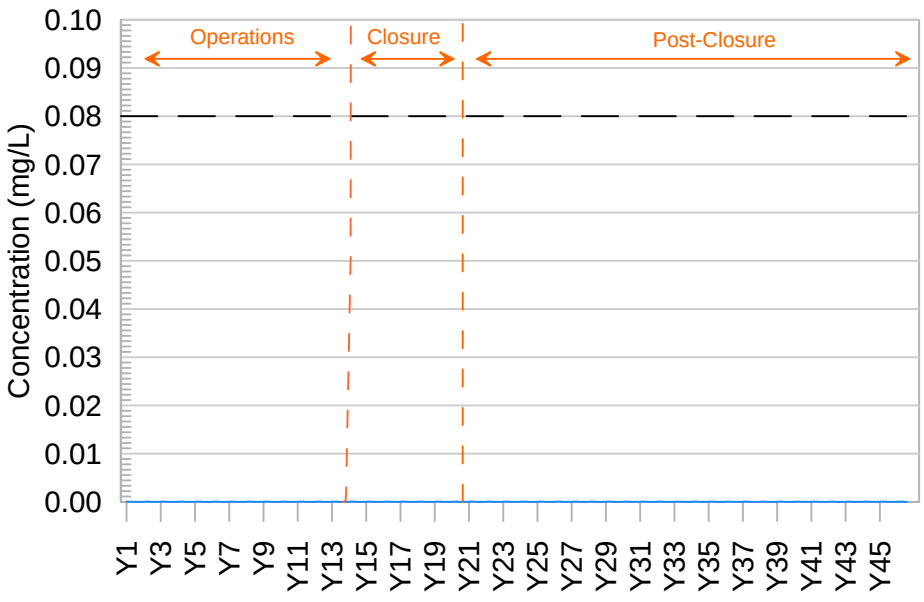


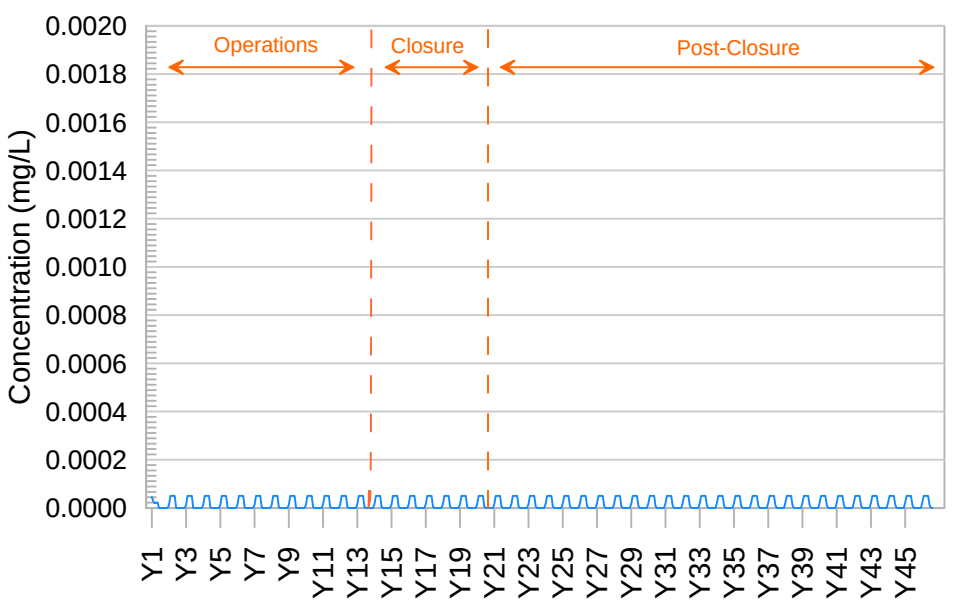
Copper - PN06



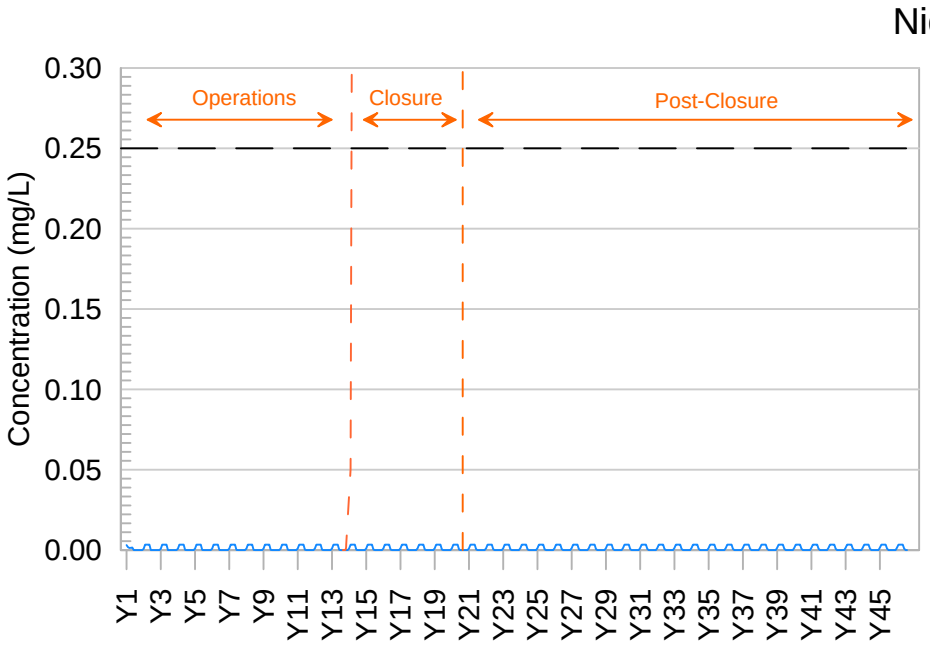


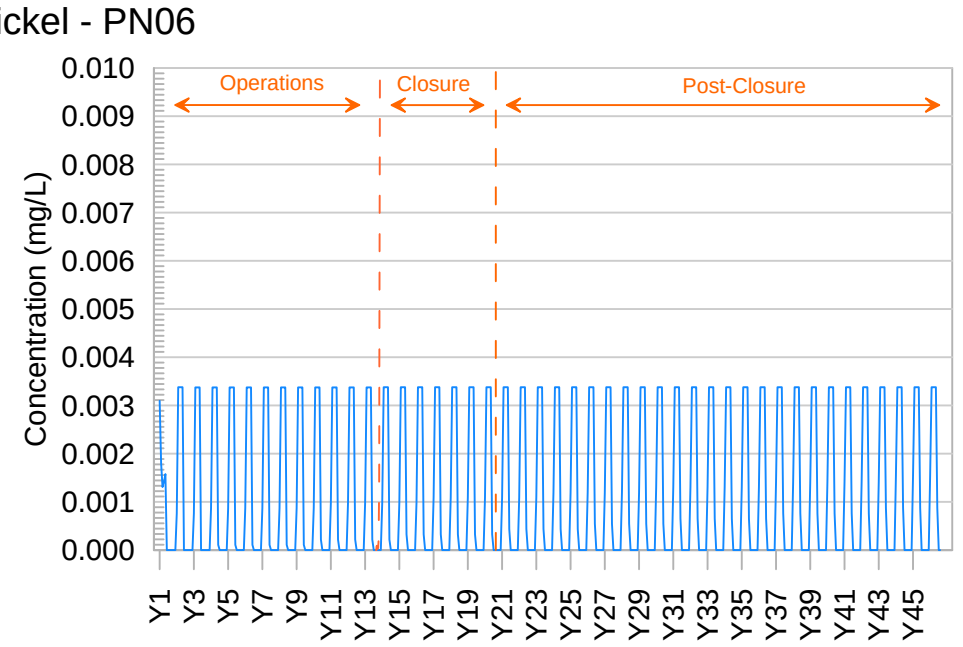
Lead - PN06





Nickel - PN06





Monthly Mean — — MDMER

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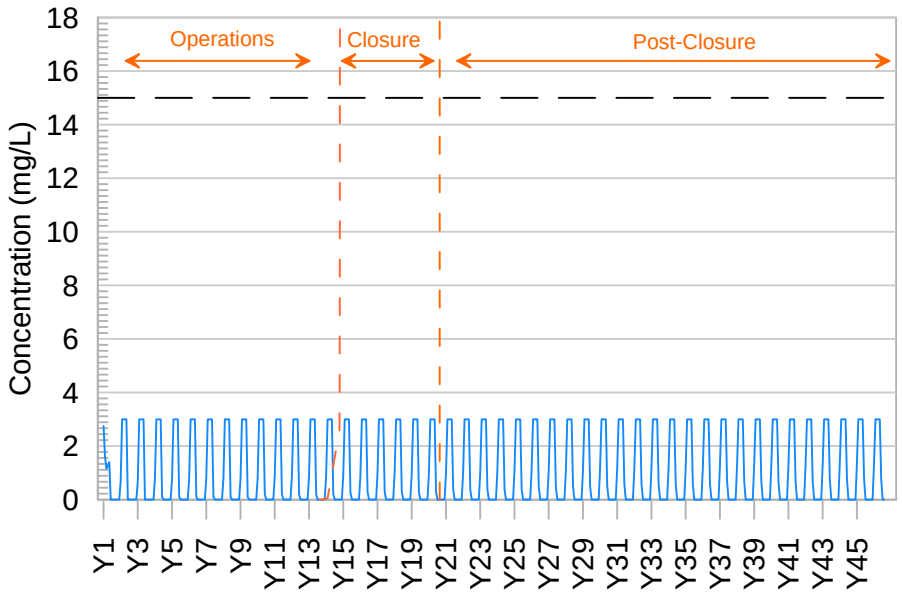
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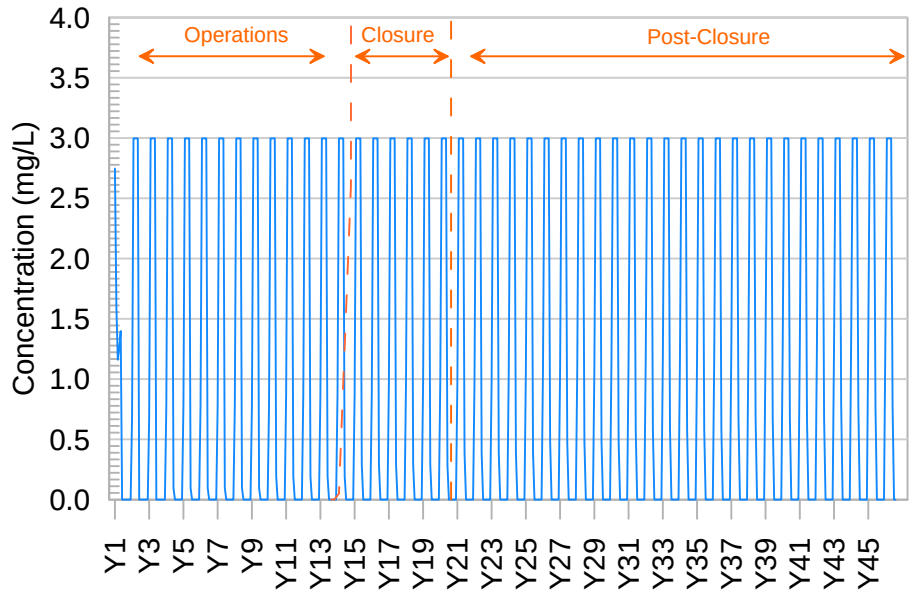
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CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-11

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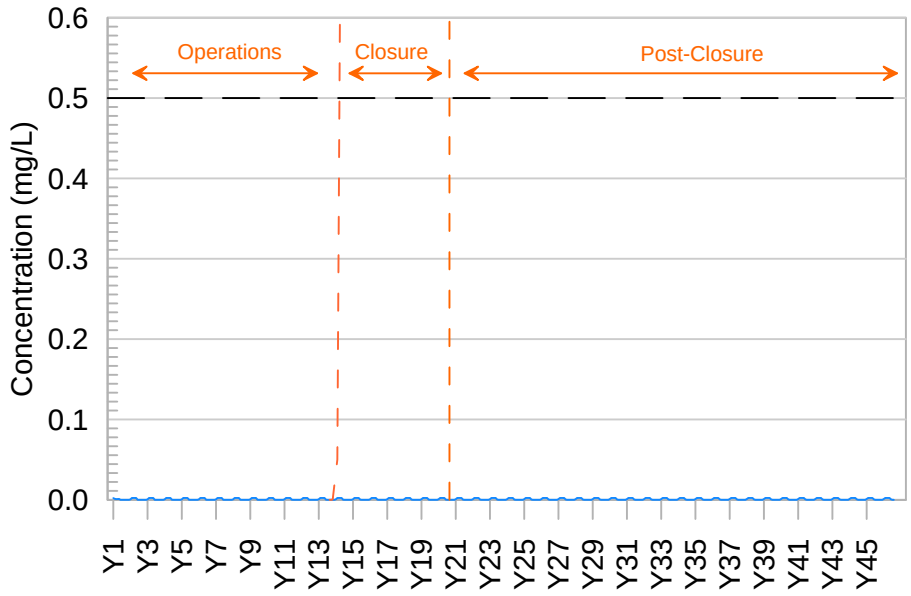
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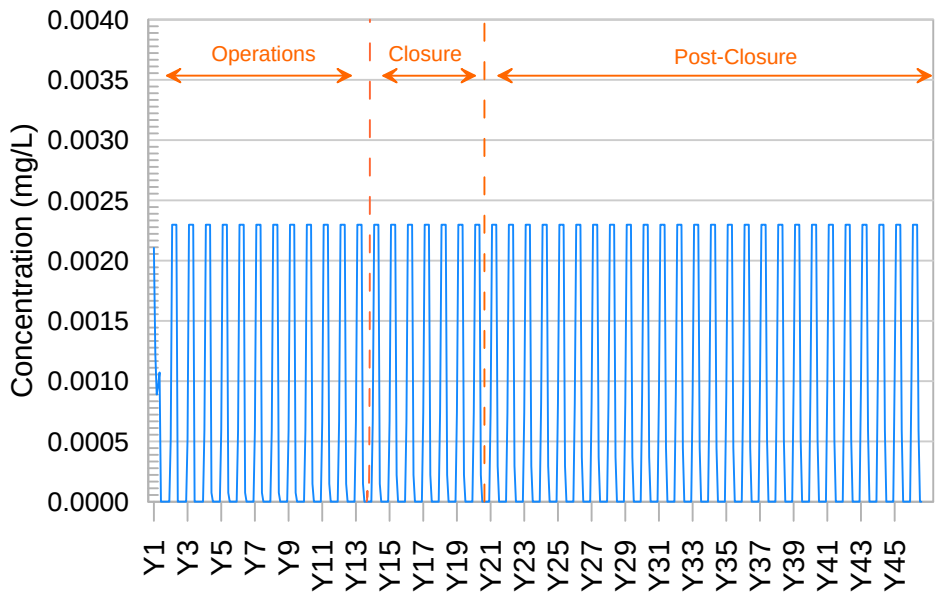
TSS - PN06



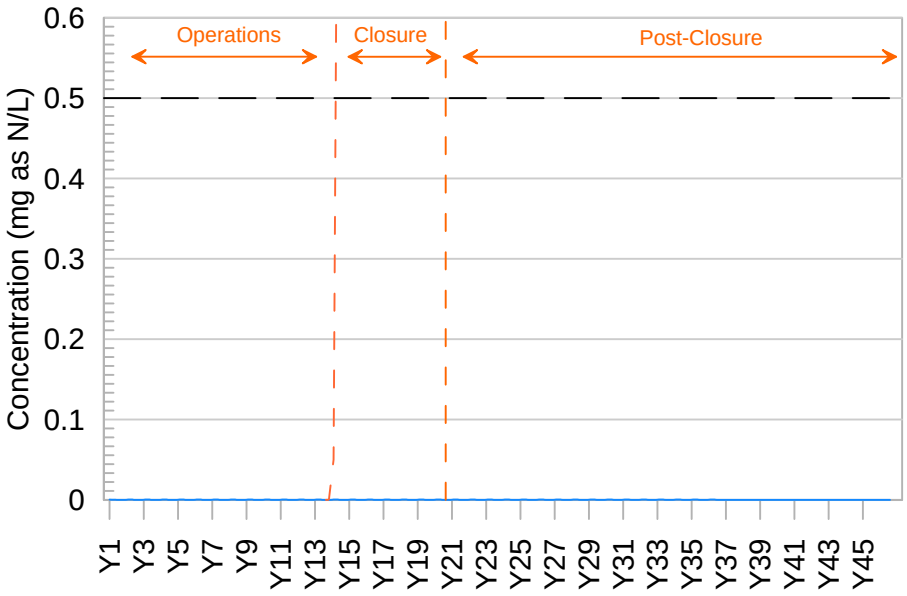


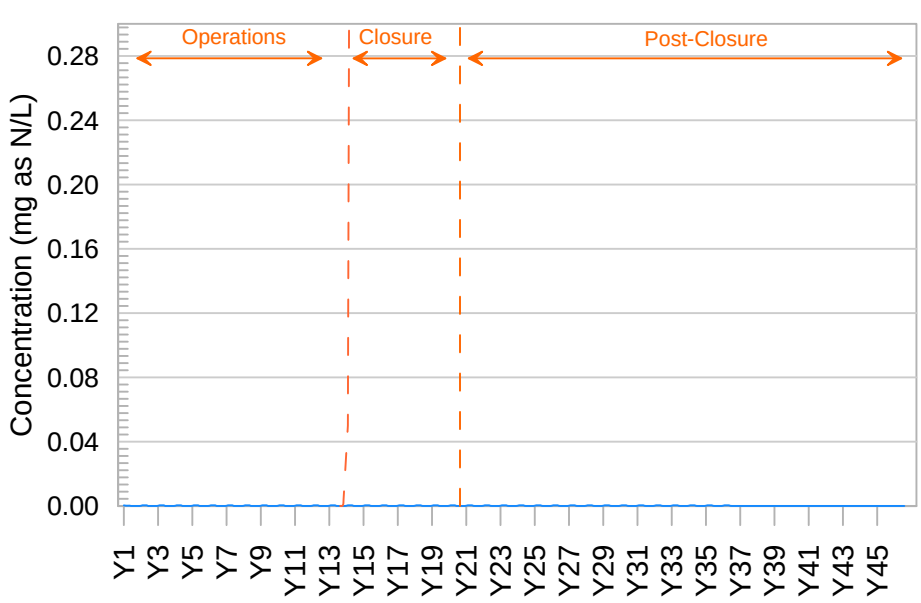
Total CN - PN06



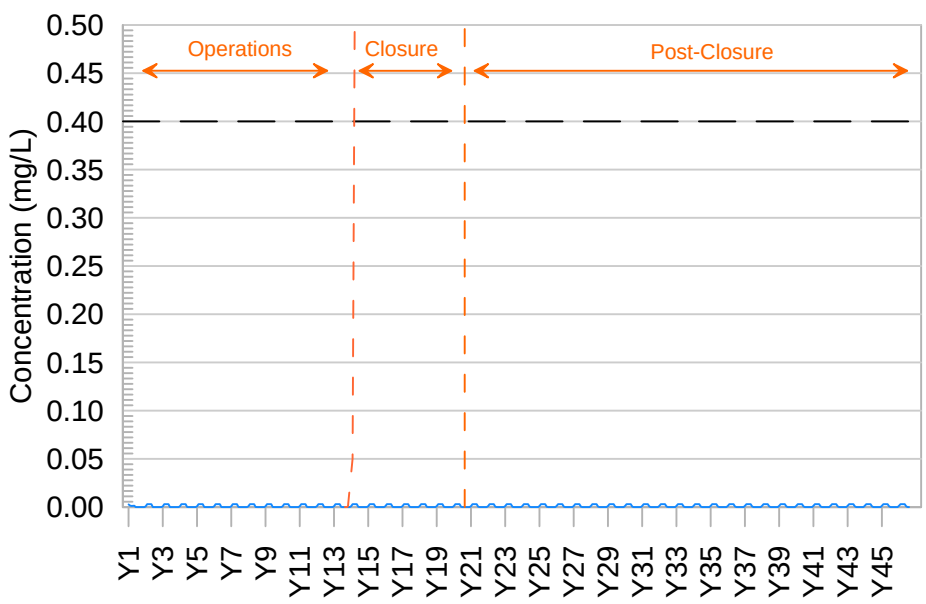


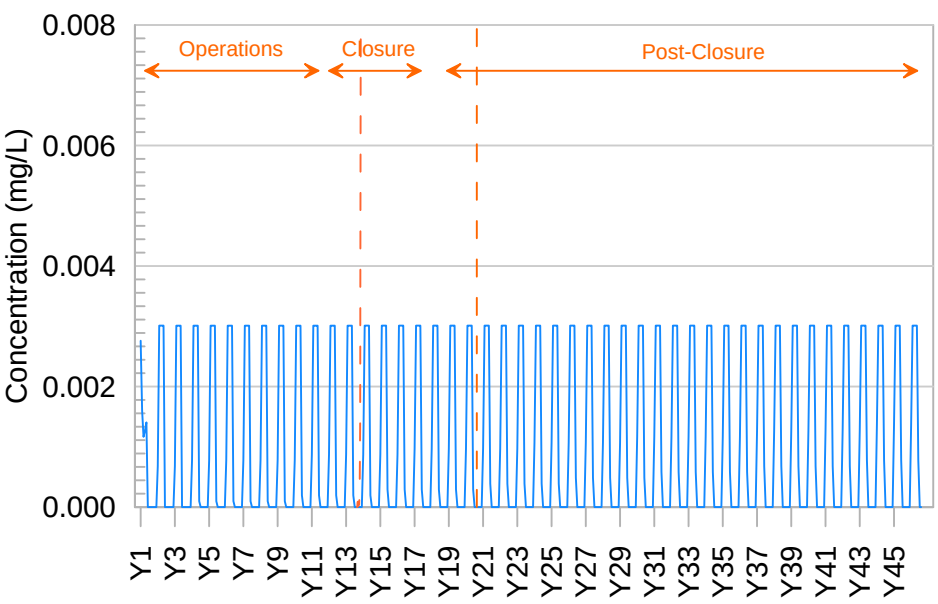
Un-ionized Ammonia - PN06





Zinc - PN06





Monthly Mean — — MDMER

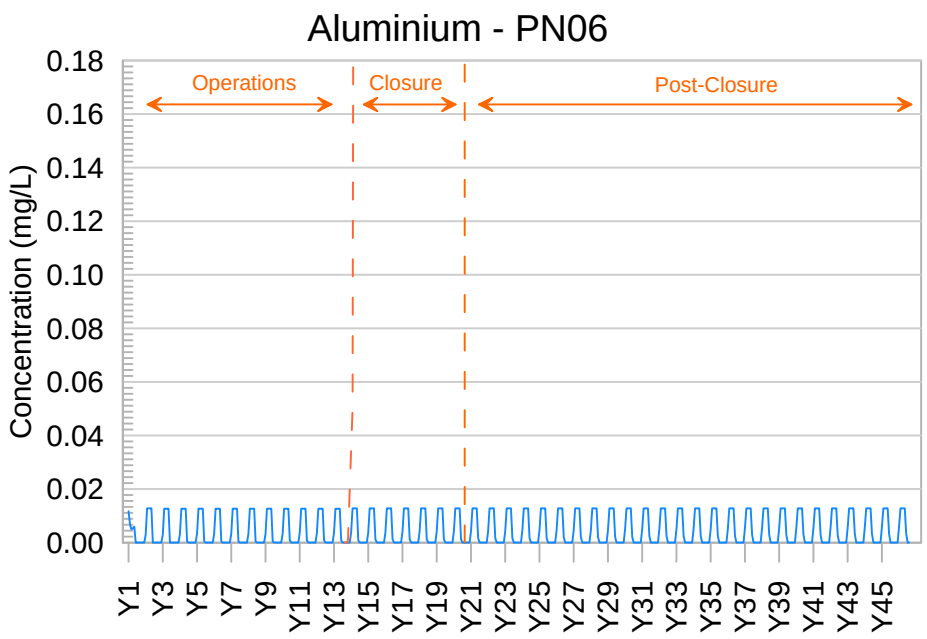
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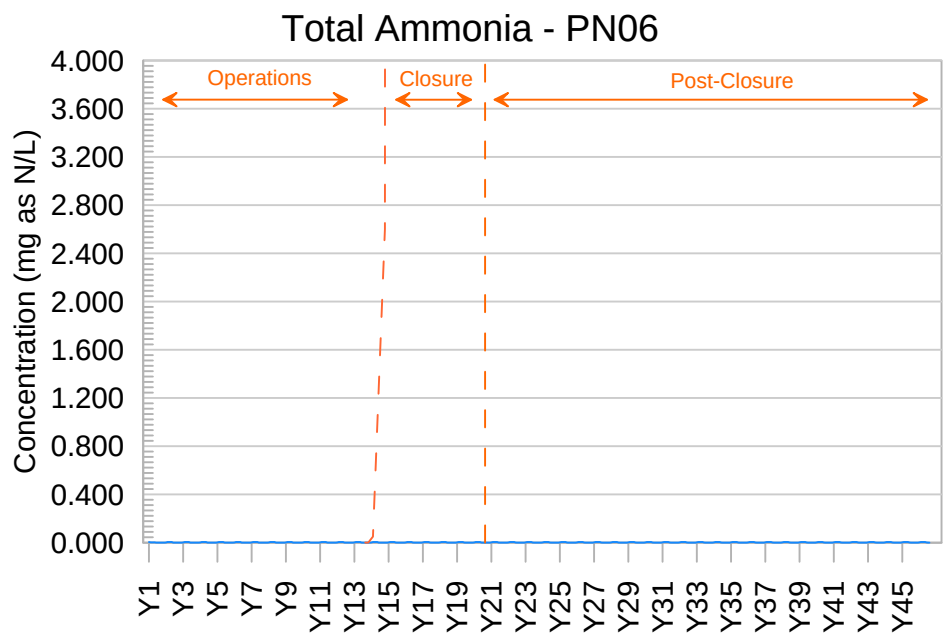
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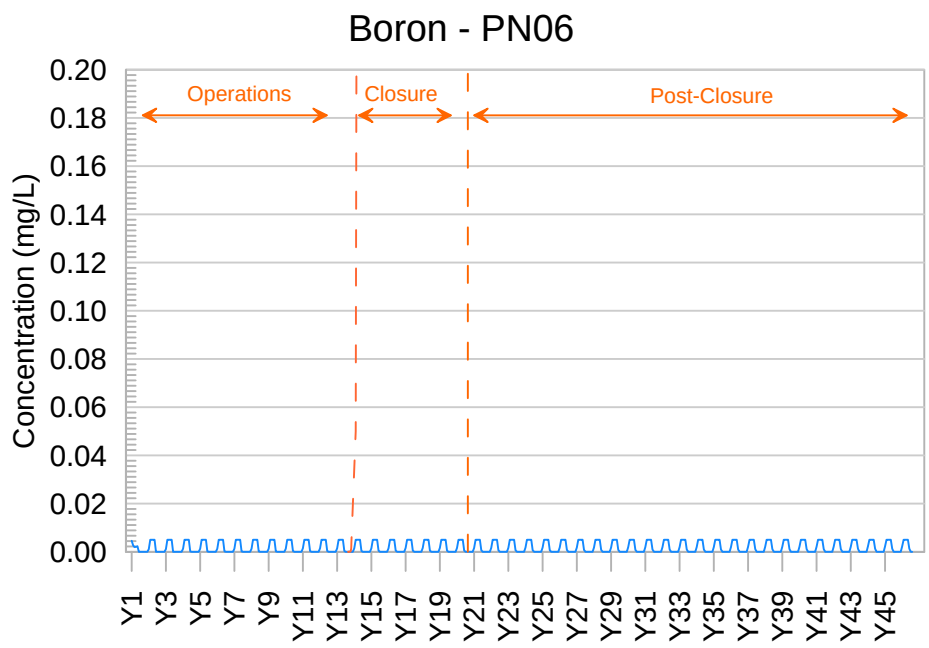
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PC	N/A	1829001	F-12

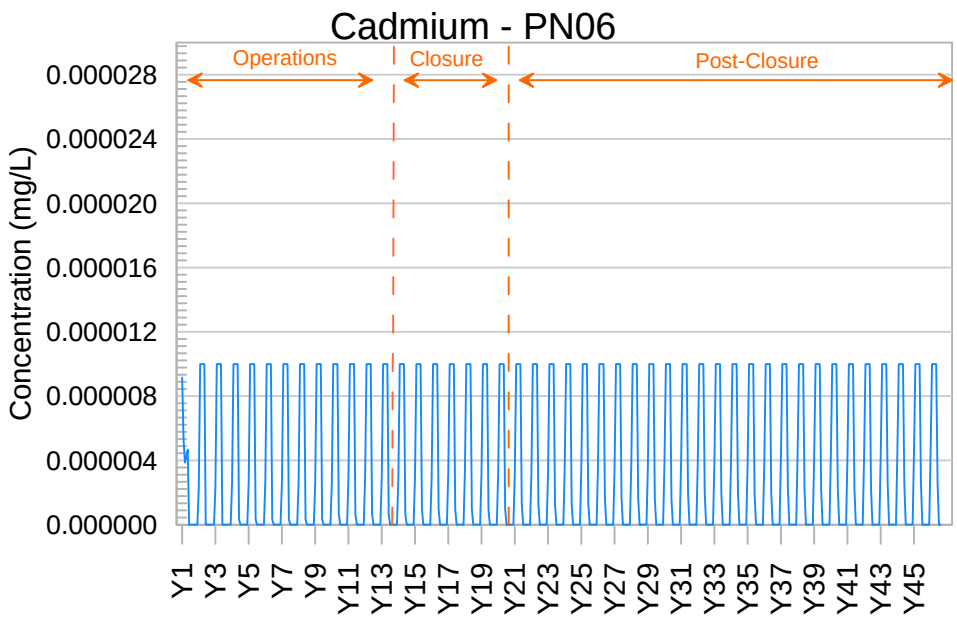
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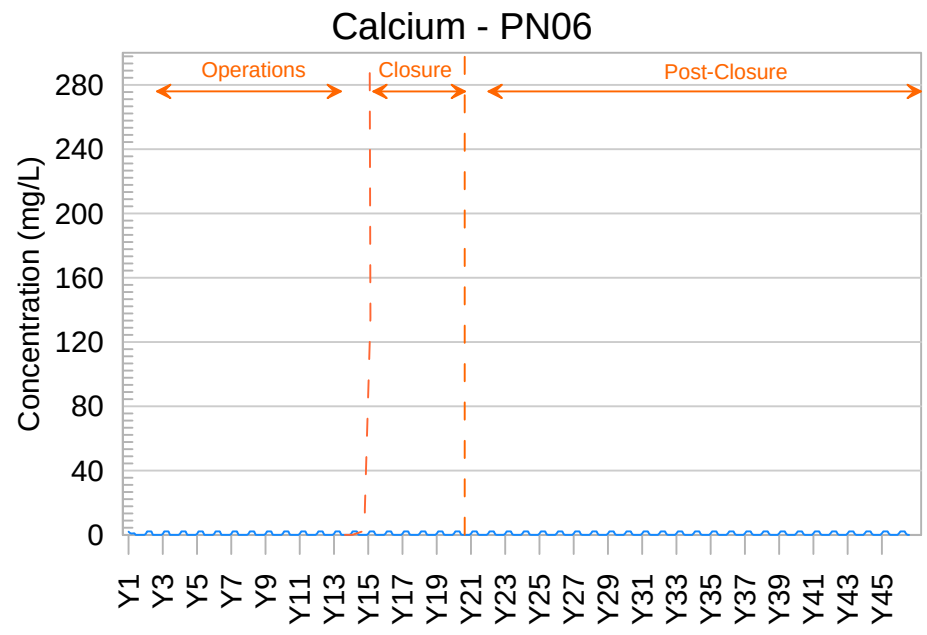
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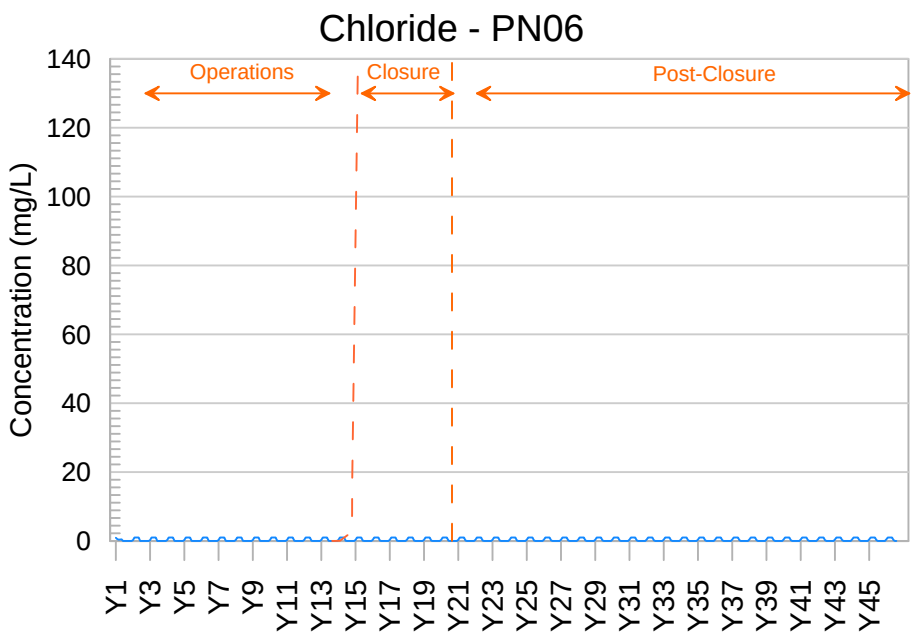


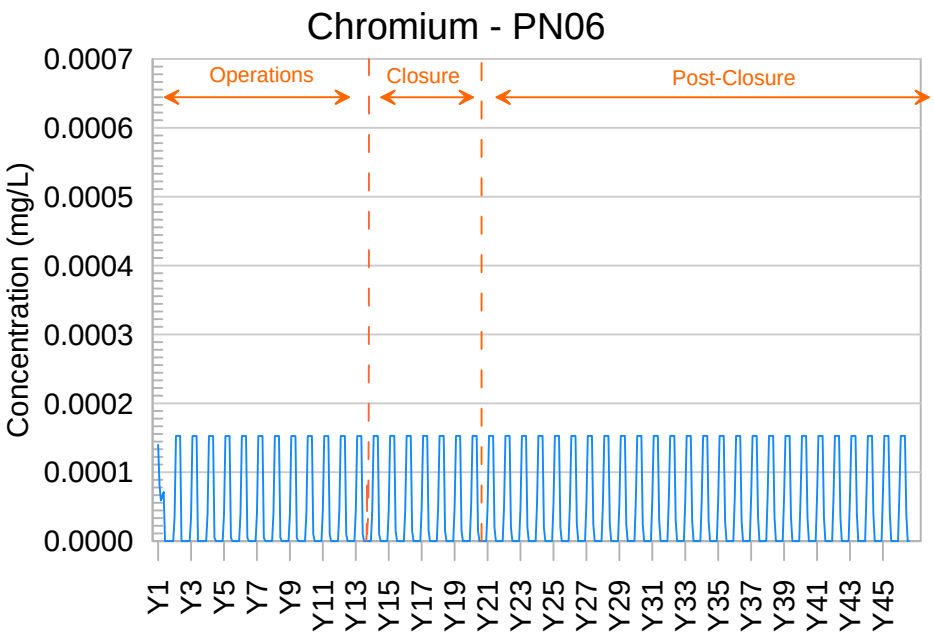


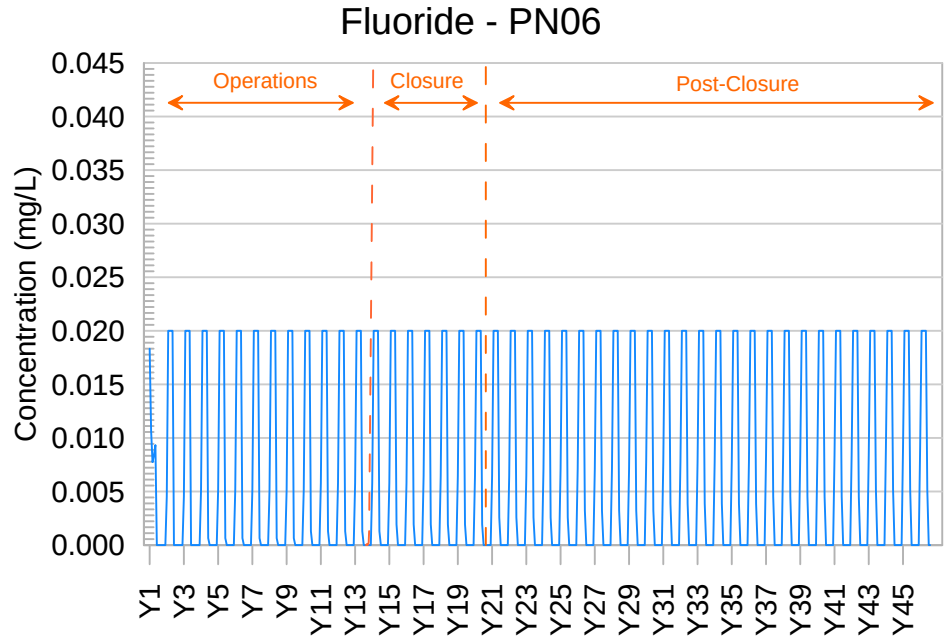












Monthly Mean

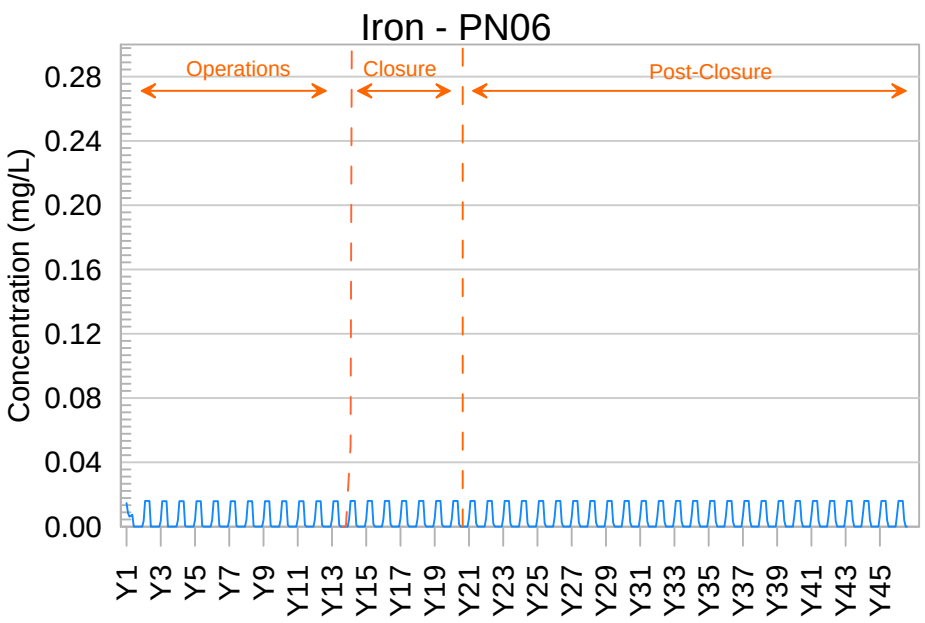
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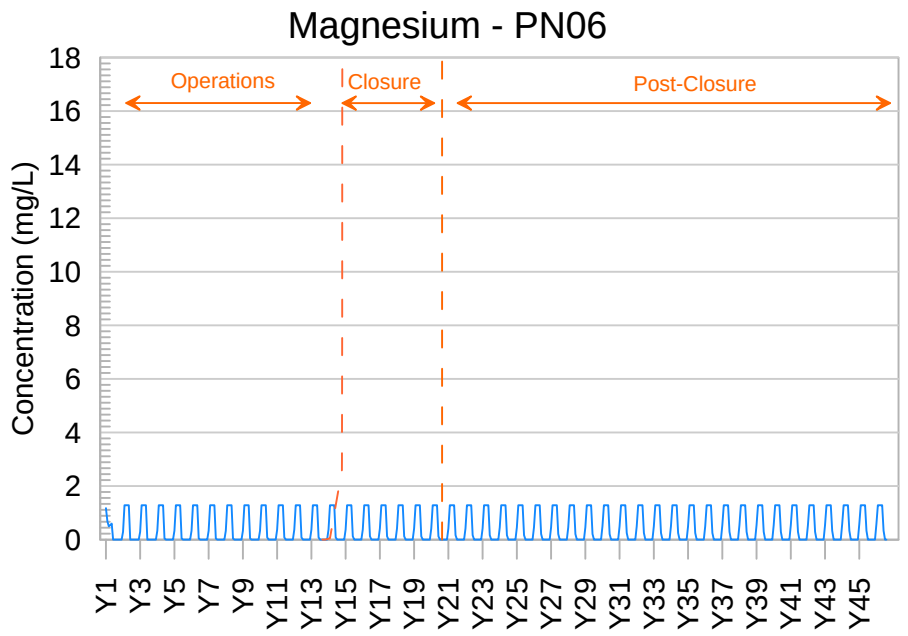
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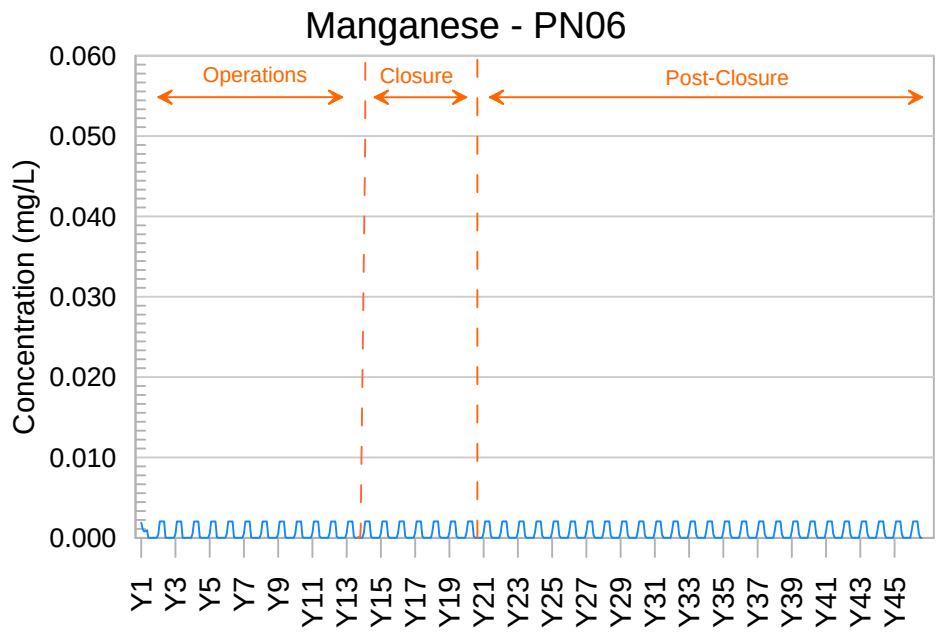
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CHECKED BY:	CLIENT:		
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PC	N/A	1829001	F-13

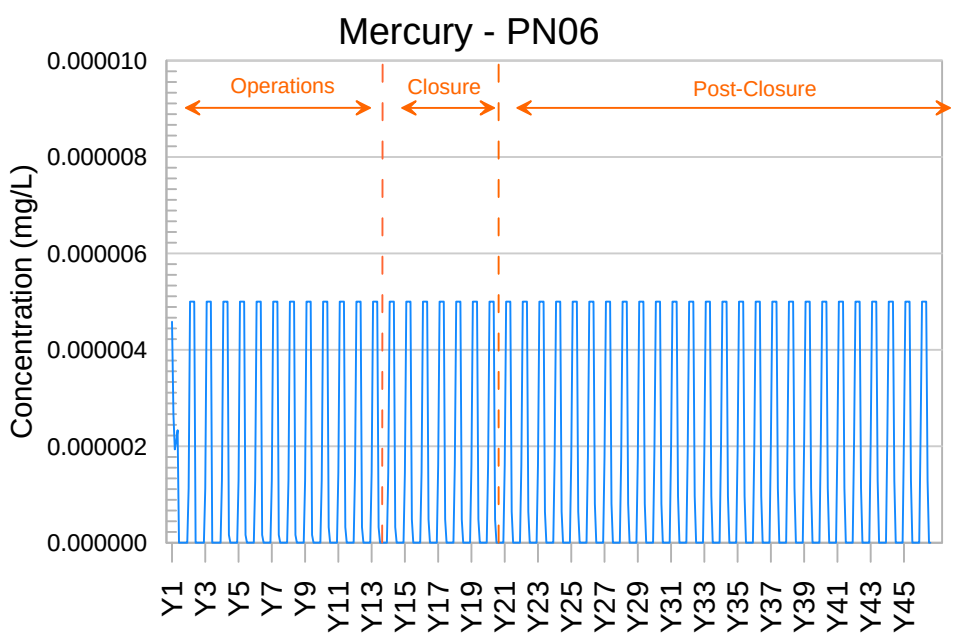
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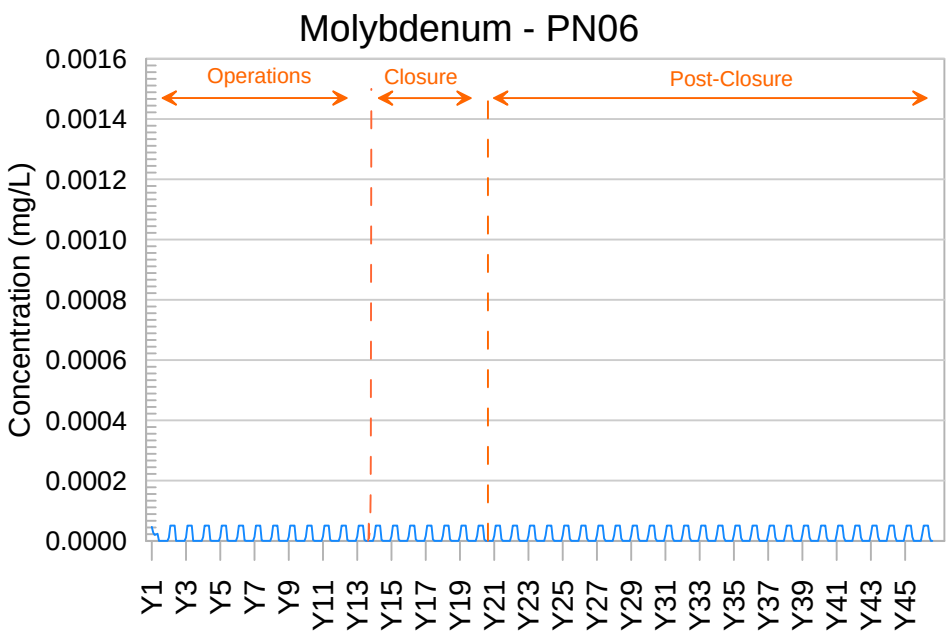
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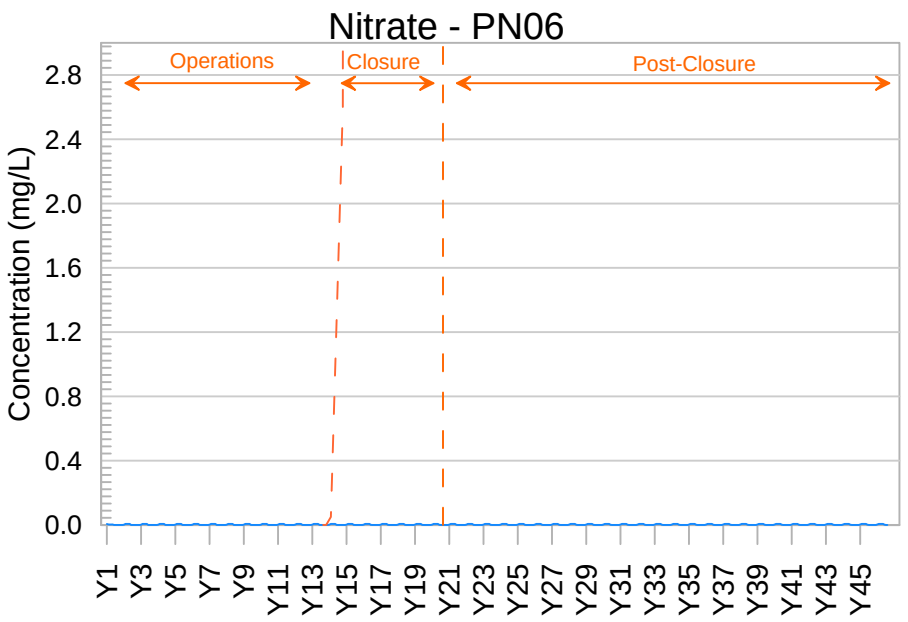


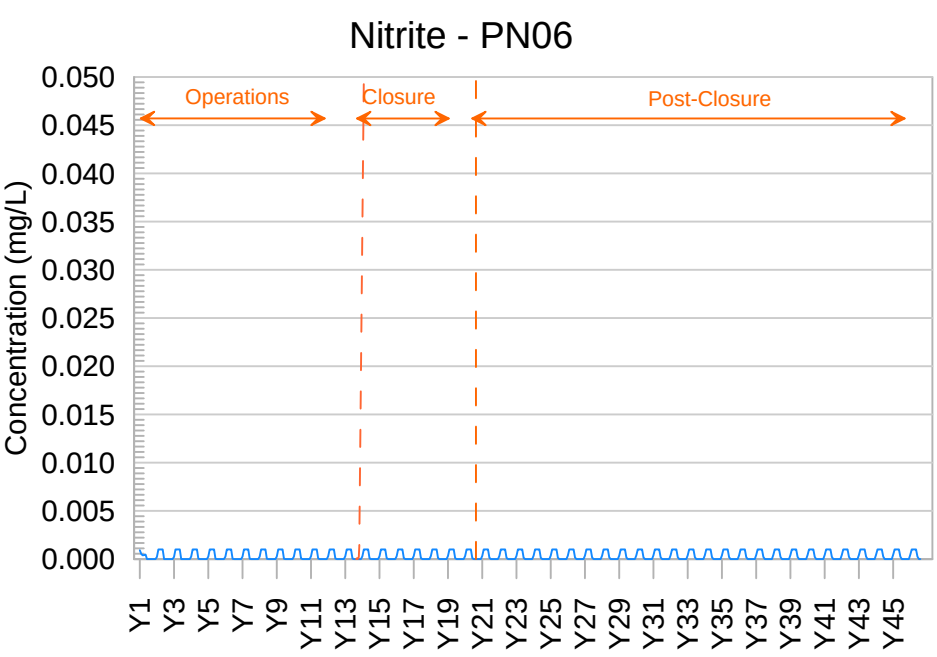


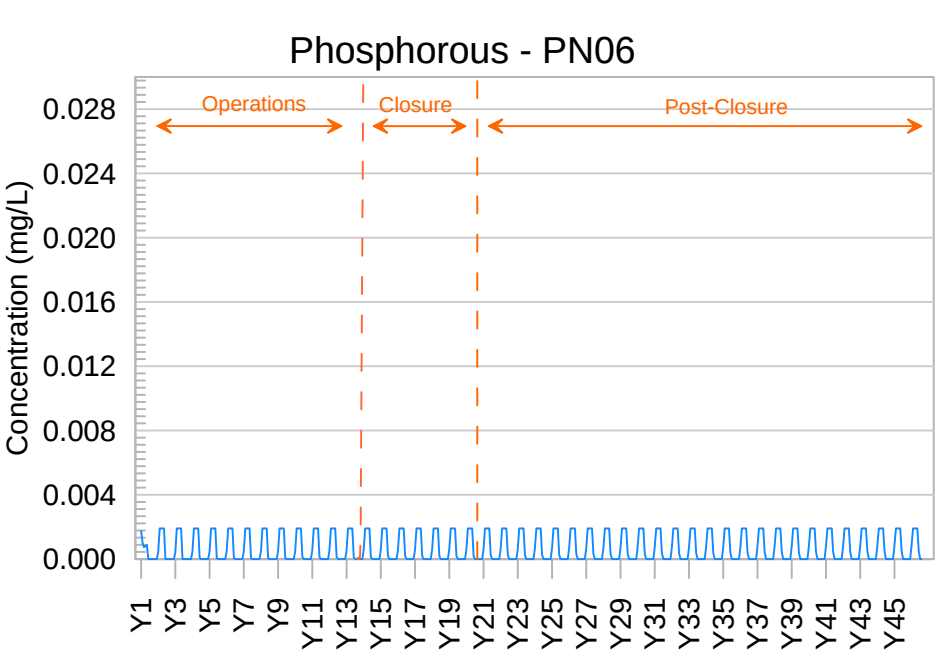












Monthly Mean

NOTES:

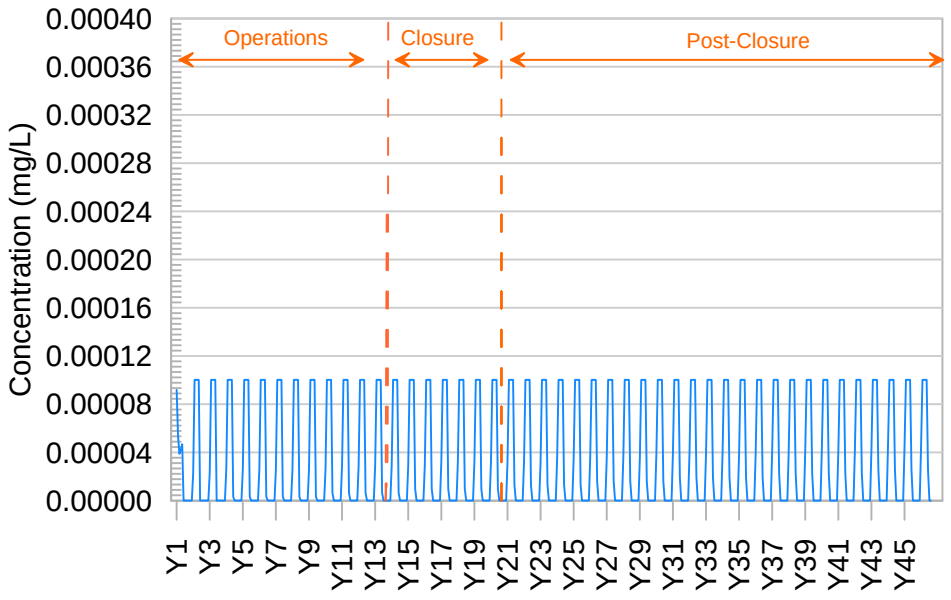
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PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN06 (PART 4)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-14

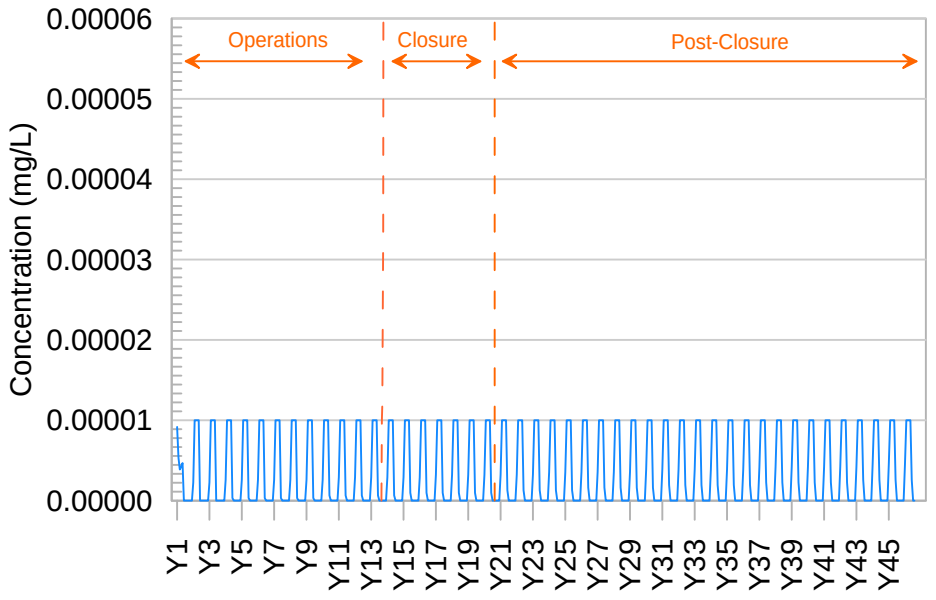
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BGC Engineering

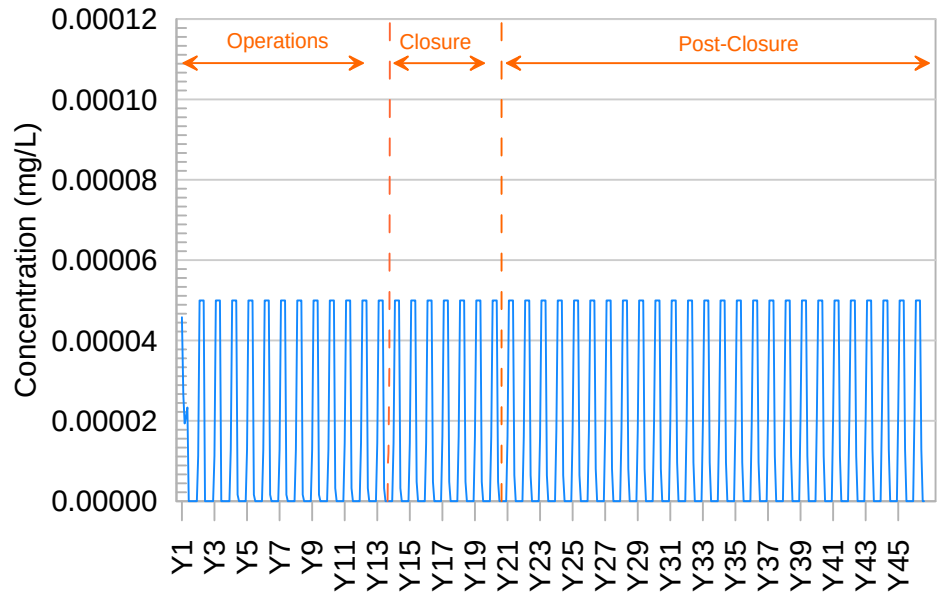
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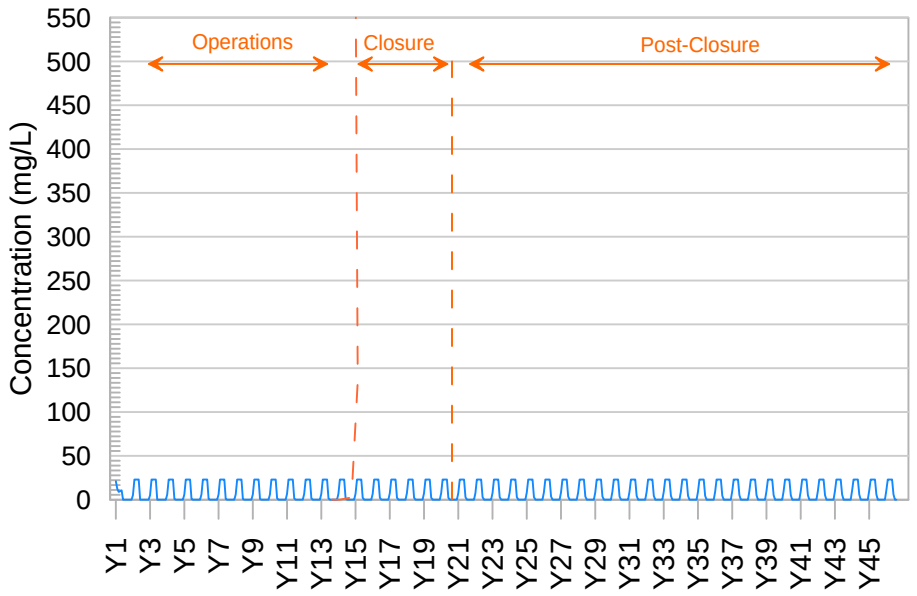
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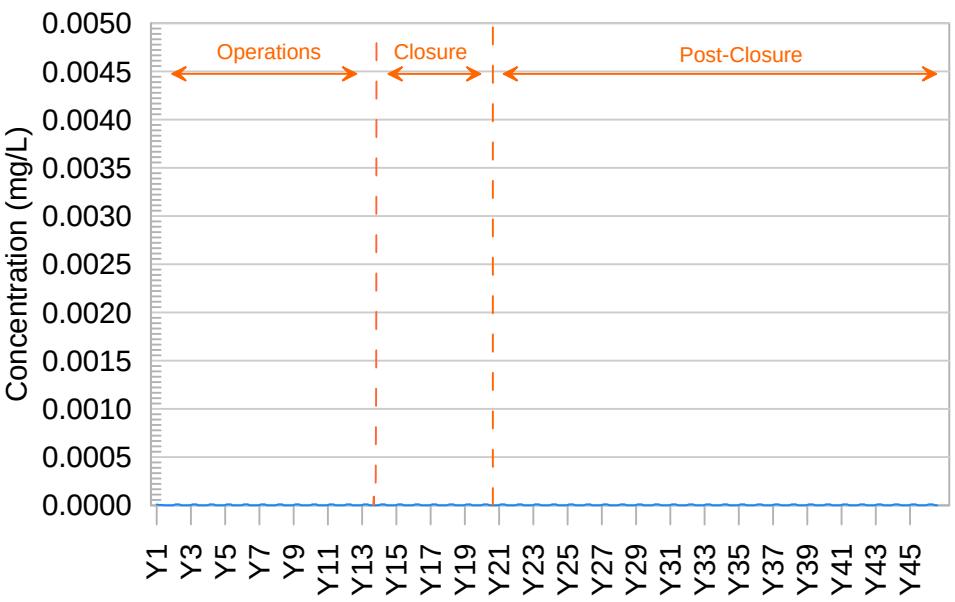
Thallium - PN06



TDS - PN06



Uranium - PN06



Monthly Mean

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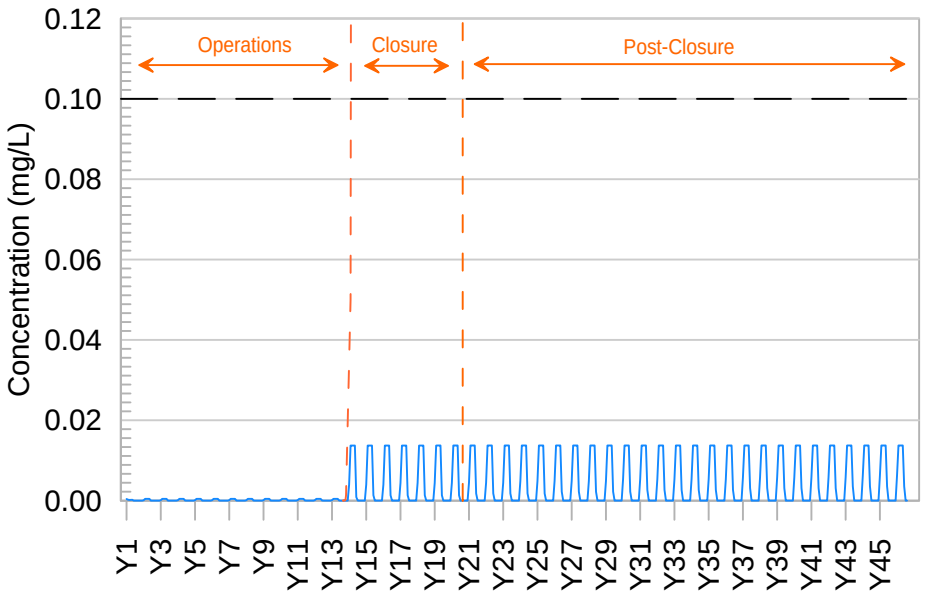
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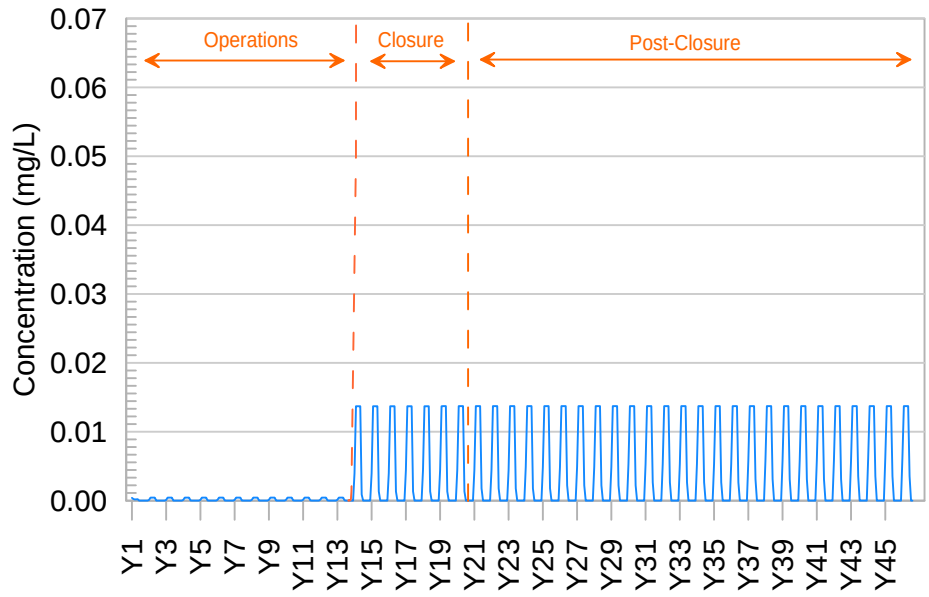
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CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-15

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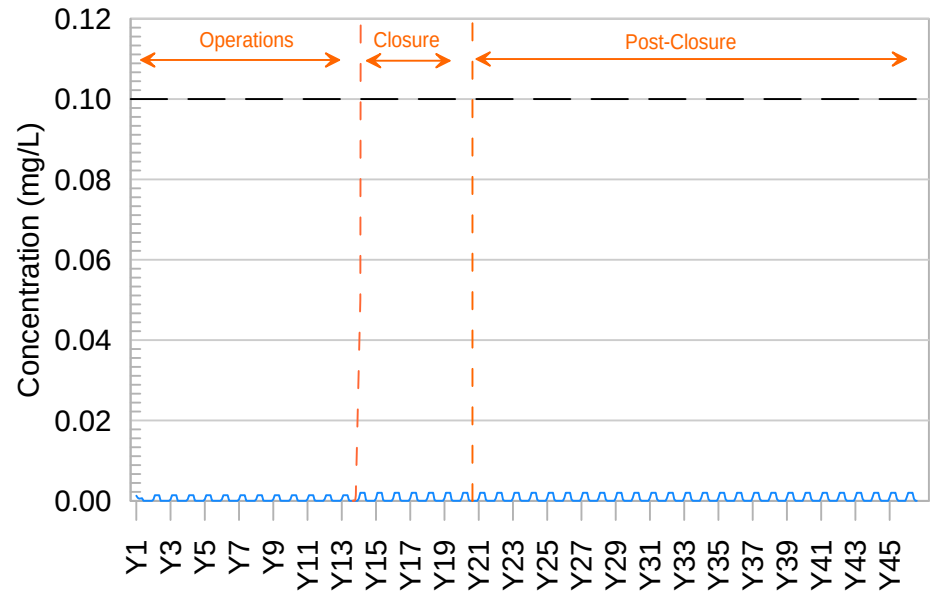
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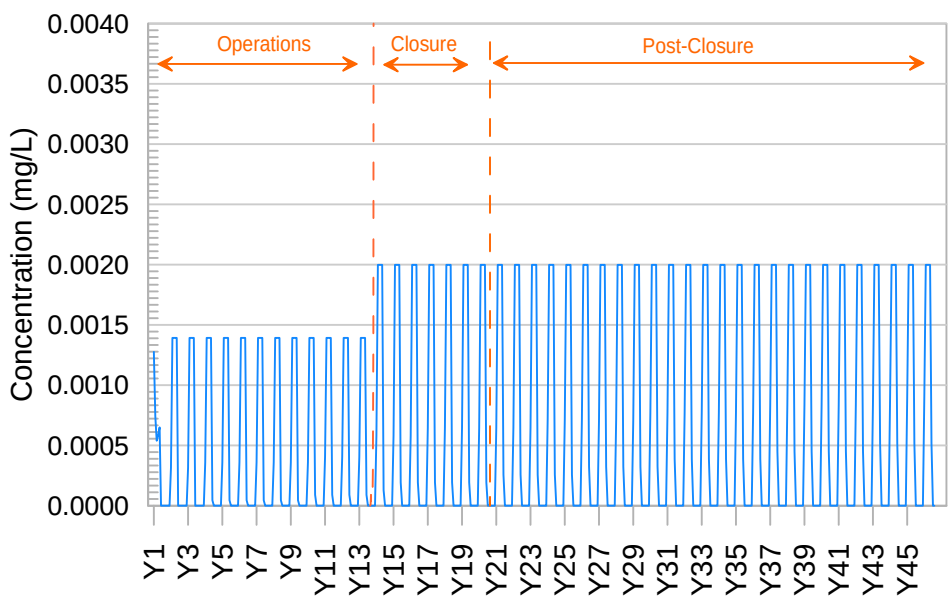
Arsenic - PN08



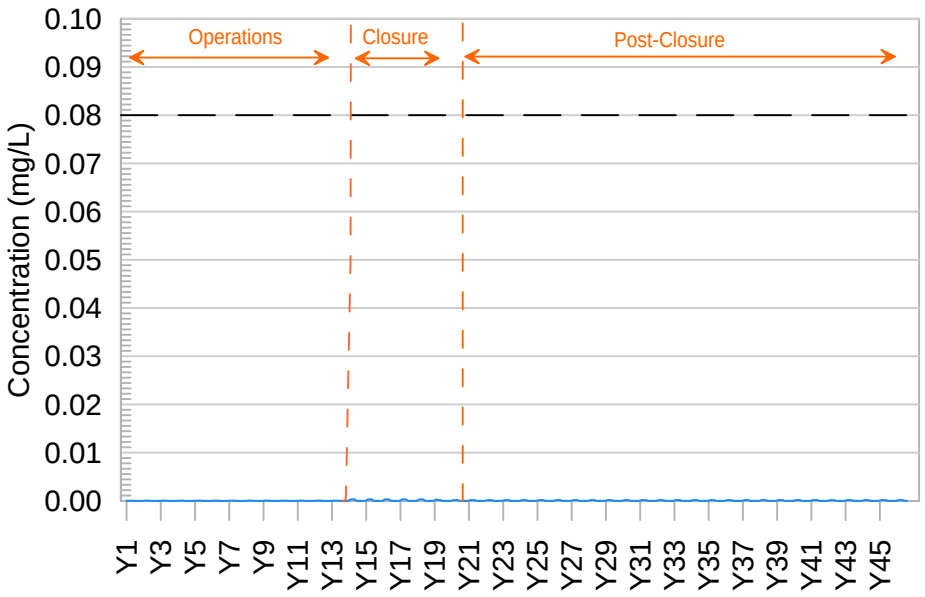


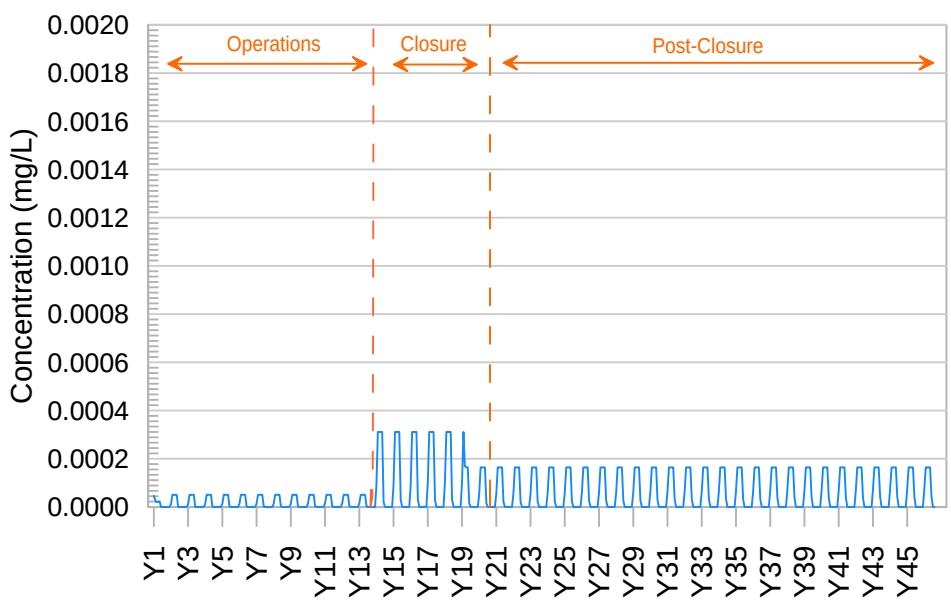
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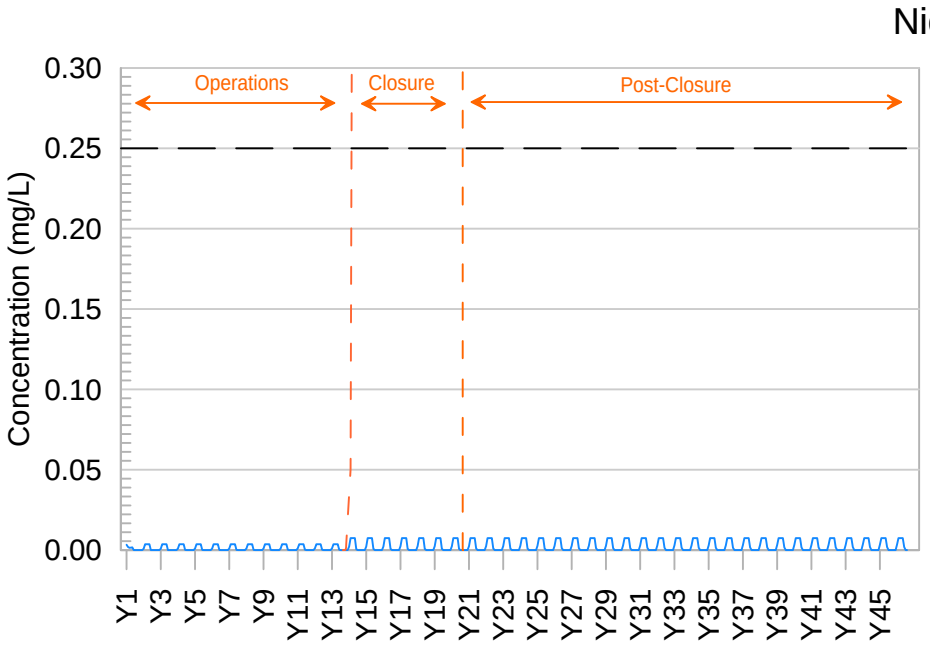


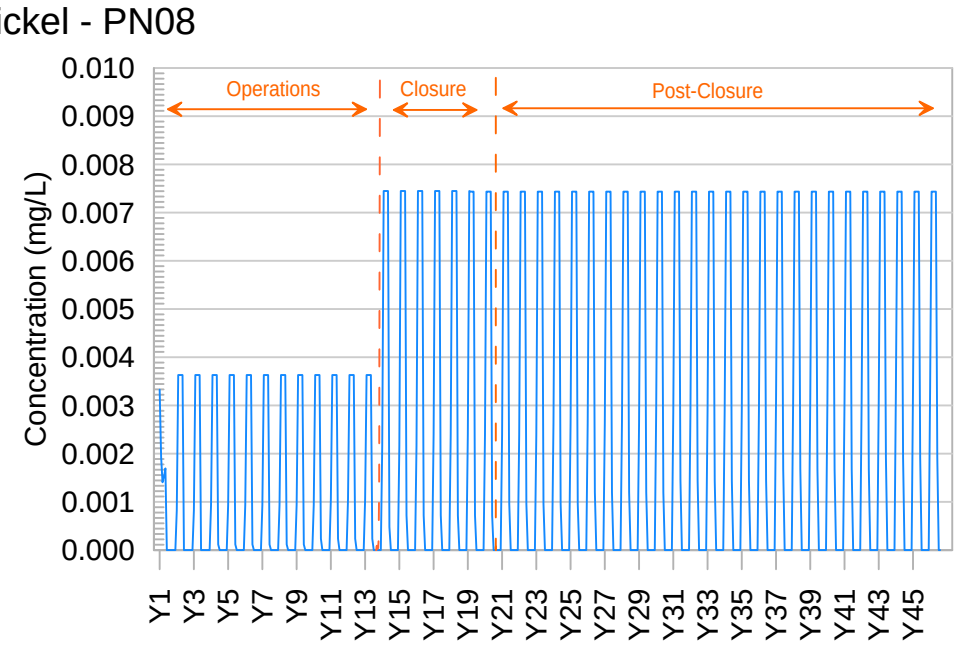
Lead - PN08





Nickel - PN08





Monthly Mean — — MDMER

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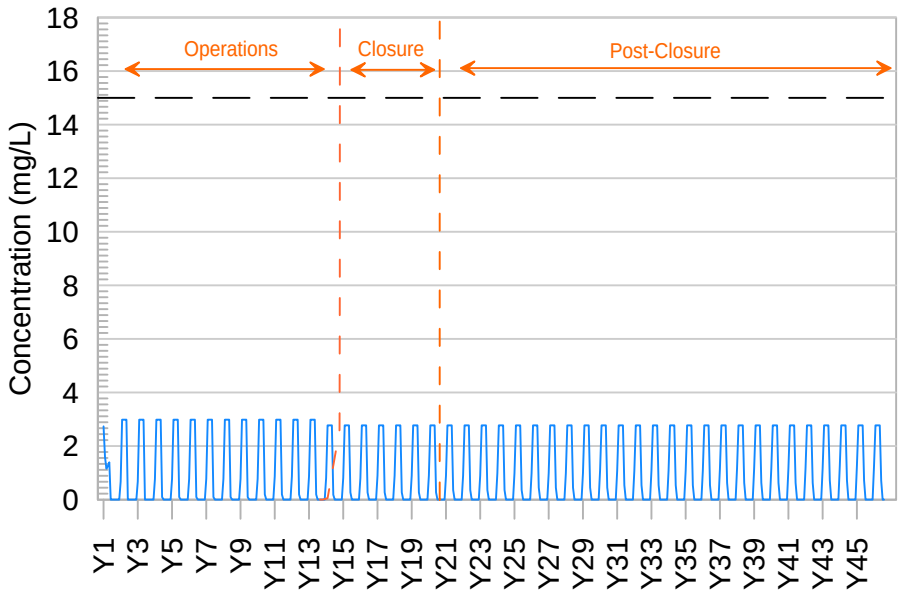
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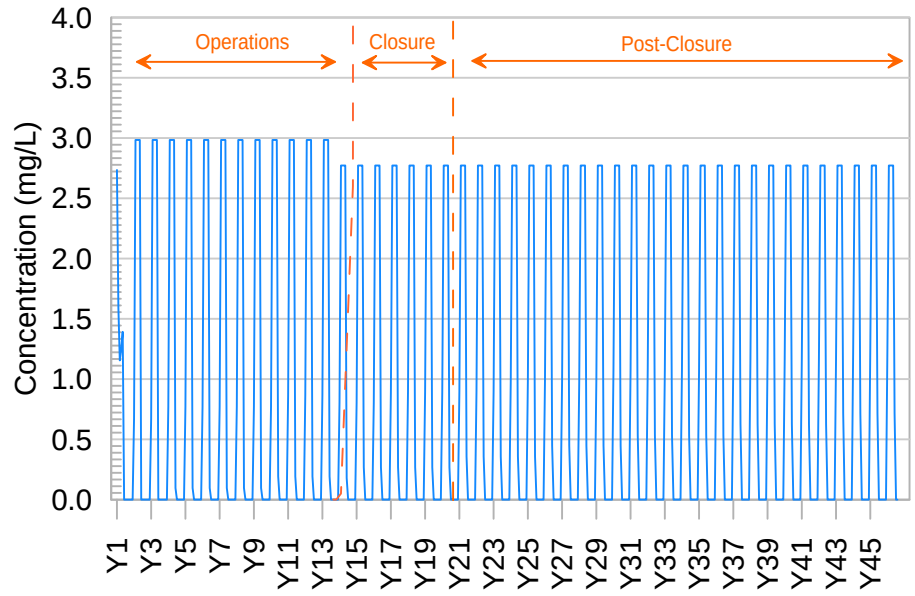
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ZMM	PREDICTED CONCENTRATIONS AT PN08 (PART 1)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-16

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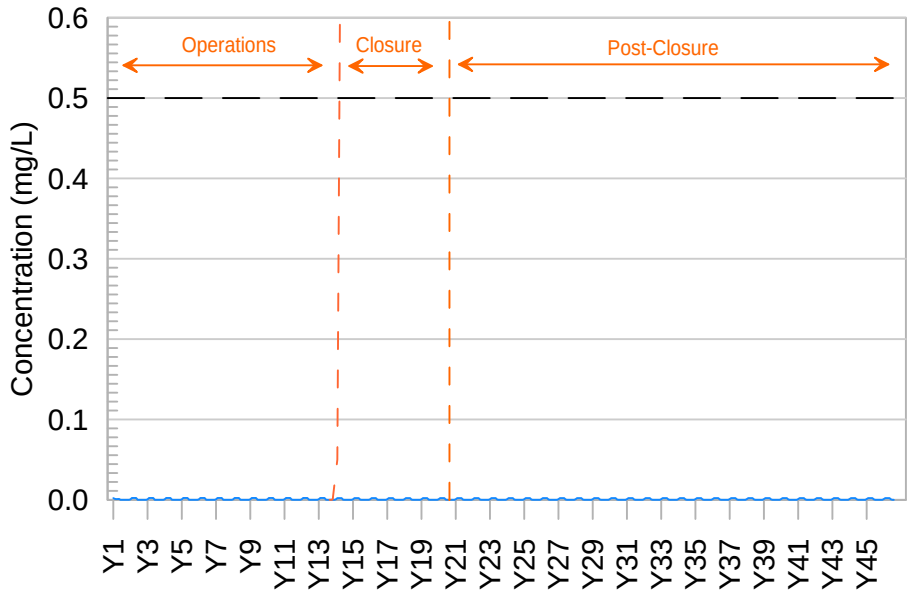
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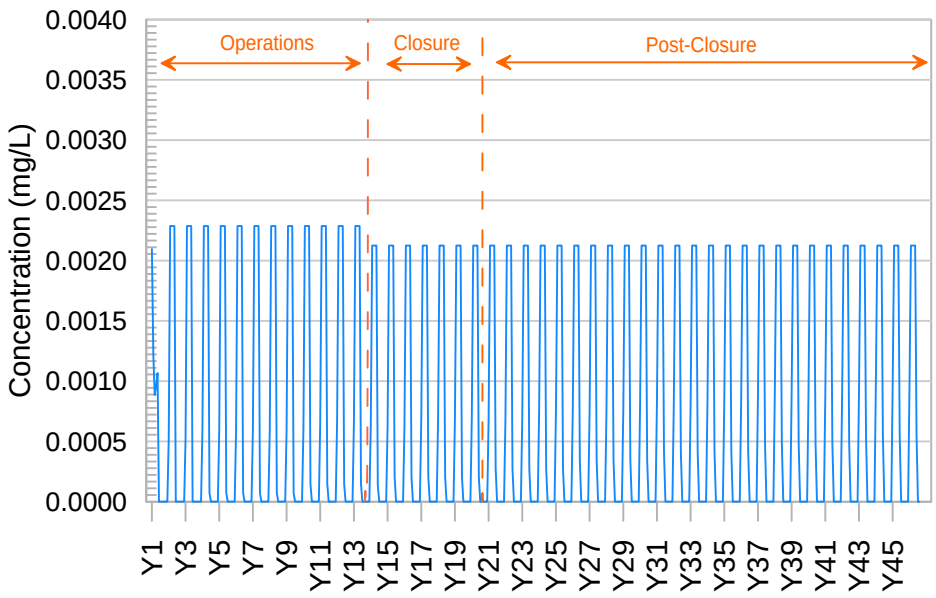
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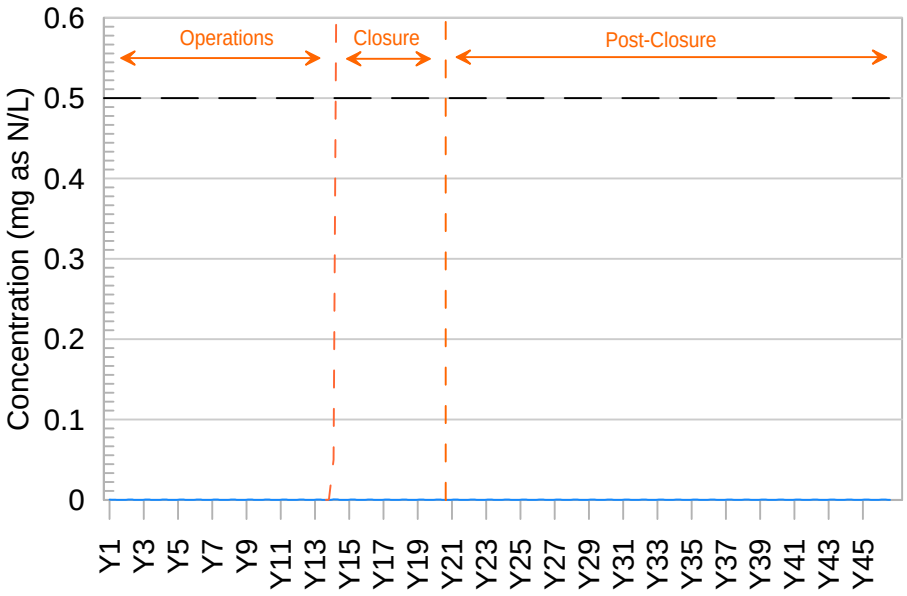


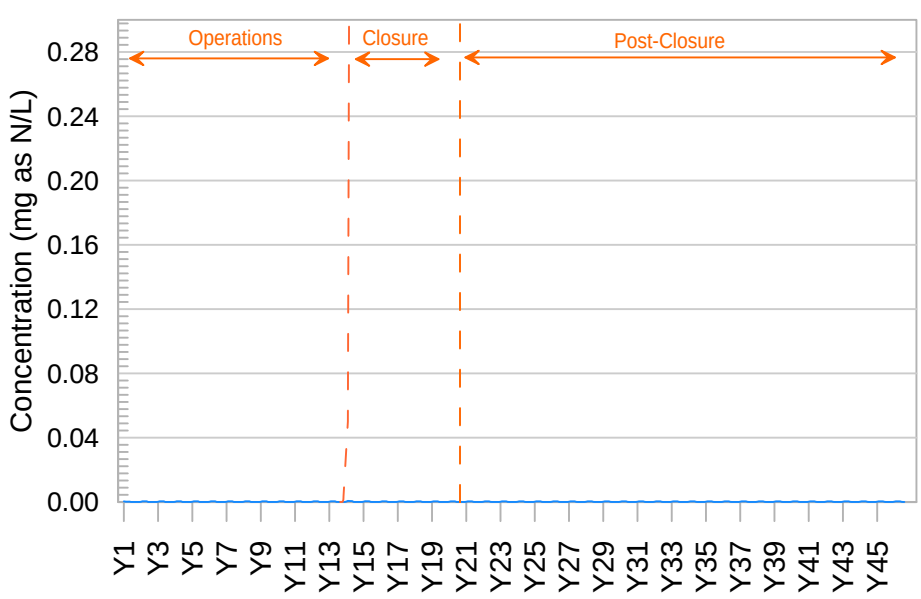
Total CN - PN08



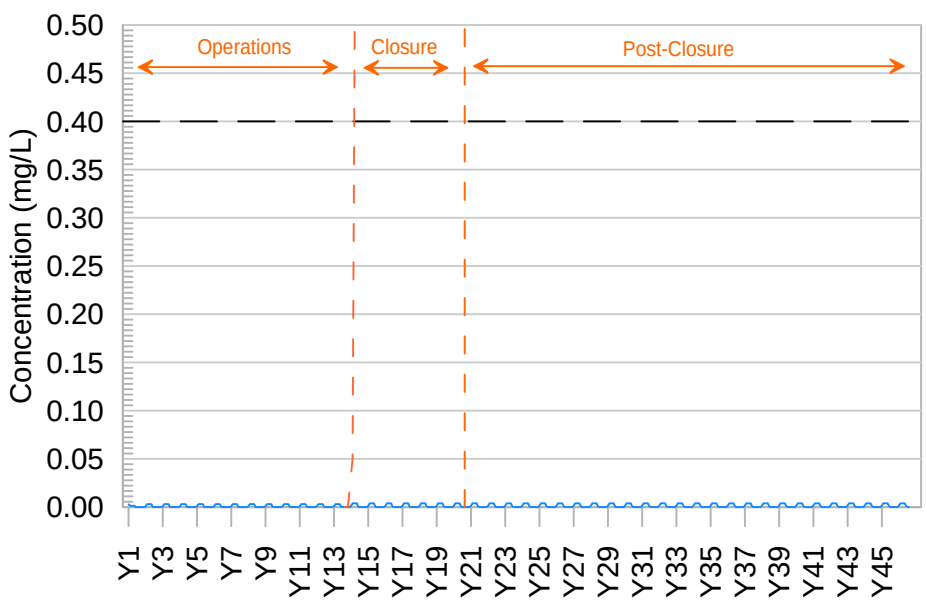


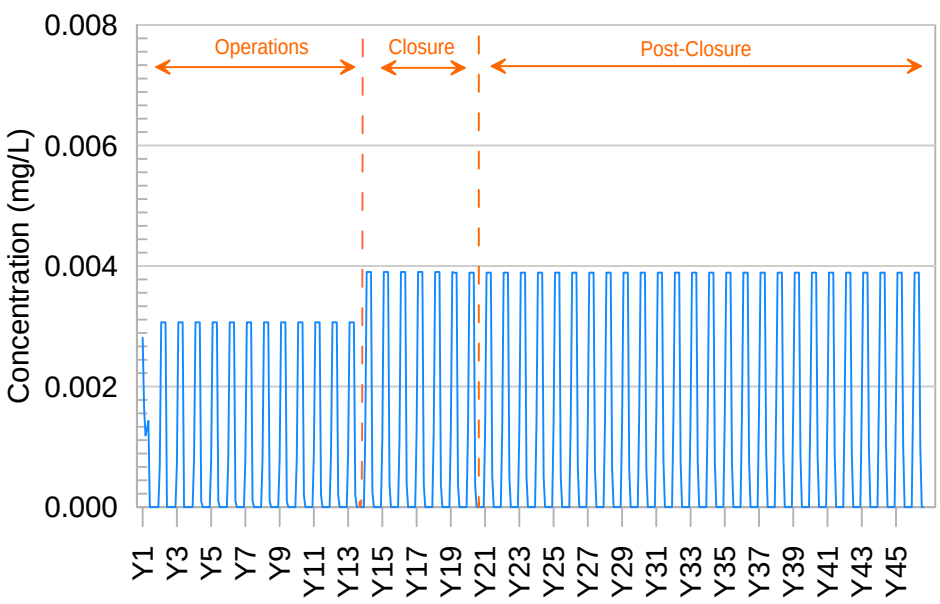
Un-ionized Ammonia - PN08





Zinc - PN08





Monthly Mean — — MDMER

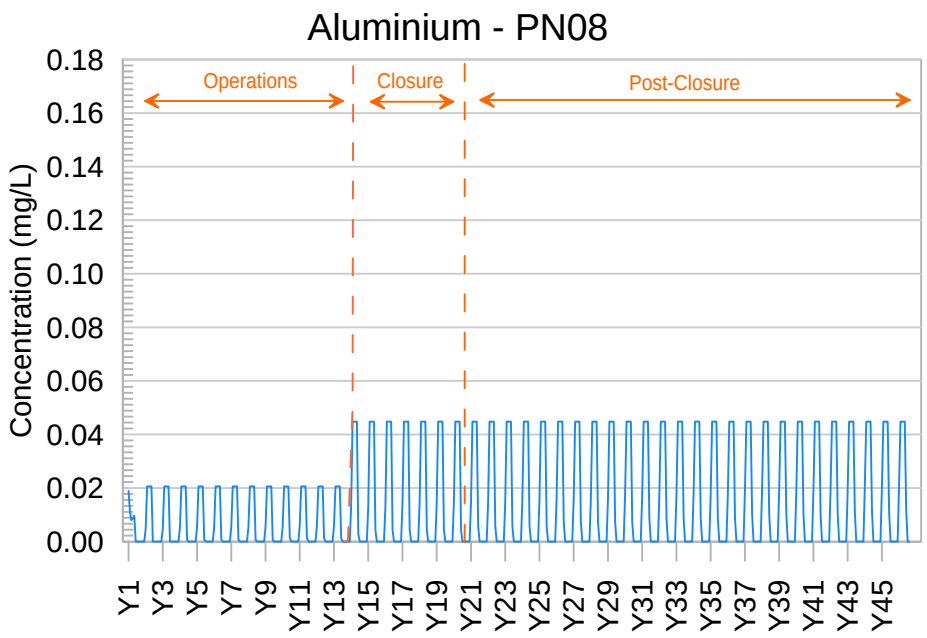
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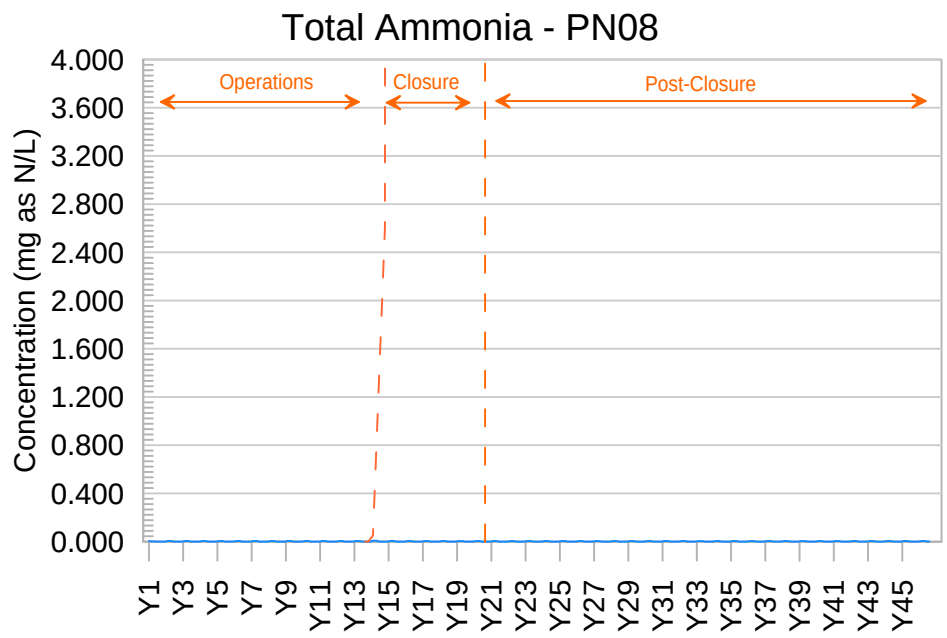
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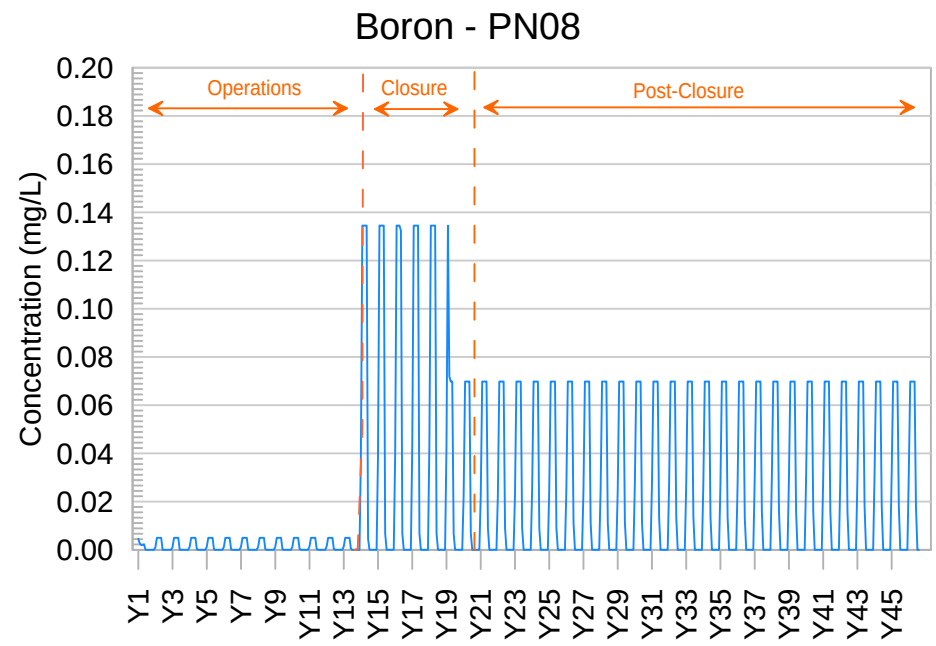
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CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-17

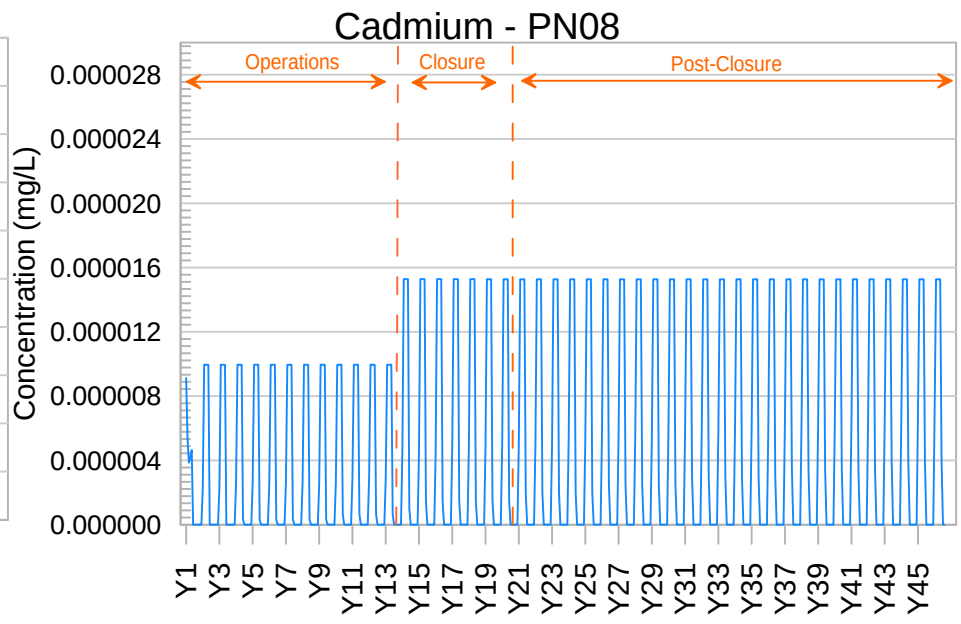
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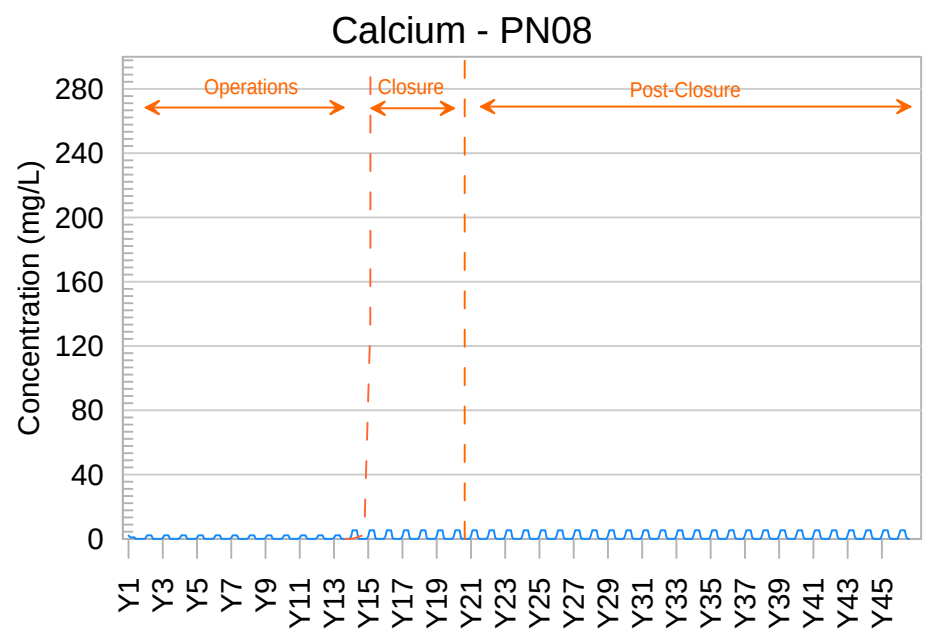
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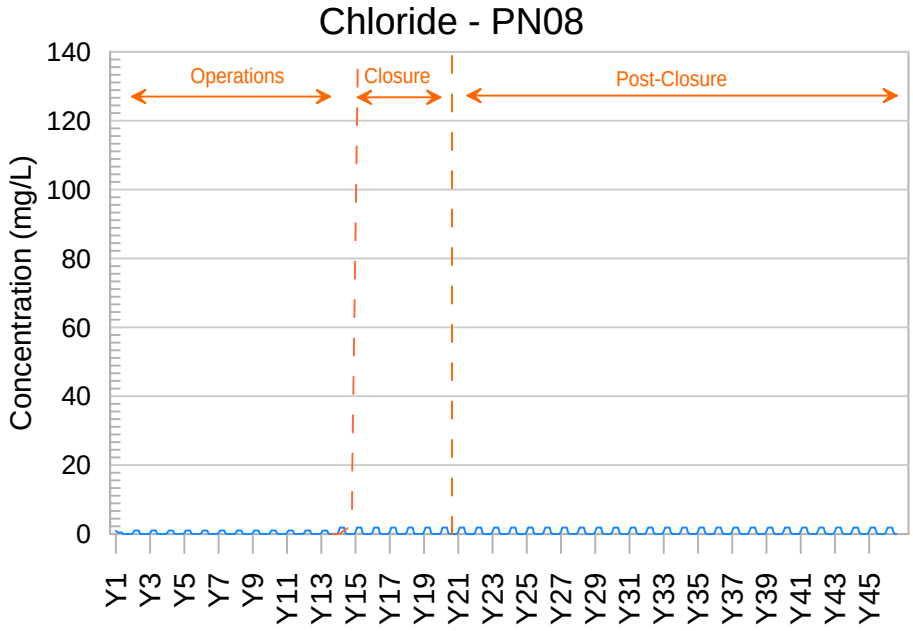


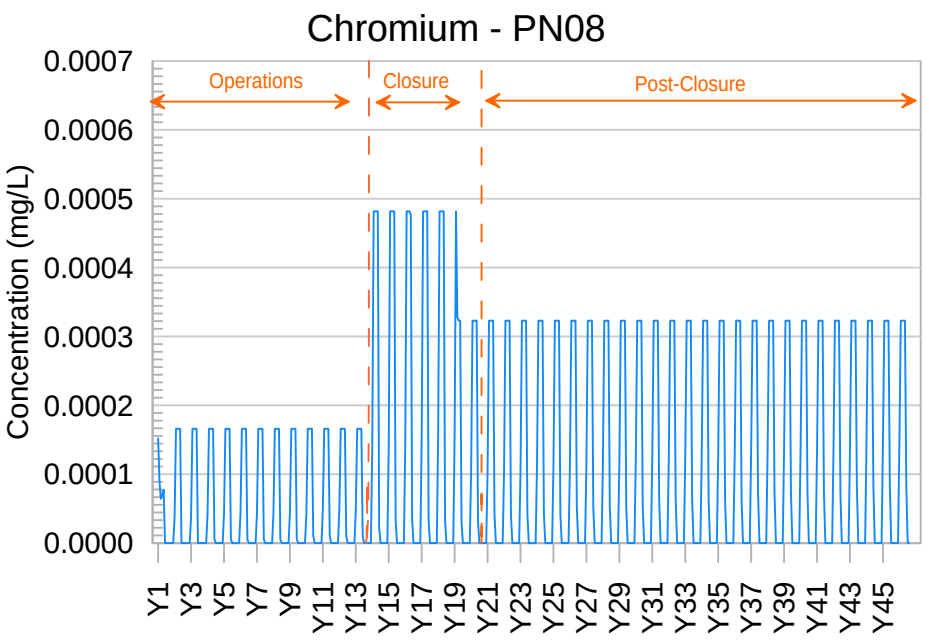


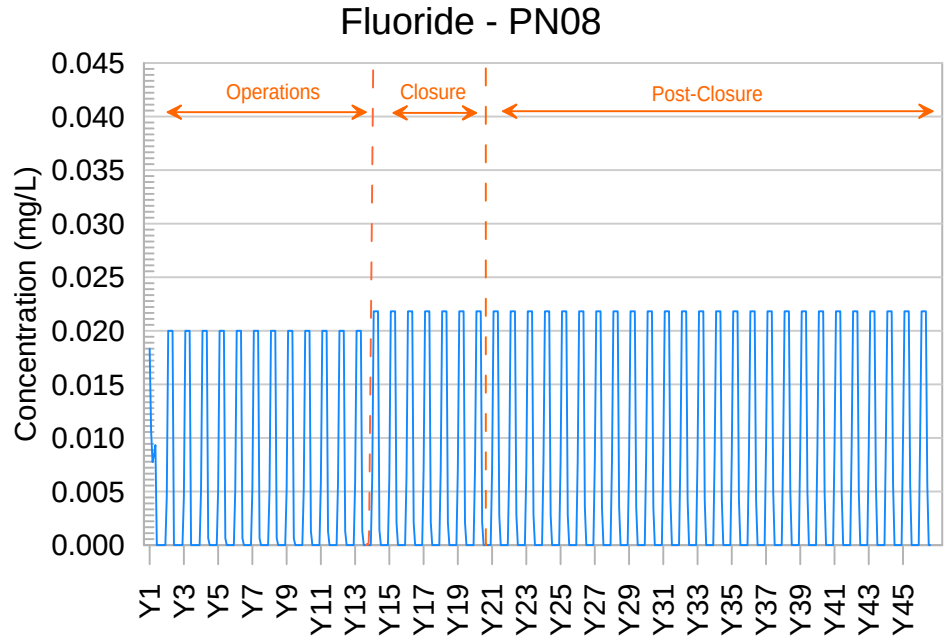












Monthly Mean

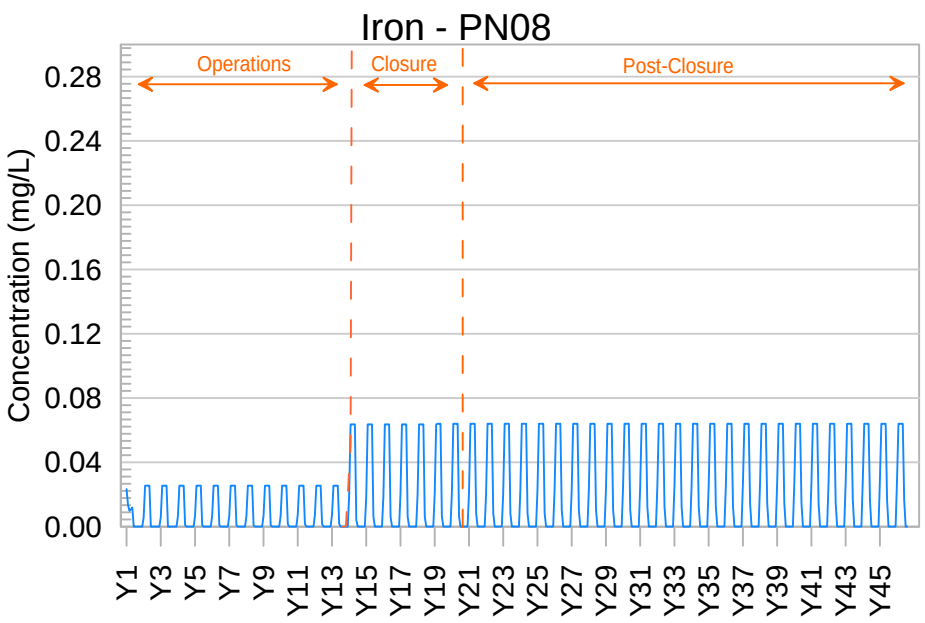
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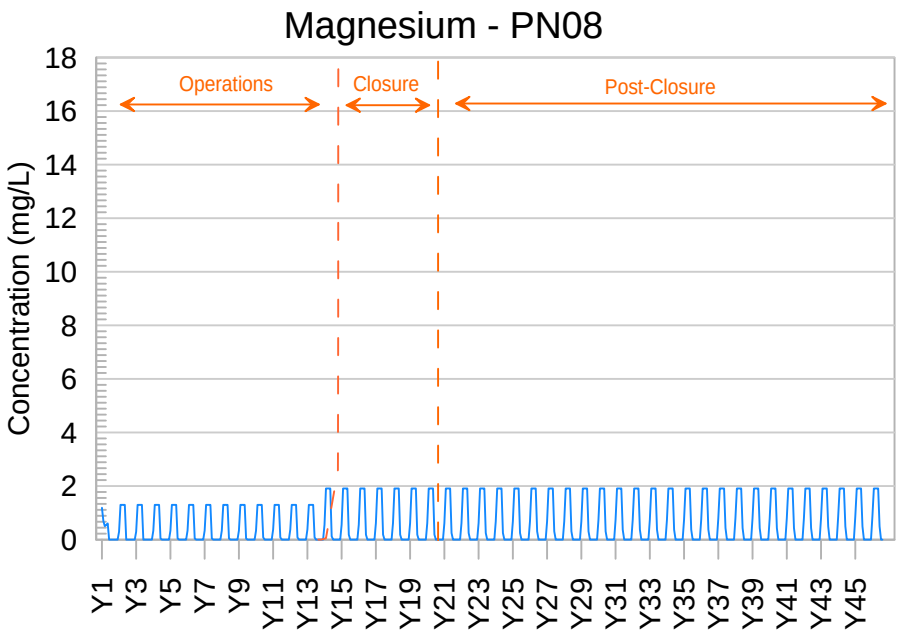
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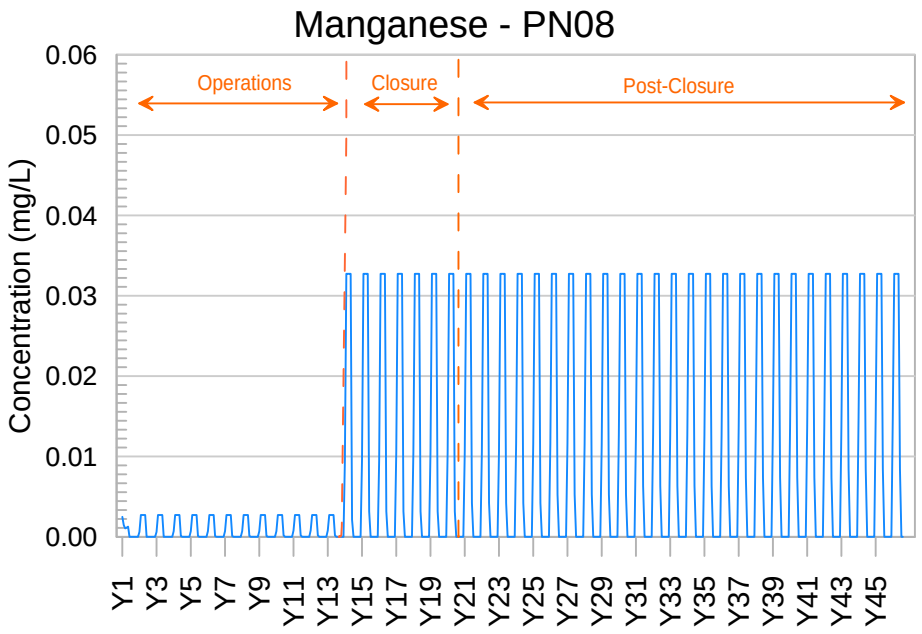
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CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
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PC	N/A	1829001	F-18

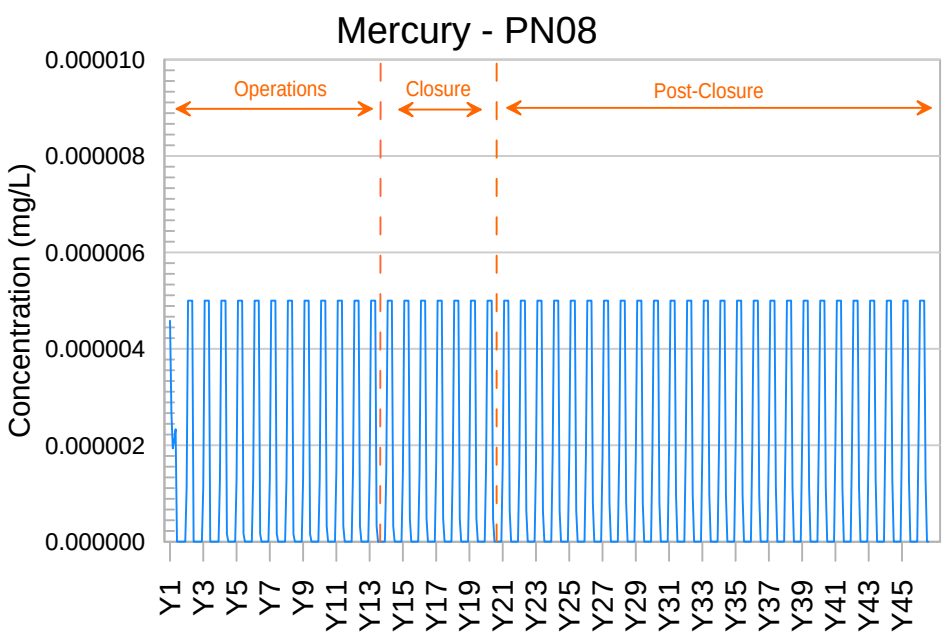
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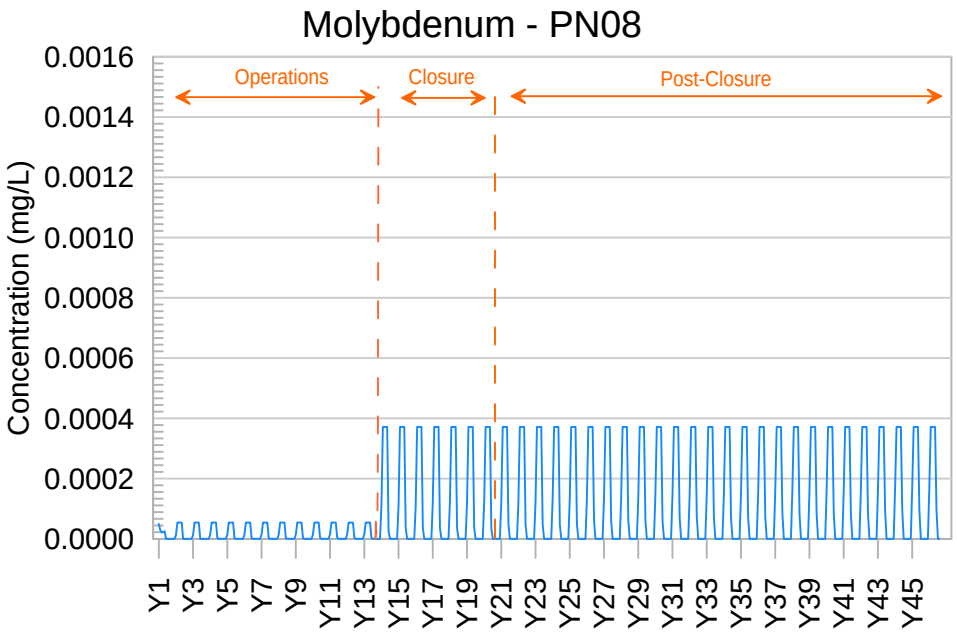
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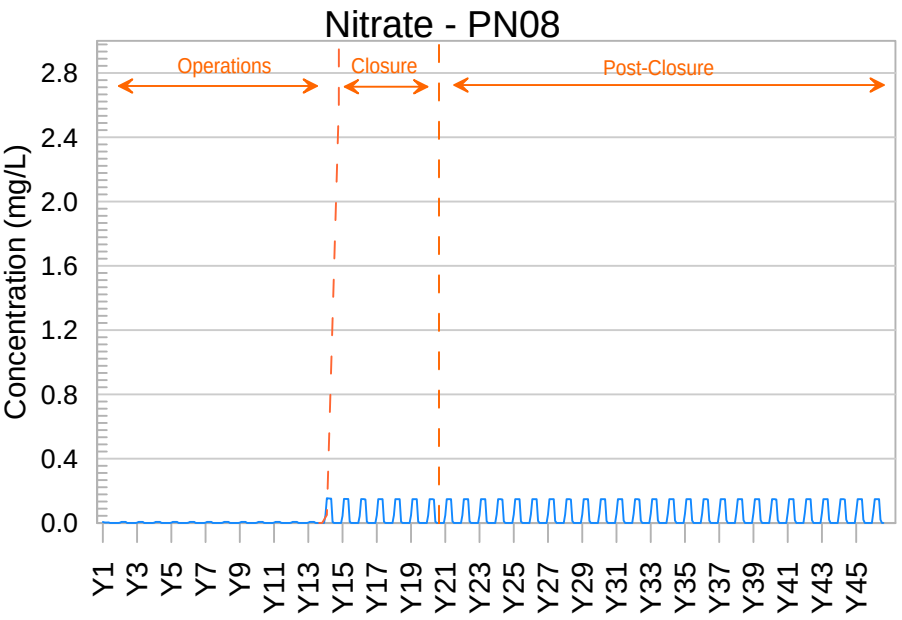


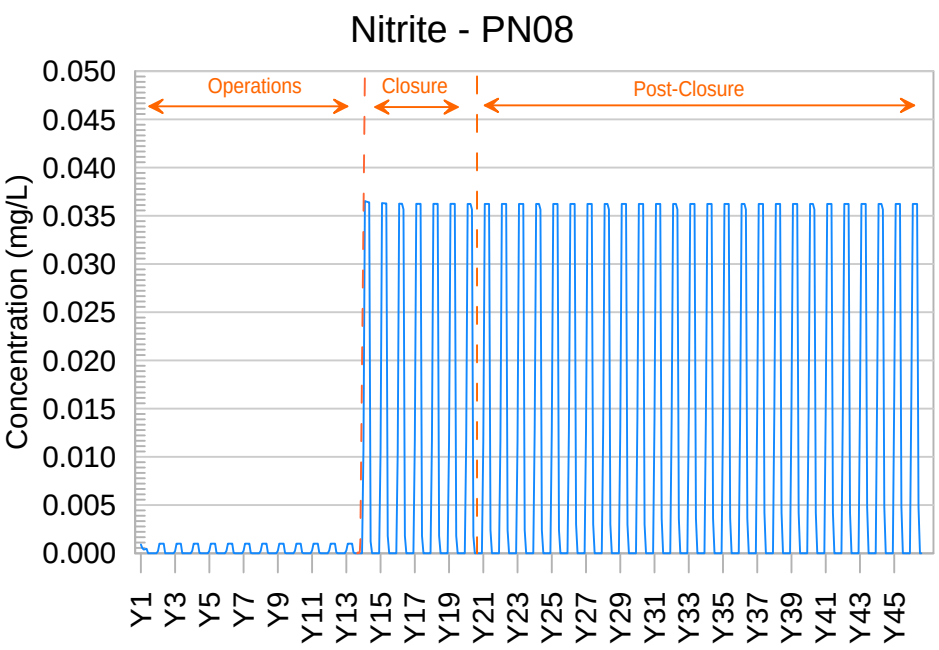


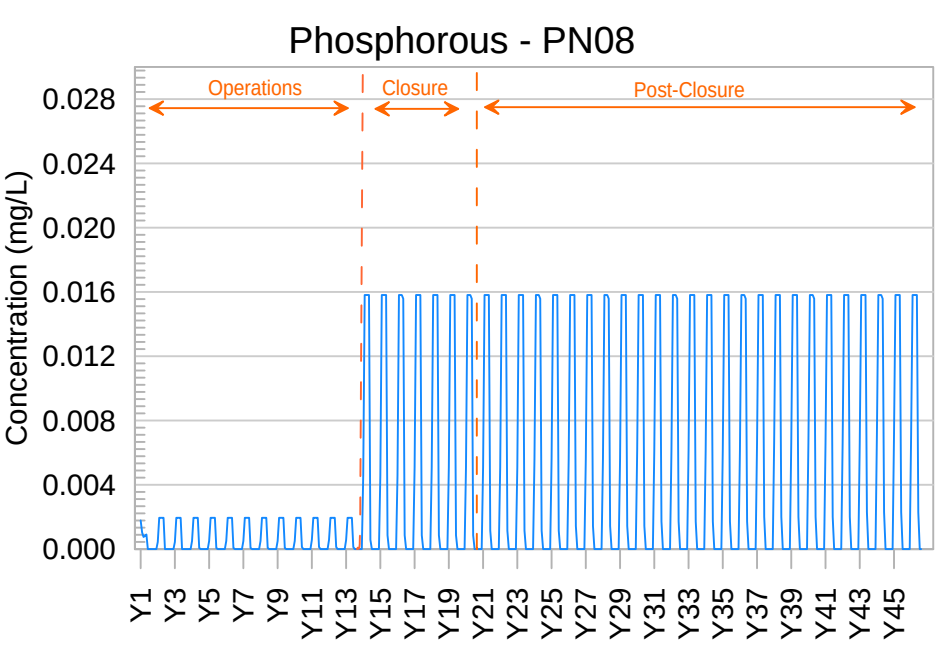












Monthly Mean

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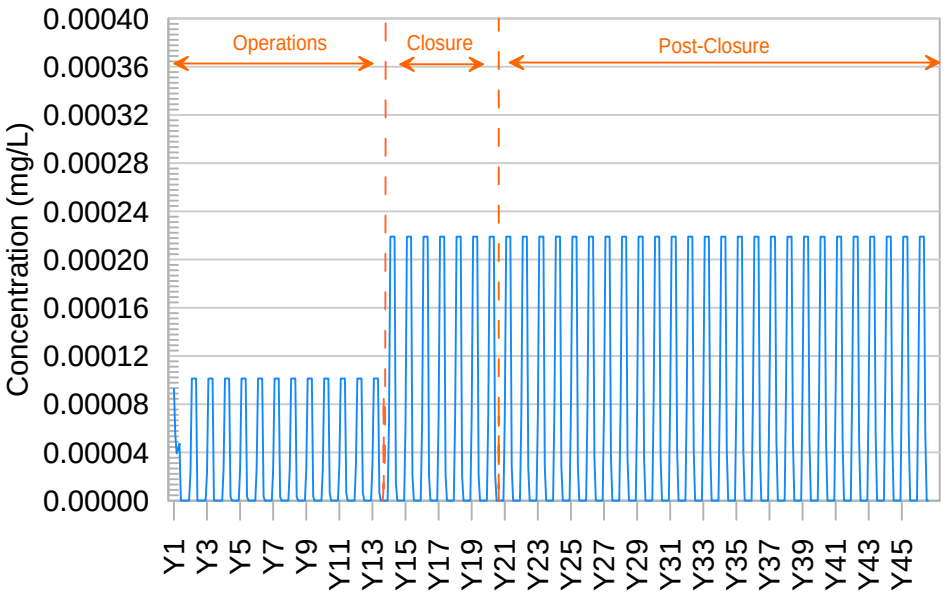
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PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN08 (PART 4)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-19

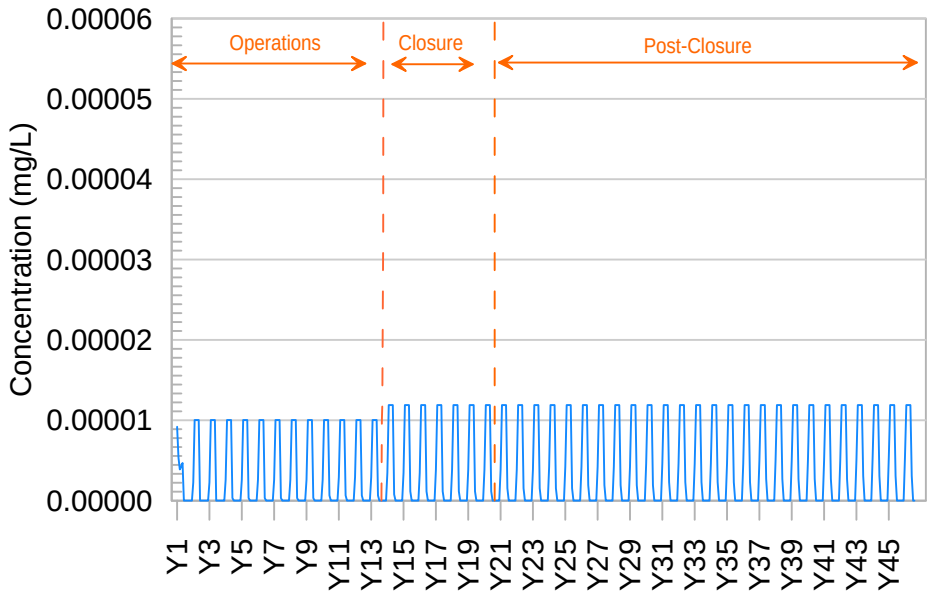
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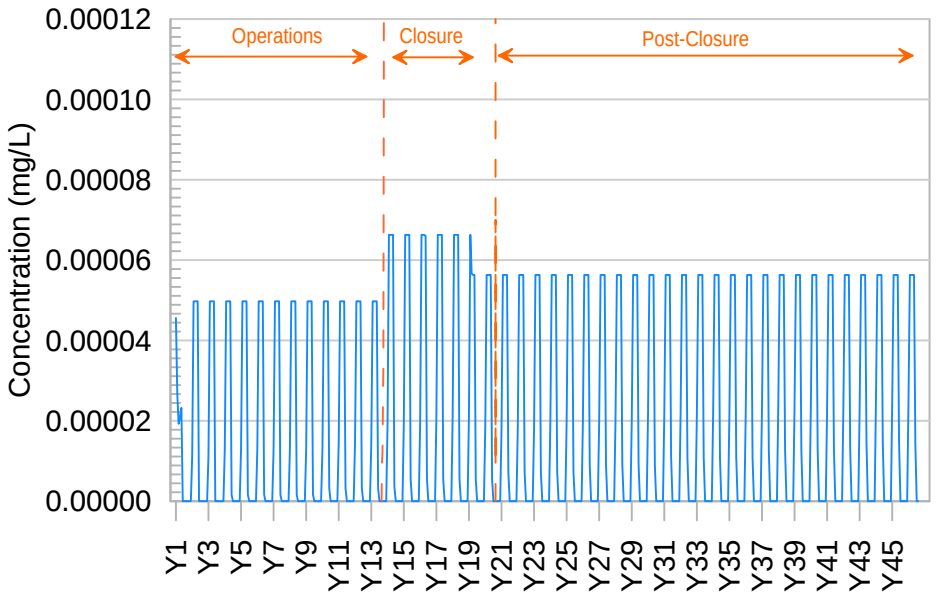
Selenium - PN08



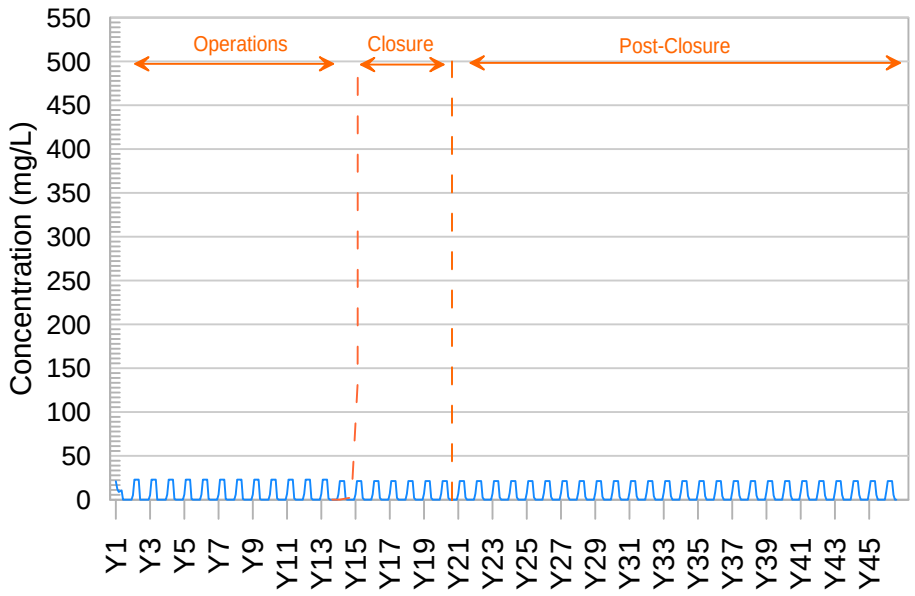
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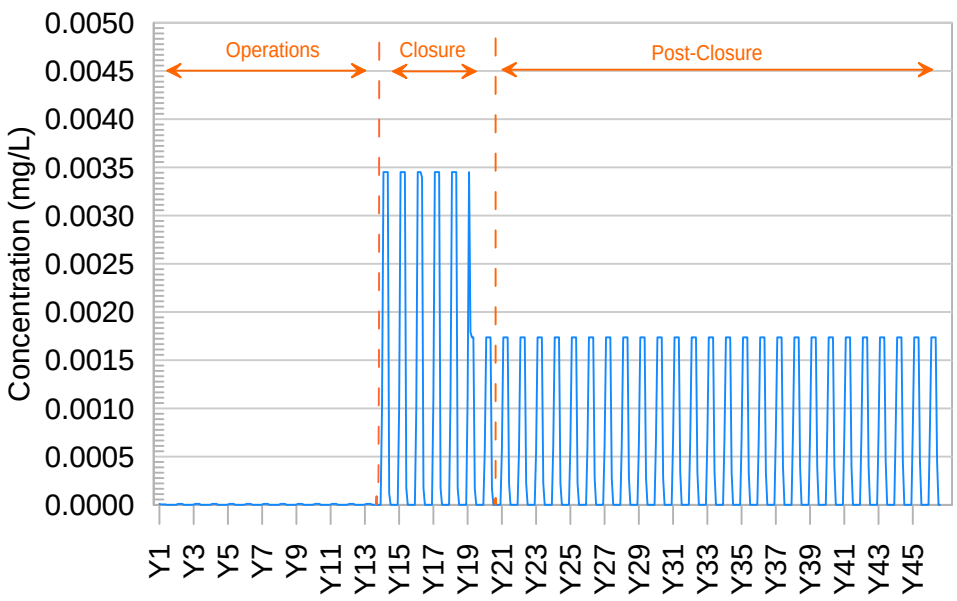
Thallium - PN08



TDS - PN08



Uranium - PN08



Monthly Mean

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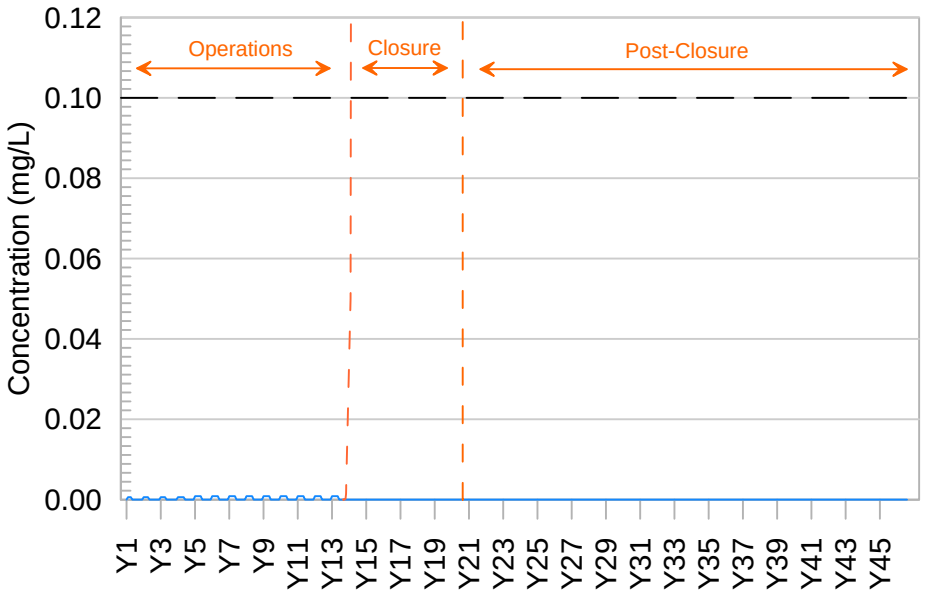
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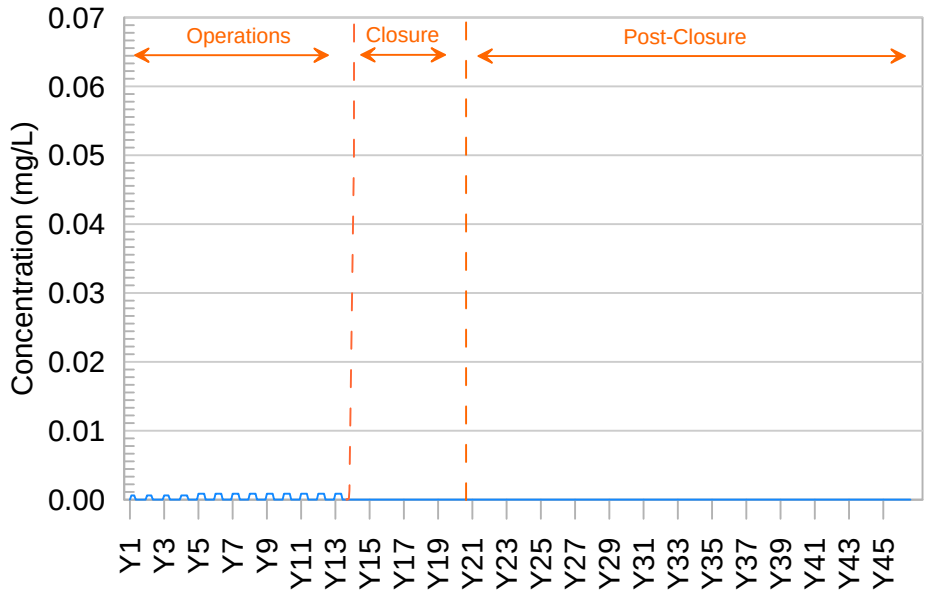
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CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-20

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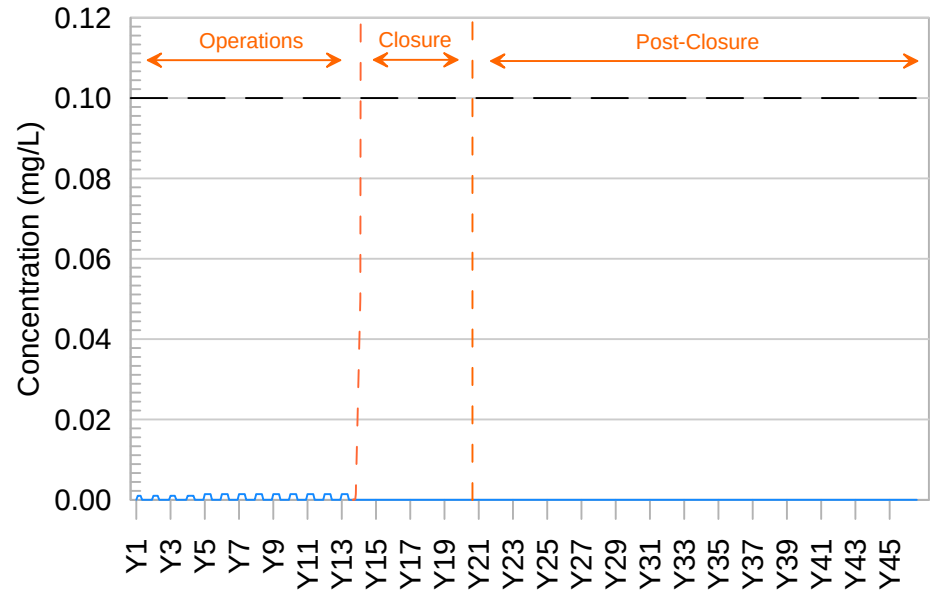
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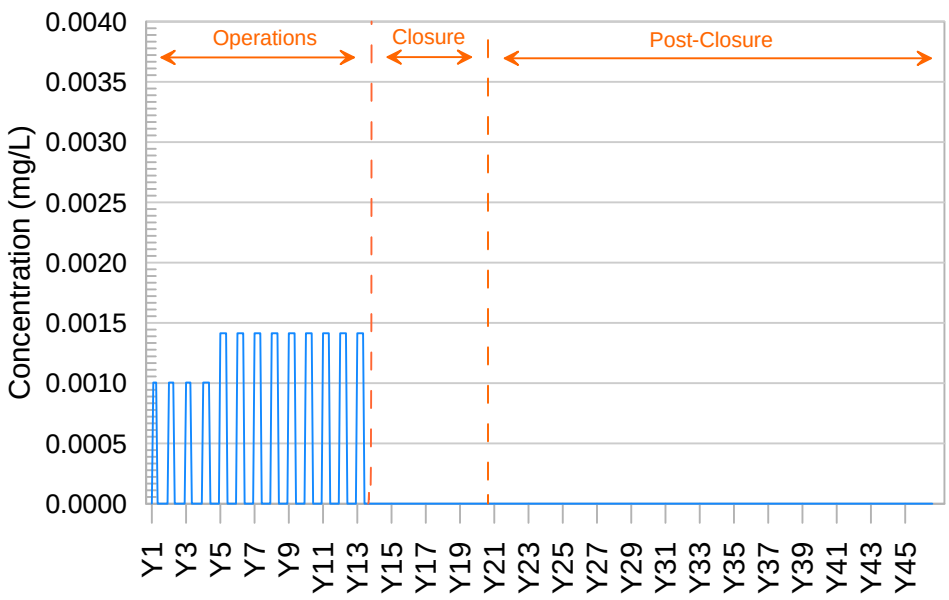
Arsenic - PN09



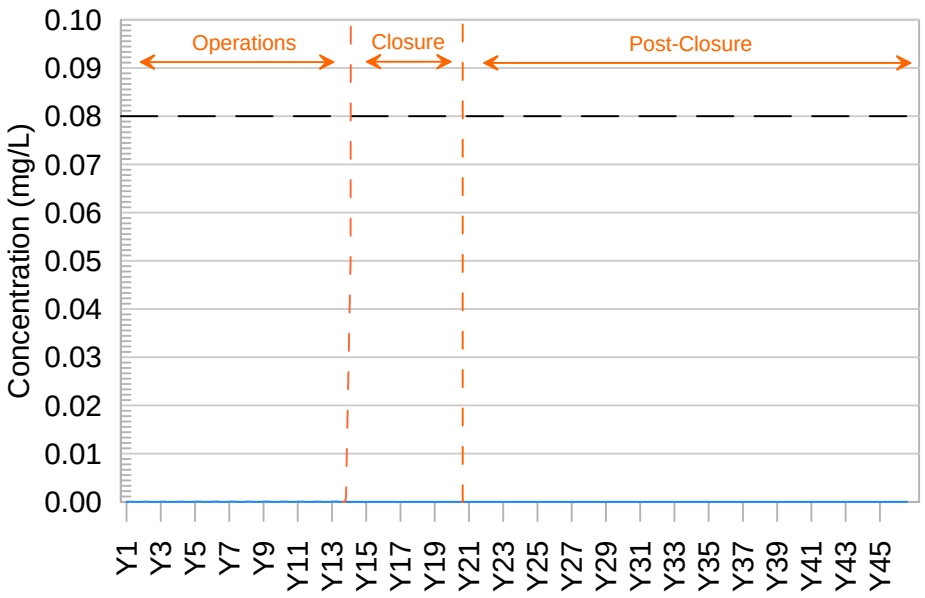


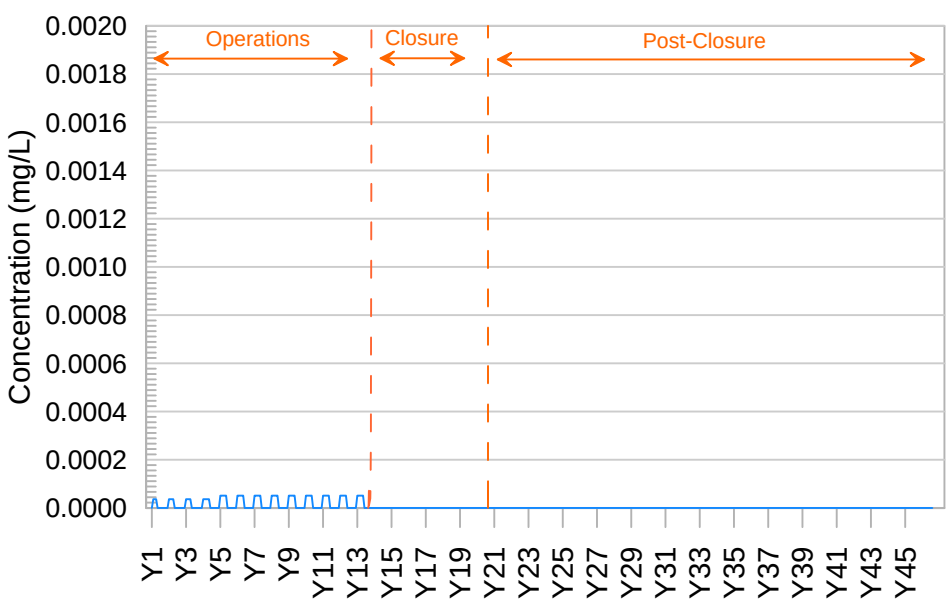
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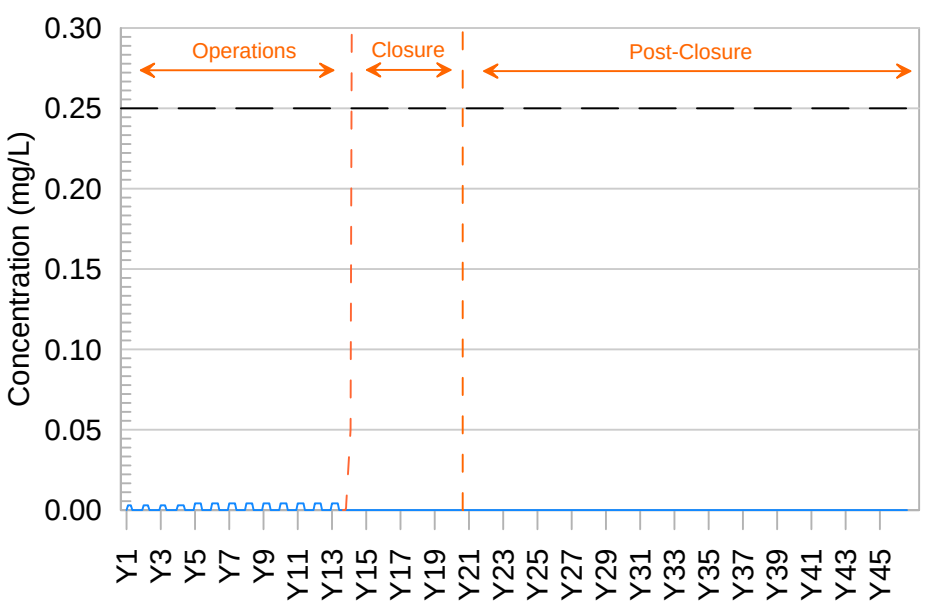


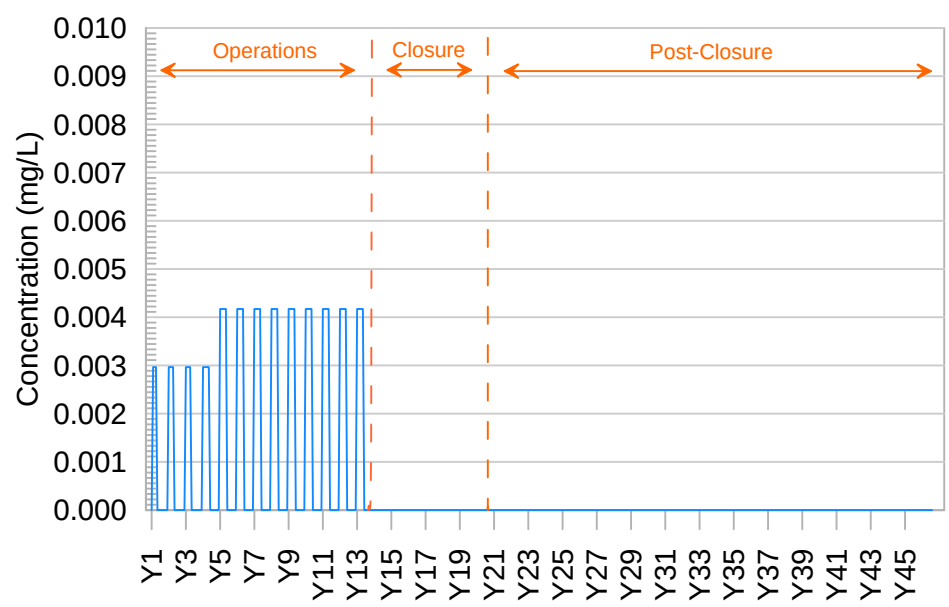
Lead - PN09





Nickel - PN09





Monthly Mean — — MDMER

NOTES:

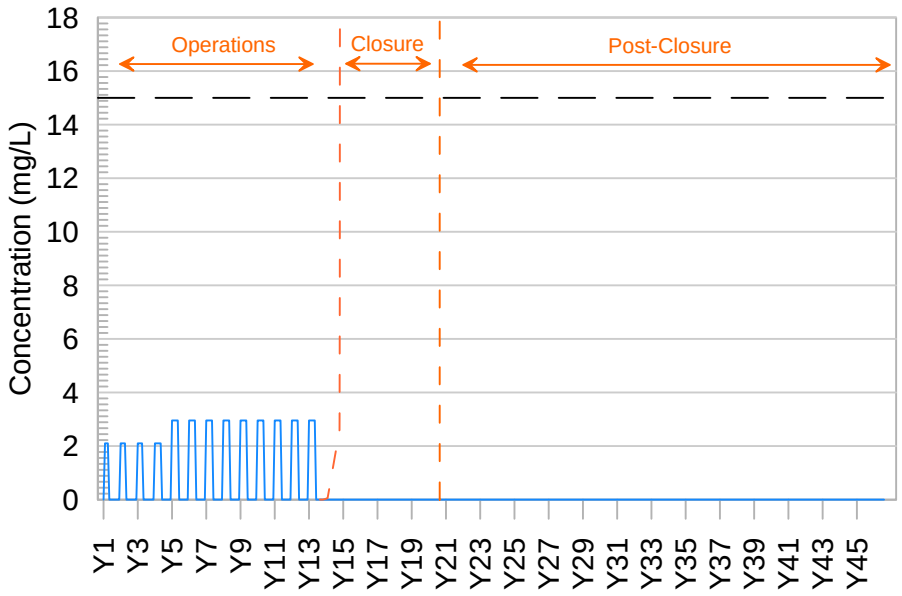
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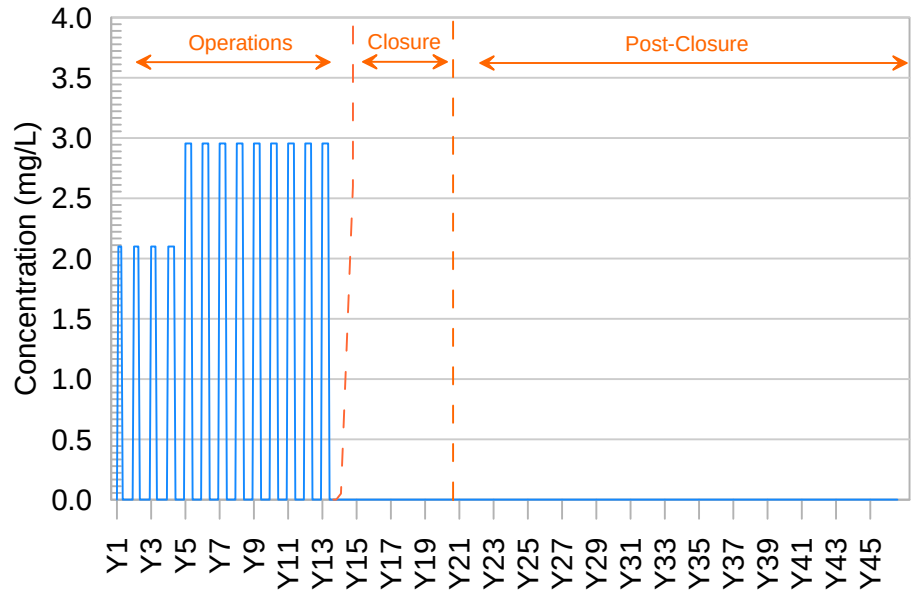
PREPARED BY:	FIGURE TITLE:		
ZMM	PREDICTED CONCENTRATIONS AT PN09 (PART 1)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-21

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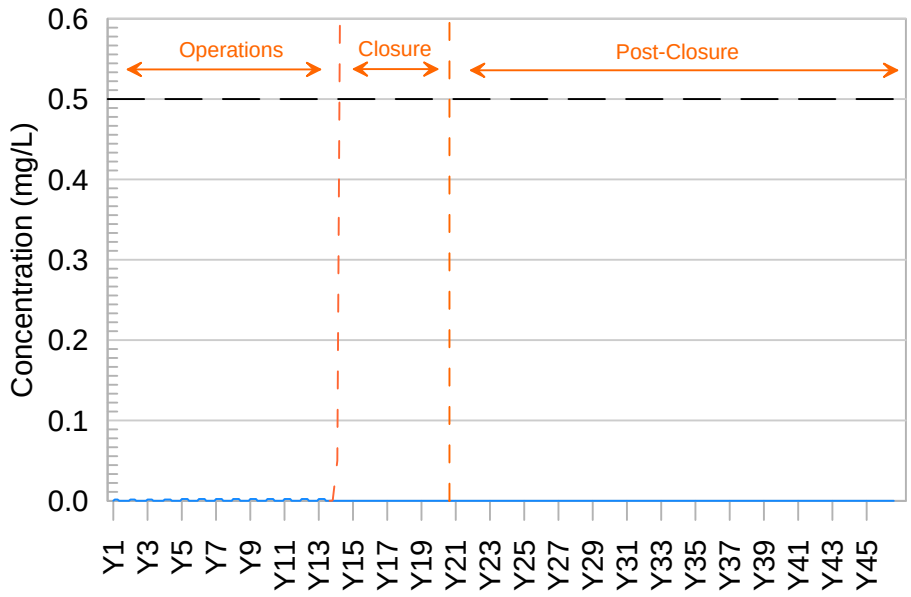
BGC Engineering

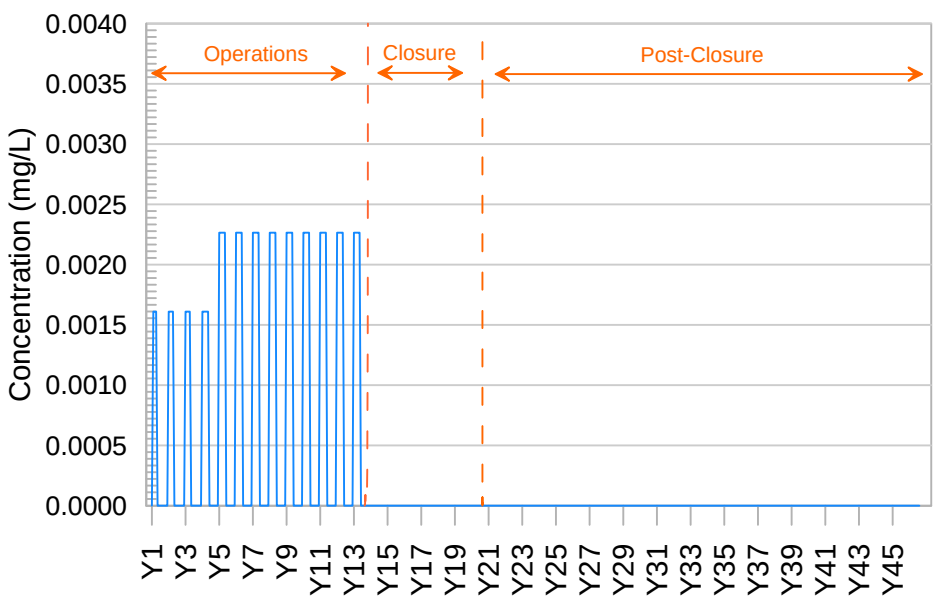
TSS - PN09



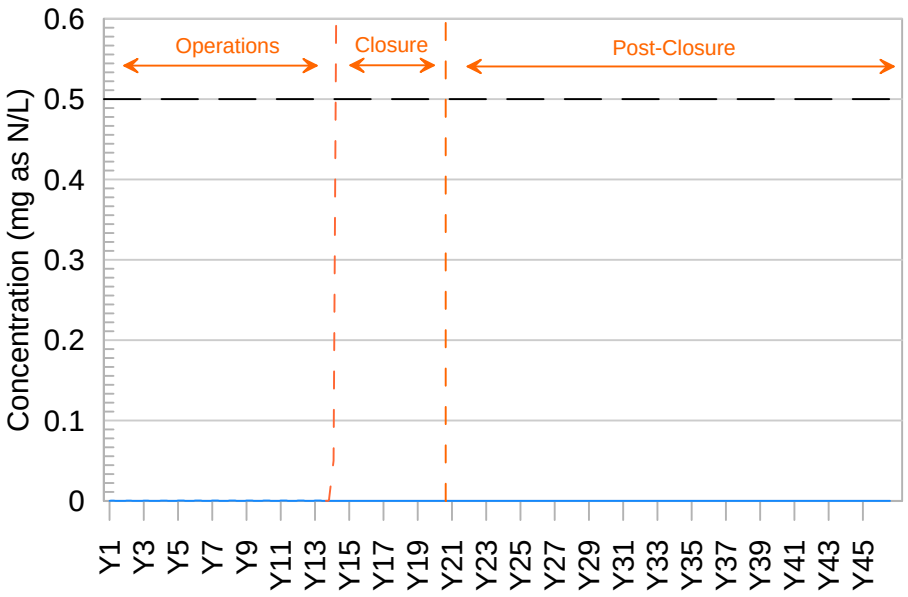


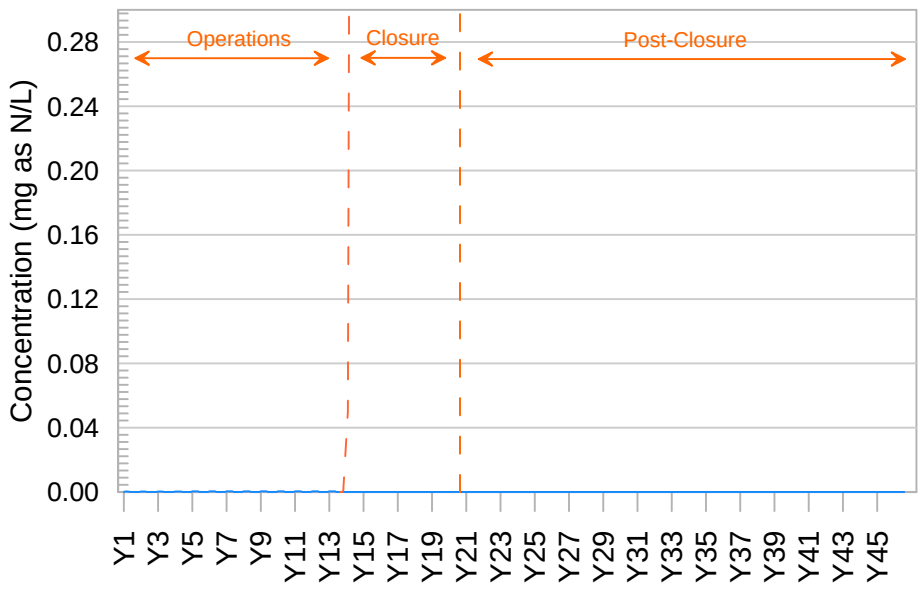
Total CN - PN09



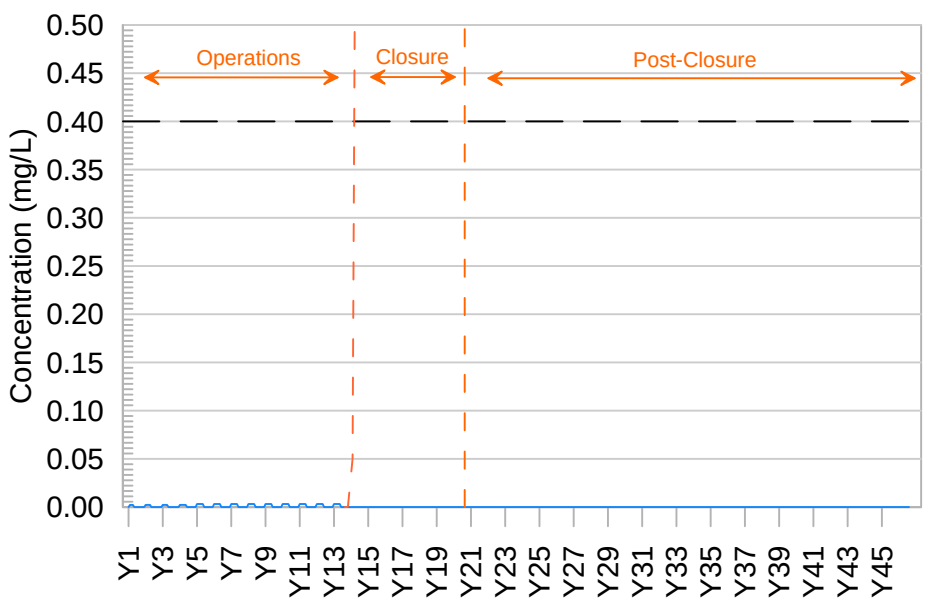


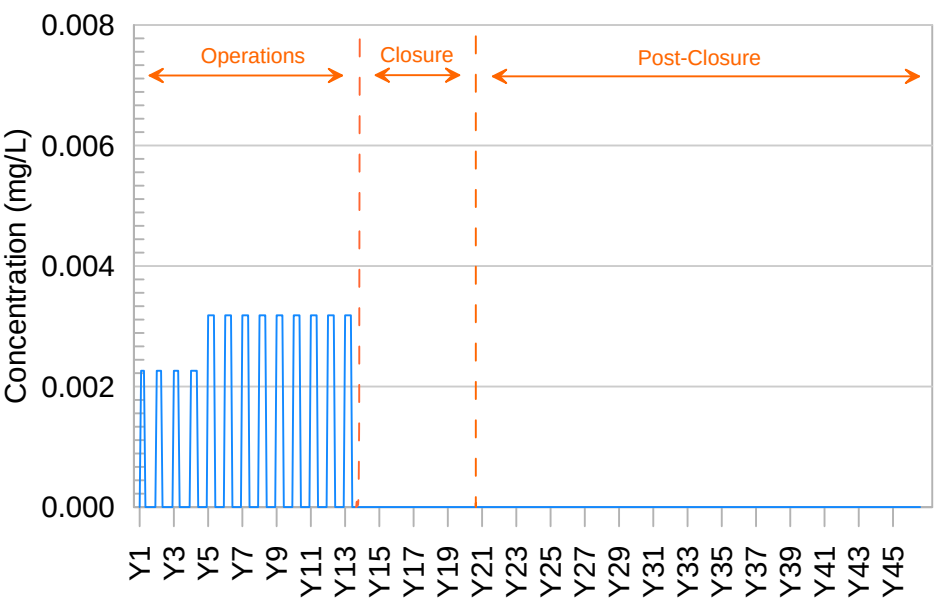
Un-ionized Ammonia - PN09





Zinc - PN09





Monthly Mean — — MDMER

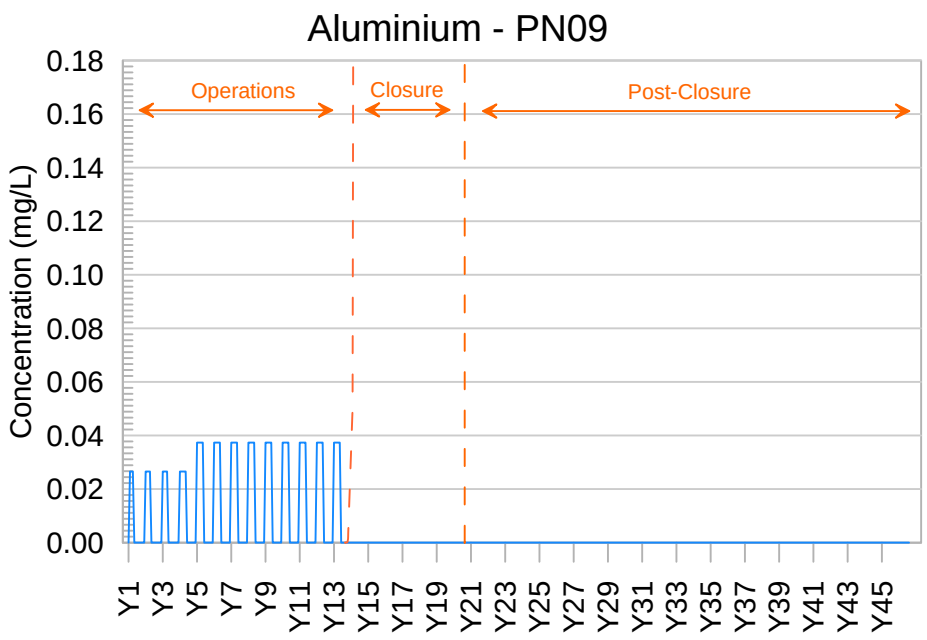
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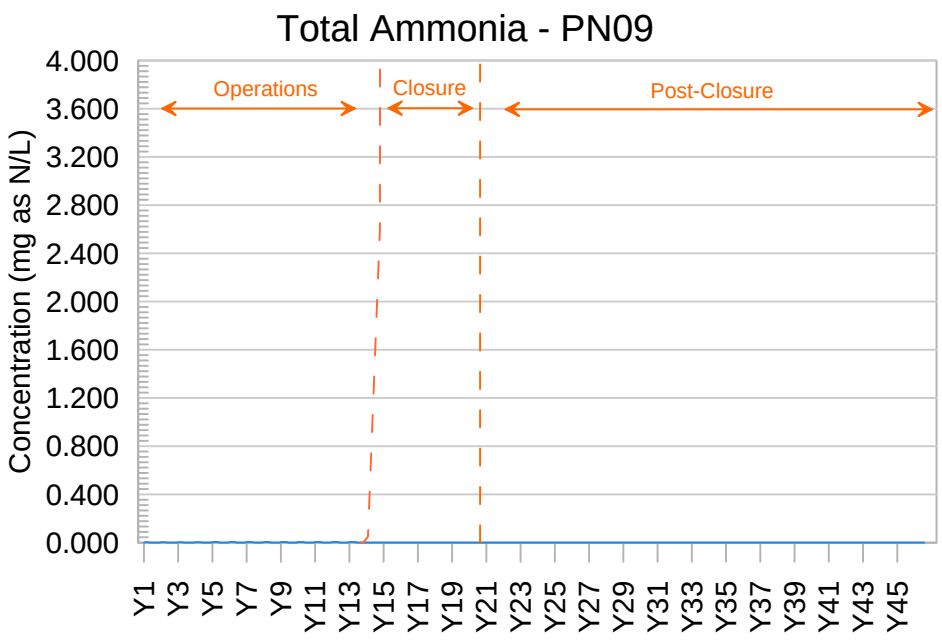
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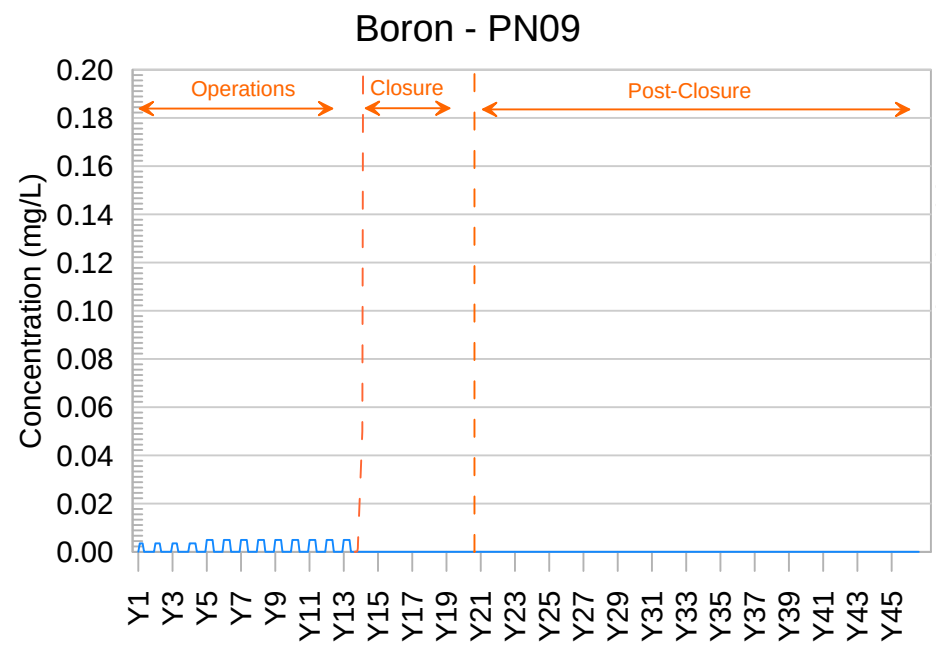
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CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-22

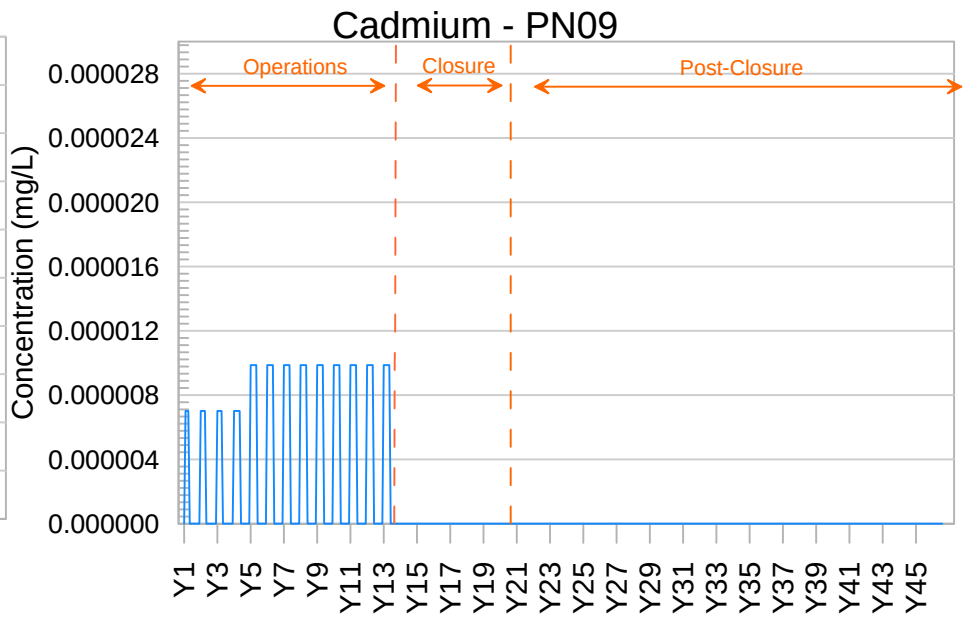
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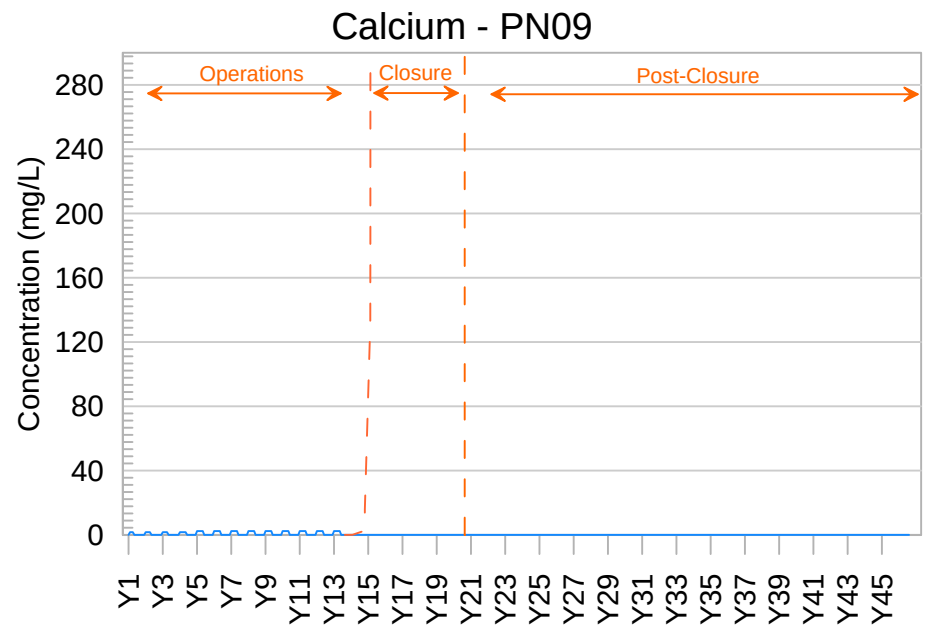
BGC Engineering

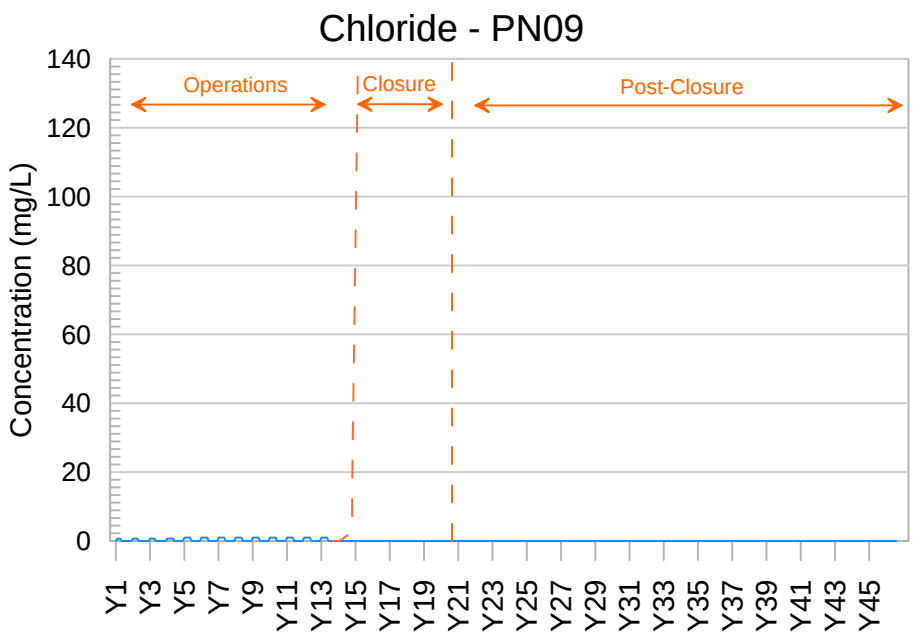


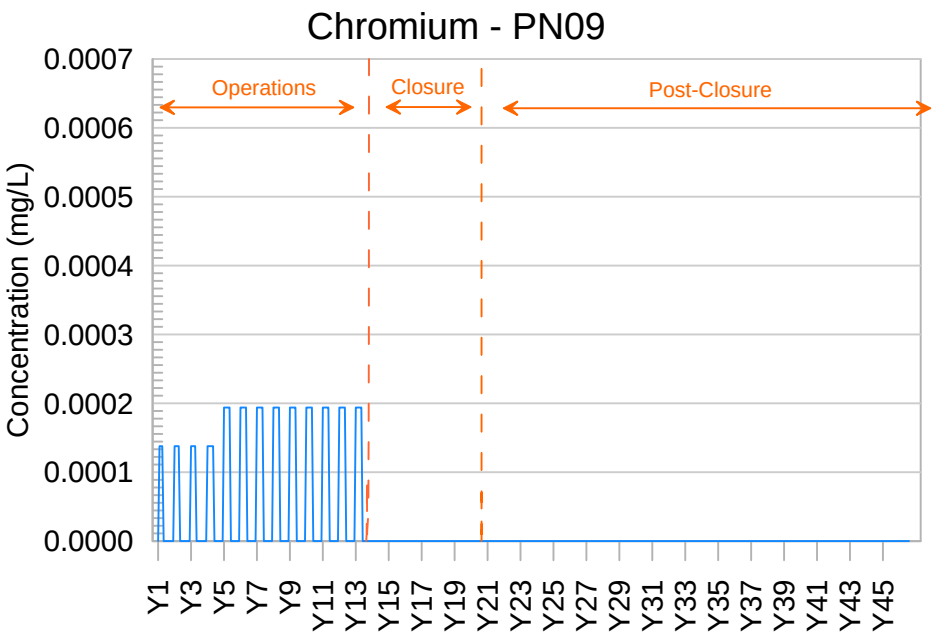


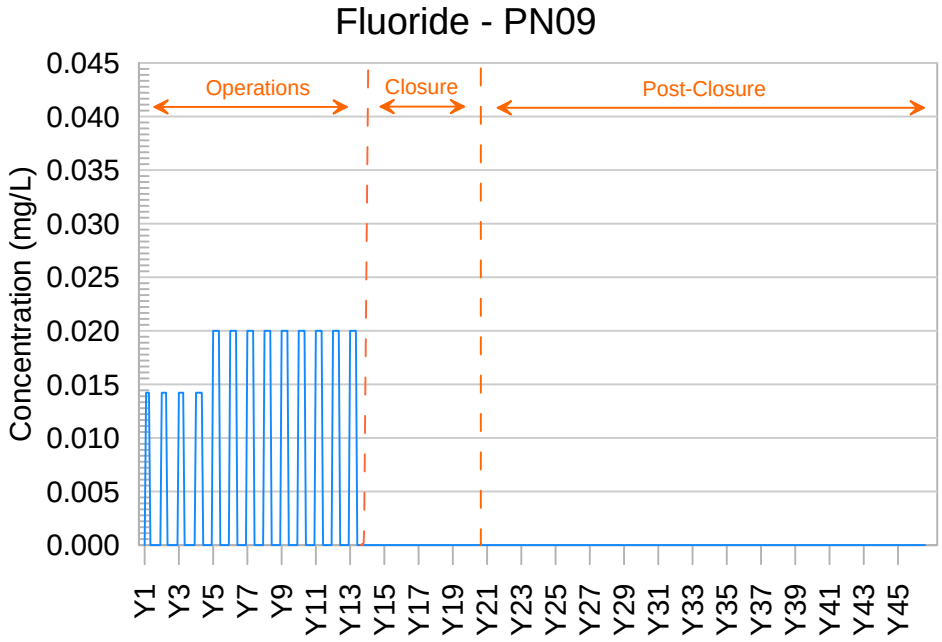












Monthly Mean

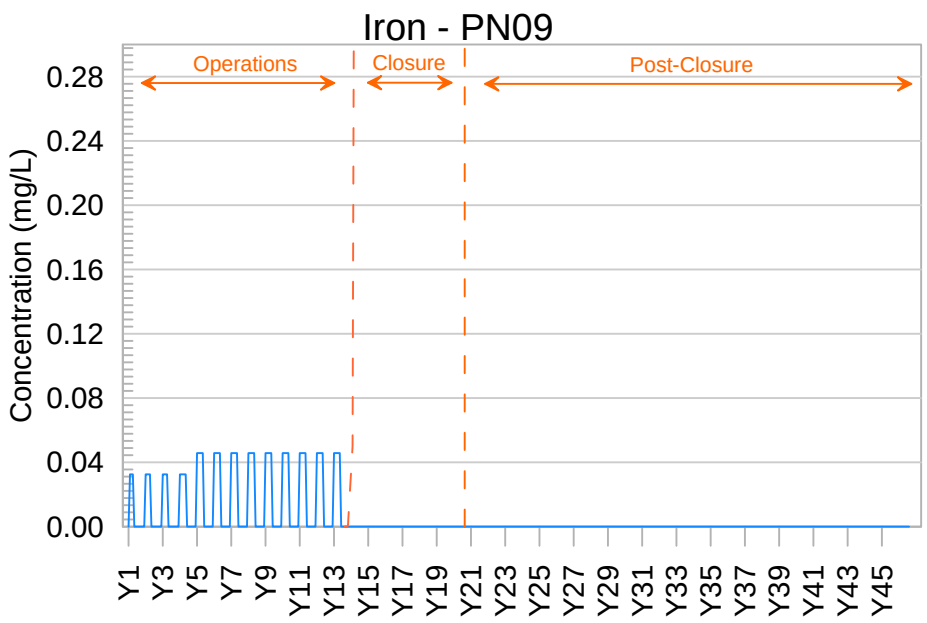
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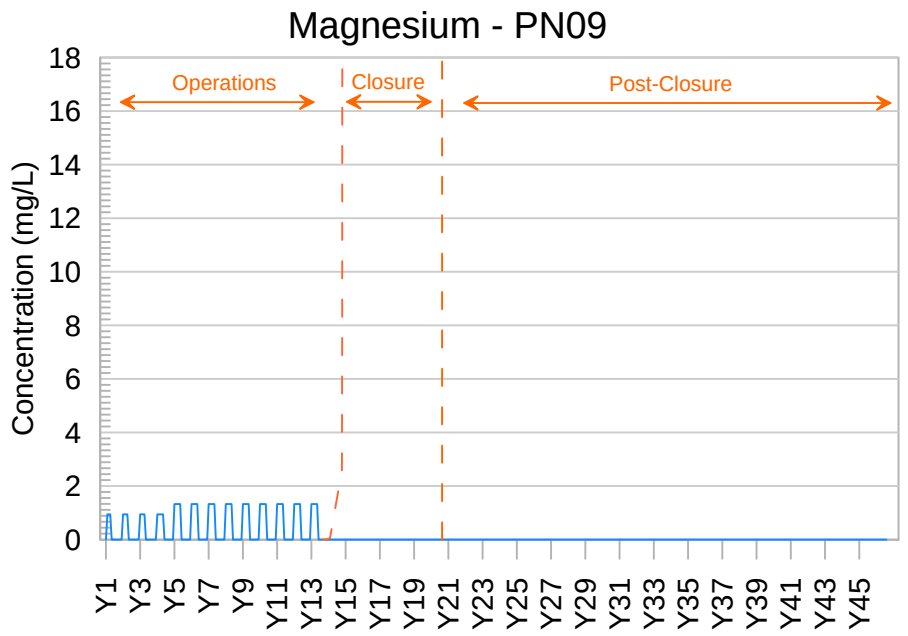
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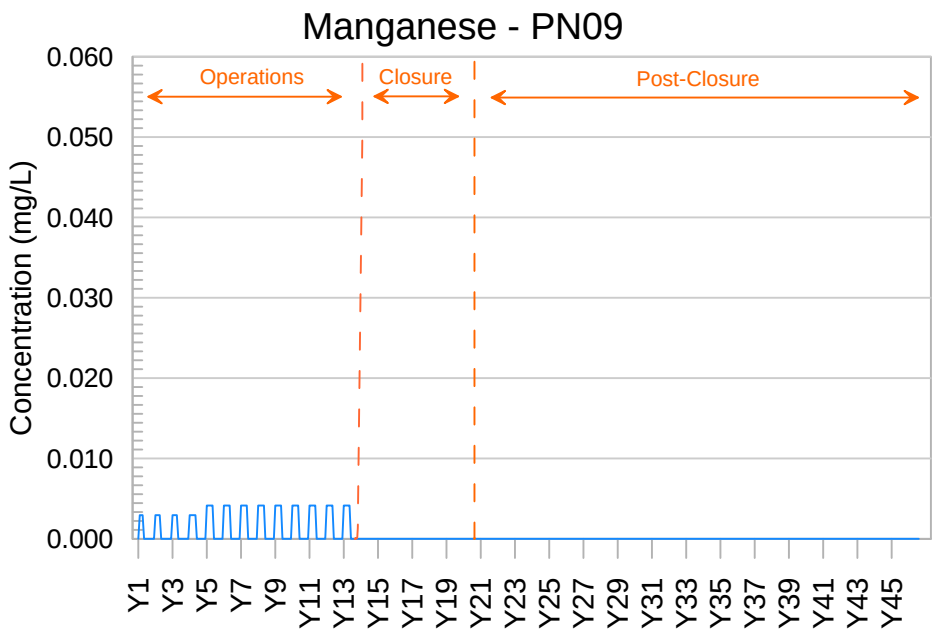
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ZMM	PREDICTED CONCENTRATIONS AT PN09 (PART 3)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-23

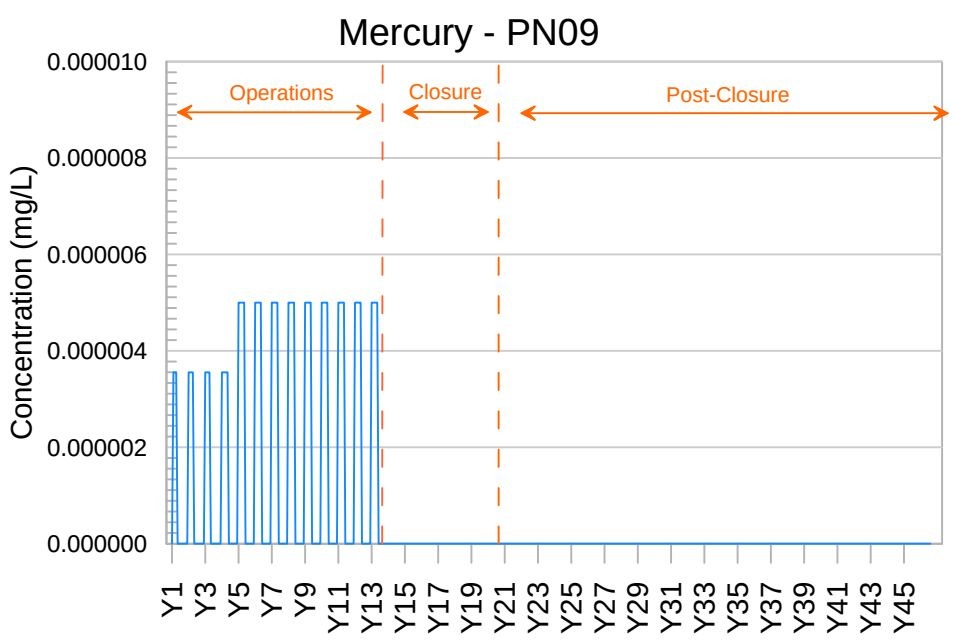
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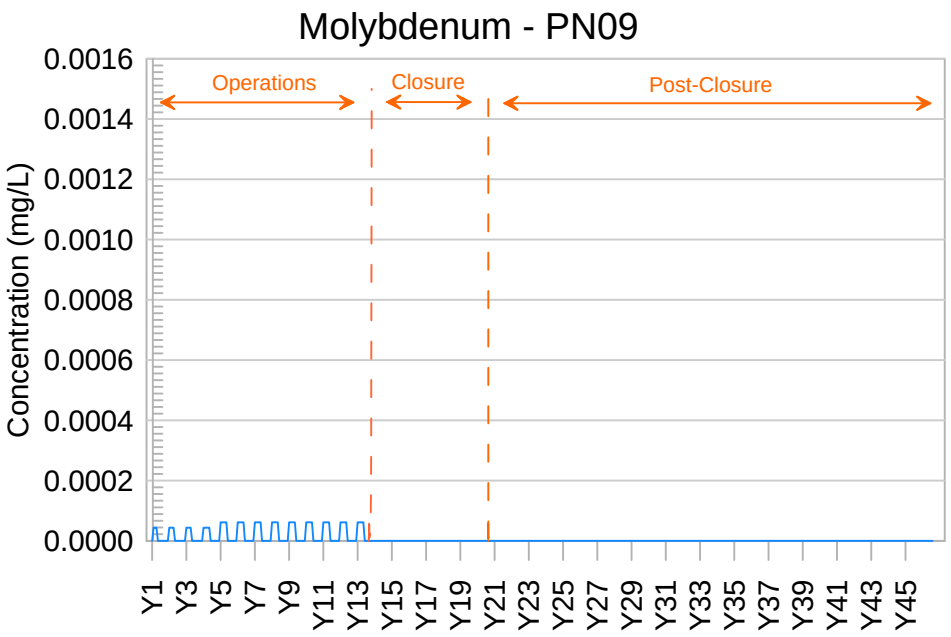
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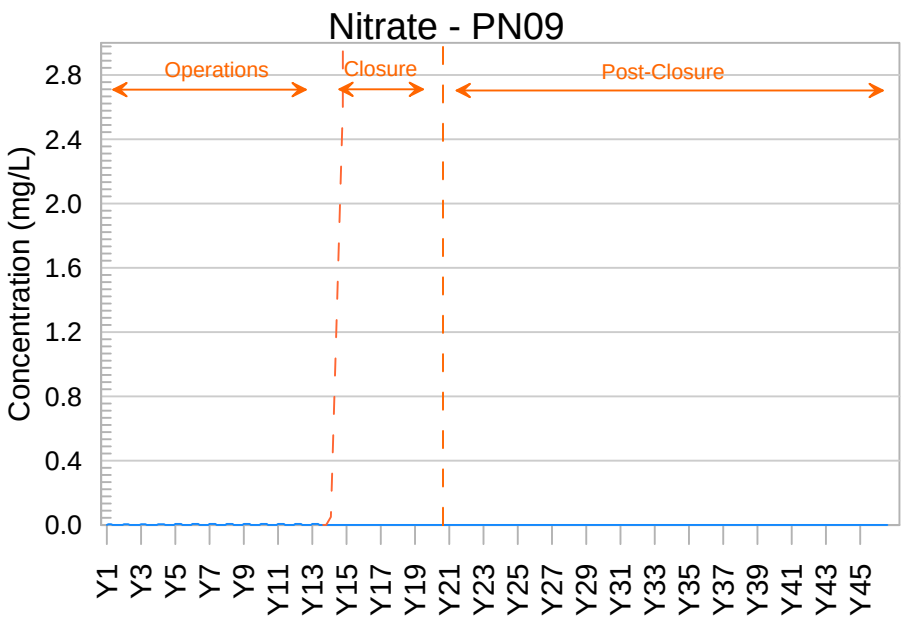


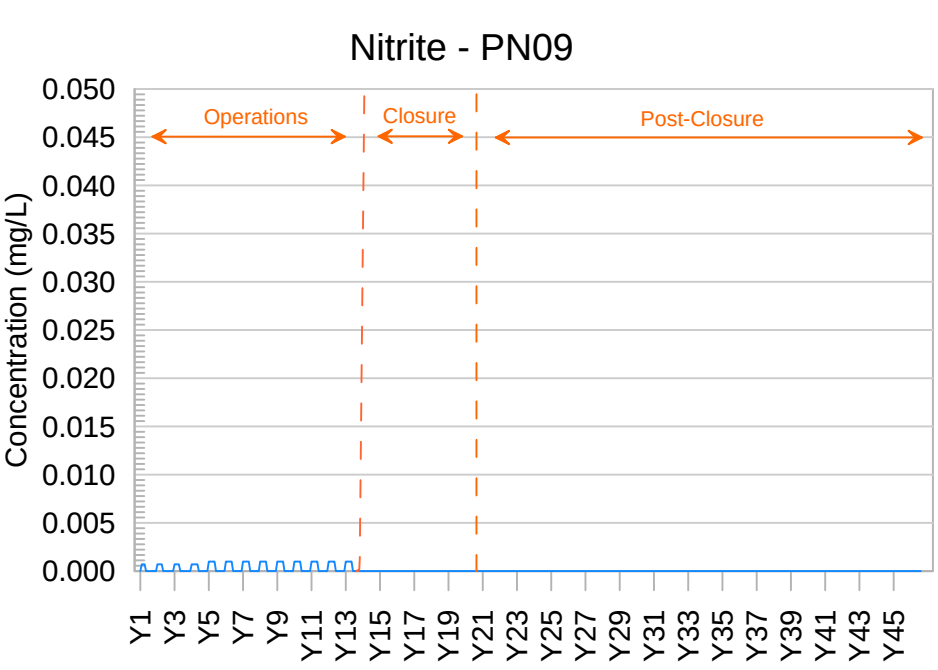


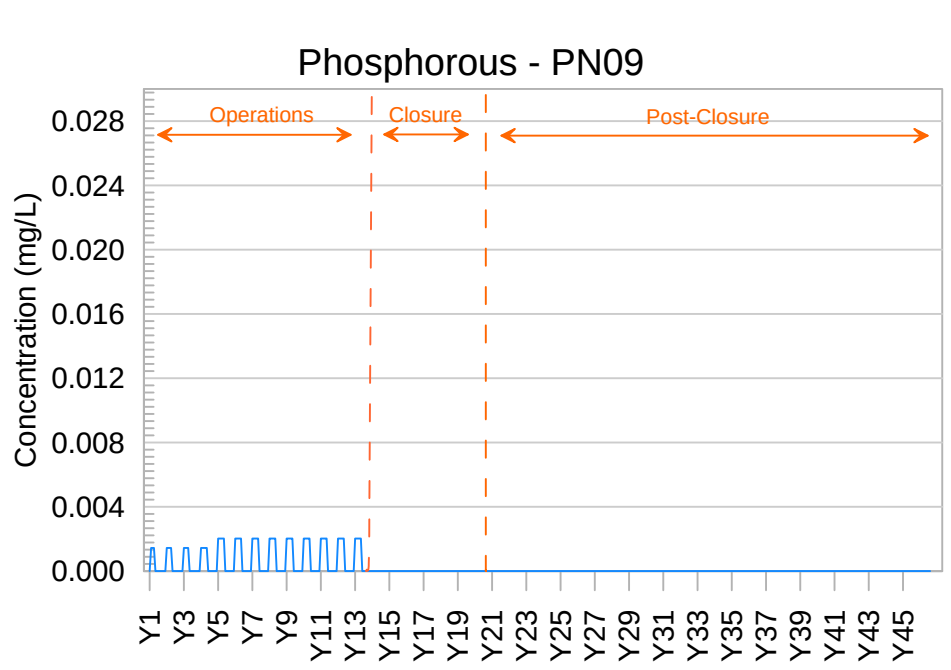












Monthly Mean

NOTES:

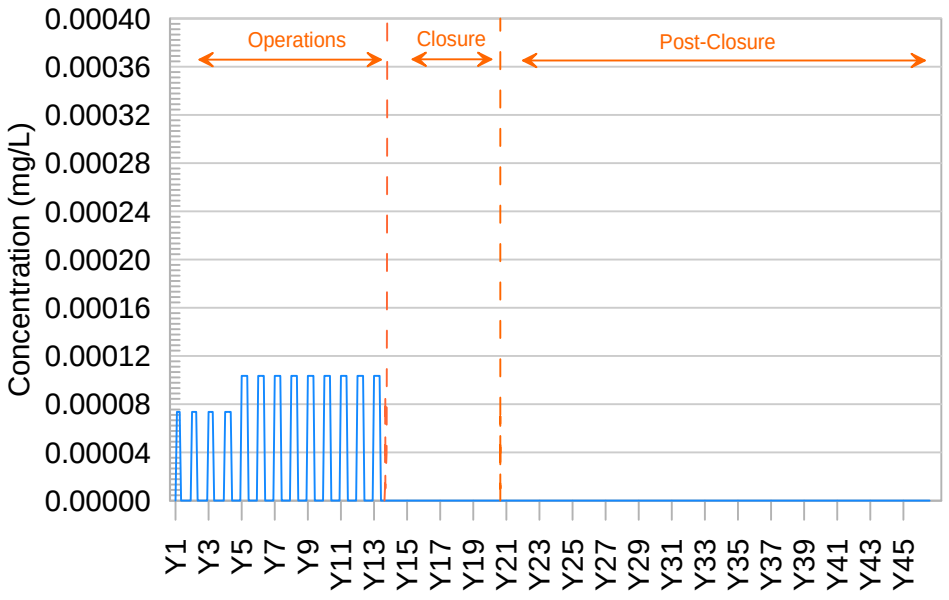
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IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-24

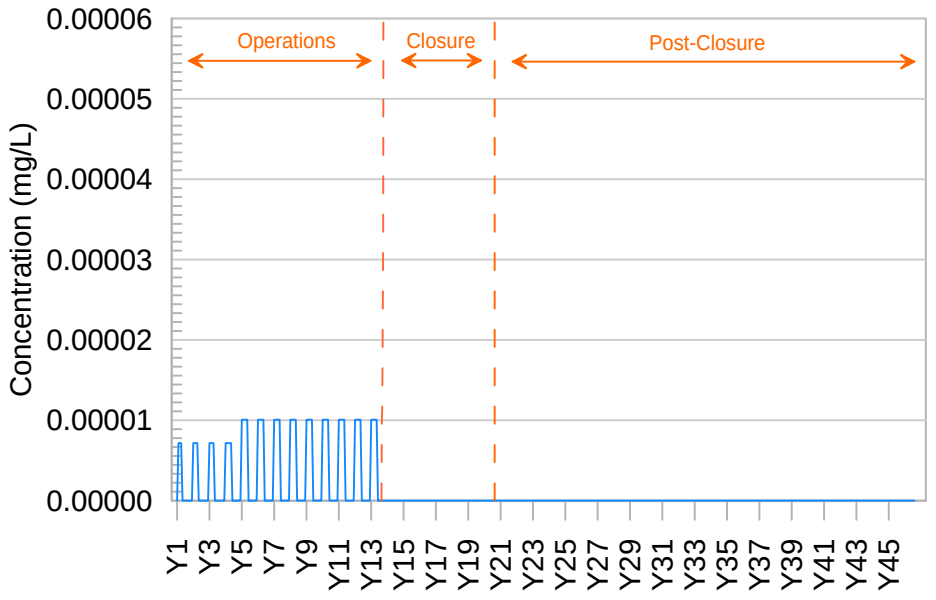
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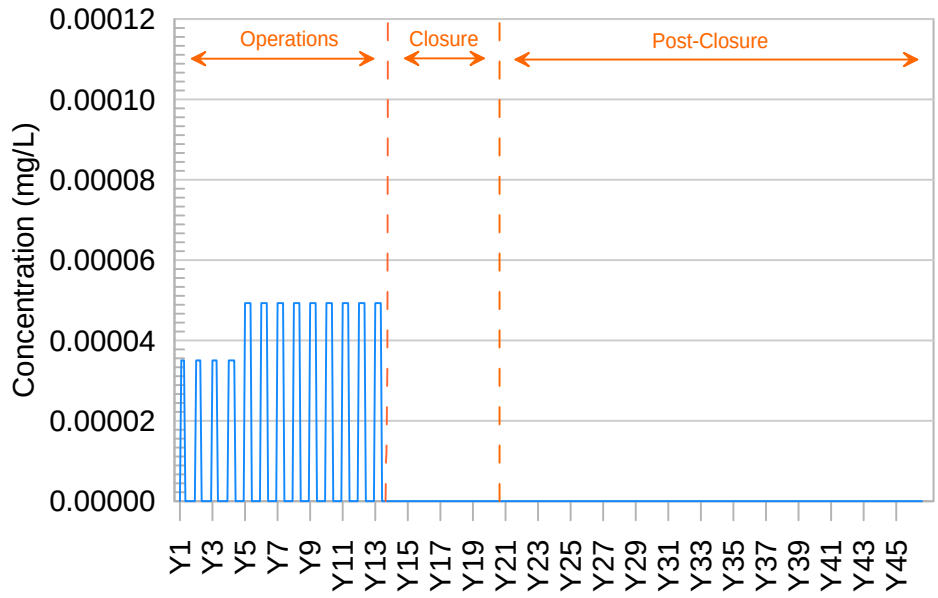
Selenium - PN09



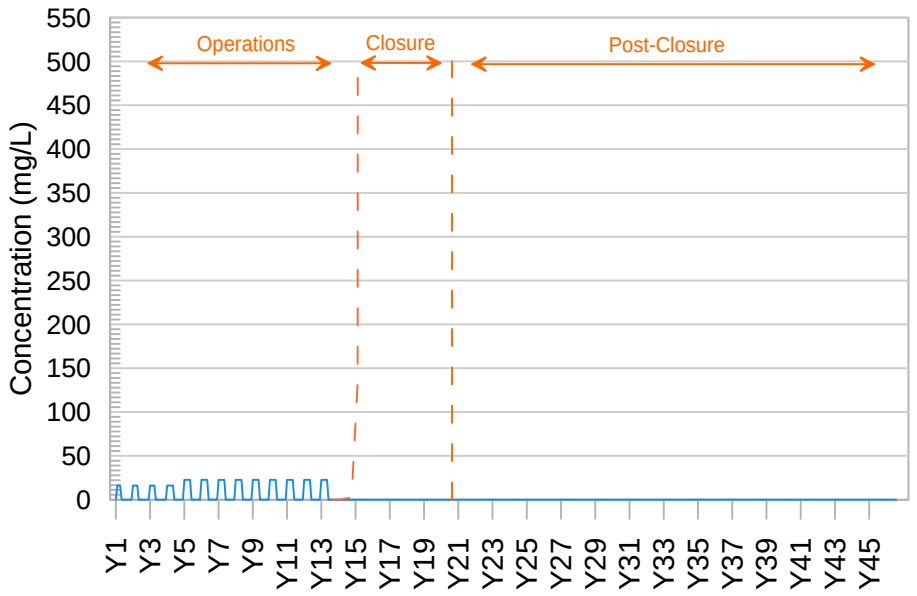
Silver - PN09



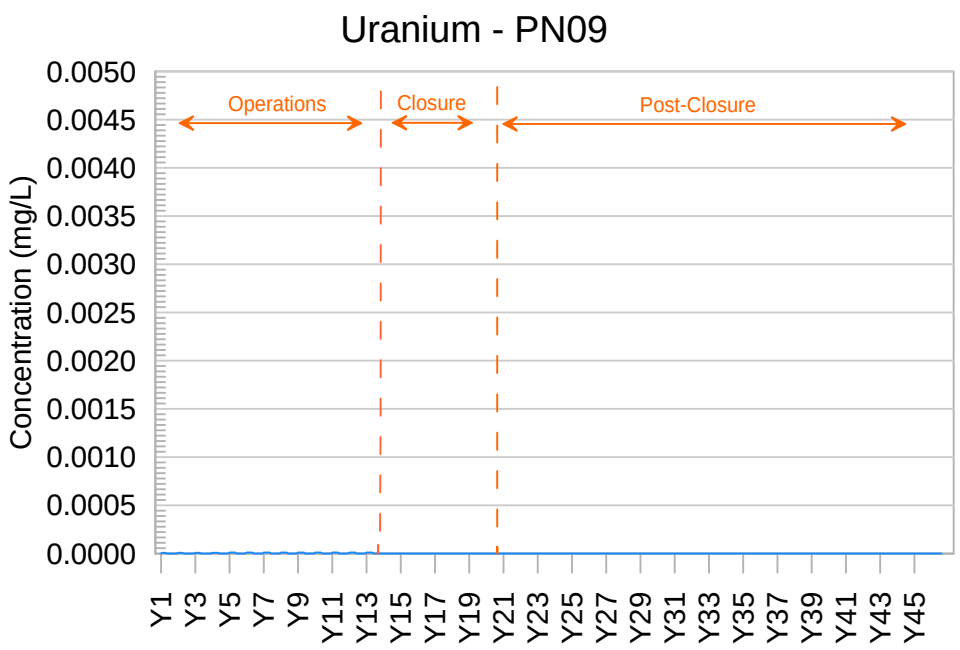
Thallium - PN09



TDS - PN09



Uranium - PN09



Monthly Mean

NOTES:

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ZMM	PREDICTED CONCENTRATIONS AT PN09 (PART 5)		
CHECKED BY:	CLIENT:		
IMC	B2GOLD Back River Corporation		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
PC	N/A	1829001	F-25

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APPENDIX G
PREDICTED MAXIMUM MONTHLY AVERAGE CONCENTRATIONS PER MINE PHASE AT EACH PREDICATION NODE FOR AVERAGE HYDROLOGICAL CONDITIONS

Table G-1 Predicted maximum monthly average concentrations per mine phase at each prediction node for average hydrological conditions (50th percentile).

Constituents	Units	MDMER Limit[a]	PN04			PN05			PN06			PN08			PN09[b]
			Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations
Alkalinity	mg/L		6.2	7.1	6.5	2.1	2.8	2.2	2.0	2.0	2.0	2.1	6.1	6.0	2.3
Aluminum	mg/L		0.14	0.14	0.12	0.016	0.074	0.022	0.013	0.013	0.013	0.021	0.045	0.045	0.037
Un-ionized ammonia	mg-N/L	0.5	0.012	0.26	0.24	0.0004	0.00038	0.000076	0.00040	0.00040	0.00040	0.00039	0.00066	0.00037	0.00039
Antimony	mg/L		0.00012	0.00049	0.00037	0.000053	0.00012	0.000074	0.000051	0.000051	0.000051	0.000055	0.00021	0.00021	0.000064
Arsenic	mg/L	0.1	0.0036	0.055	0.043	0.00031	0.0021	0.0010	0.00024	0.00024	0.00024	0.00043	0.014	0.014	0.00085
Barium	mg/L		0.0085	0.0072	0.0066	0.0051	0.094	0.036	0.0051	0.0051	0.0051	0.0051	0.0055	0.0055	0.0052
Beryllium	mg/L		0.00019	0.00018	0.00017	0.00020	0.00019	0.00018	0.00020	0.00020	0.00020	0.00020	0.00019	0.00019	0.00020
Bismuth	mg/L		0.00047	0.00046	0.00043	0.00050	0.0011	0.00066	0.00050	0.00050	0.0005	0.00050	0.00049	0.00049	0.00049
Boron	mg/L		0.0052	0.042	0.033	0.0050	0.064	0.025	0.0050	0.0050	0.005	0.0050	0.13	0.070	0.0049
Cadmium	mg/L		0.0000095	0.000014	0.000013	0.00001	0.000022	0.000013	0.00001	0.00001	0.00001	0.00001	0.000015	0.000015	0.0000099
Calcium	mg/L		4.1	14	9.7	2.2	240	84	2.2	2.2	2.2	2.2	5.3	5.3	2.4
Chloride	mg/L		5.4	7.0	4.6	1.0	110	120	1.0	1.0	1.0	0.99	1.9	1.9	0.98
Chromium	mg/L		0.00037	0.00061	0.00049	0.00016	0.00026	0.00018	0.00015	0.00015	0.00015	0.00017	0.00048	0.00032	0.00019
Cobalt	mg/L		0.0015	0.003	0.0025	0.00017	0.00077	0.00032	0.00014	0.00014	0.00014	0.00022	0.0015	0.0015	0.00039
Copper	mg/L	0.1	0.0015	0.0033	0.0030	0.0014	0.0015	0.0013	0.0014	0.0014	0.0014	0.0014	0.0020	0.0020	0.0014
Cyanate	mg/L		0.0000033	2.6	1.2	0	0.000011	0.000012	0	0	0	0	0	0	0
Fluoride	mg/L		0.020	0.022	0.021	0.020	0.020	0.018	0.020	0.020	0.020	0.020	0.022	0.022	0.020
Free Cyanide	mg/L		0	0	0	0	0	0	0	0	0	0	0	0	0
Hardness	mg/L		18	30	32	11	670	240	11	11	11	11	66	66	11
Iron	mg/L		0.18	0.25	0.21	0.020	0.09	0.046	0.016	0.016	0.016	0.025	0.064	0.064	0.046
Lead	mg/L	0.08	0.000055	0.0017	0.0011	0.00005	0.00012	0.000070	0.000050	0.000050	0.000050	0.000050	0.00031	0.00016	0.000051
Lithium	mg/L		0.0047	0.0074	0.0064	0.0050	0.11	0.041	0.0050	0.0050	0.0050	0.0050	0.013	0.0088	0.0049
Magnesium	mg/L		2.0	1.6	1.7	1.3	16	6.3	1.3	1.3	1.3	1.3	1.9	1.9	1.3
Manganese	mg/L		0.013	0.017	0.017	0.0023	0.048	0.018	0.0020	0.0020	0.0020	0.0027	0.033	0.033	0.0041
Mercury	mg/L		0.0000068	0.0000054	0.0000051	0.0000050	0.0000050	0.0000046	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Molybdenum	mg/L		0.00011	0.0014	0.00094	0.000052	0.00068	0.00027	0.000051	0.000051	0.000051	0.000054	0.00037	0.00037	0.000062
Nickel	mg/L	0.25	0.0076	0.0080	0.0081	0.0035	0.0054	0.0034	0.0034	0.0034	0.0034	0.0036	0.0074	0.0074	0.0042
Nitrate	mg-N/L		0.25	2.4	1.8	0.0065	0.023	0.015	0.0065	0.0065	0.0065	0.0065	0.15	0.15	0.0064
Nitrite	mg-N/L		0.013	0.032	0.030	0.0010	0.0028	0.0015	0.0010	0.0010	0.0010	0.00099	0.037	0.036	0.00098
Orthophosphate	mg-P/L		0.00095	0.00092	0.00076	0.0010	0.0017	0.0012	0.0010	0.0010	0.0010	0.00099	0.00092	0.00092	0.00098

Constituents	Units	MDMER Limit[a]	PN04			PN05			PN06			PN08			PN09[b]
			Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations
Phosphate	mg-P/L		0.0015	0.000020	0.000012	0	0.0032	0.0011	0	0	0	0	0	0	0
Phosphorus	mg/L		0.0027	0.0066	0.0084	0.0019	0.0094	0.014	0.0019	0.0019	0.0019	0.0019	0.016	0.016	0.002
Potassium	mg/L		0.62	3.6	2.6	0.34	3.9	1.6	0.34	0.34	0.34	0.34	6.9	3.6	0.34
Selenium	mg/L		0.00012	0.00030	0.00023	0.00010	0.00022	0.00014	0.00010	0.00010	0.00010	0.00010	0.00022	0.00022	0.0001
Silicon	mg/L		0.67	1.9	1.6	0.29	0.47	0.31	0.28	0.28	0.28	0.31	2.8	2.5	0.36
Silver	mg/L		0.000010	0.000023	0.000018	0.00001	0.000022	0.000013	0.000010	0.000010	0.000010	0.000010	0.000012	0.000012	0.00001
Sodium	mg/L		0.90	180	100	0.66	100	35	0.66	0.66	0.66	0.66	2	2	0.65
Strontium	mg/L		0.028	0.053	0.036	0.0094	4.8	1.7	0.0094	0.0094	0.0094	0.0094	0.046	0.028	0.0093
Sulphate	mg/L		6.5	280	170	4.2	7	4.9	4.1	4.1	4.1	4.3	18	18	4.6
TDS	mg/L		25	22	21	23	460	290	23	23	23	23	21	21	23
Tellurium	mg/L		0.0019	0.0018	0.0016	0.0020	0.0019	0.0018	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Thallium	mg/L		0.000048	0.000046	0.000041	0.000050	0.00011	0.000066	0.000050	0.000050	0.000050	0.000050	0.000066	0.000056	0.000049
Thiocyanate	mg/L		0	1.1	0.17	0	0	0	0	0	0	0	0	0	0
Thorium	mg/L		0	0.000029	0.000020	0	0.00000031	0.00000011	0	0	0	0	0.000016	0.000016	0
Tin	mg/L		0.000095	0.00018	0.00017	0.0001	0.00022	0.00014	0.0001	0.0001	0.0001	0.000099	0.00073	0.00041	0.000098
Titanium	mg/L		0.013	0.013	0.011	0.010	0.012	0.0095	0.010	0.010	0.010	0.010	0.012	0.012	0.011
TOC	mg/L		3.8	3.7	3.0	4.0	3.9	3.6	4.0	4.0	4.0	4.0	3.7	3.7	3.9
Total Cyanide	mg/L	0.5	0.0022	0.0021	0.0015	0.0023	0.0022	0.00044	0.0023	0.0023	0.0023	0.0023	0.0021	0.0021	0.0023
TSS	mg/L	15	2.8	2.8	2.3	3.0	2.9	2.7	3.0	3.0	3.0	3.0	2.8	2.8	3.0
Uranium	mg/L		0.000011	0.00082	0.00062	0.000010	0.000044	0.000021	0.000010	0.000010	0.000010	0.000010	0.0035	0.0017	0.000010
Vanadium	mg/L		0.00012	0.00050	0.00048	0.000055	0.00056	0.00023	0.000054	0.000054	0.000054	0.000058	0.0033	0.0017	0.000066
WAD Cyanide	mg/L		0	0.000052	0.000031	0	<0.01	<0.01	0	0	0	0	0	0	0
Zinc	mg/L	0.4	0.0039	0.0041	0.0040	0.0030	0.0071	0.0042	0.0030	0.0030	0.0030	0.0031	0.0039	0.0039	0.0032
Zirconium	mg/L		0.00038	0.00037	0.00042	0.00040	0.00039	0.00036	0.00040	0.00040	0.00040	0.00040	0.00063	0.00063	0.00039

Note:

(a) Refer to Table 5-2 for MDMER discharge limits

(b) PN09 is not active after Operations (i.e., at the start of closure)

TDS = total dissolved solids; TOC = total organic carbon; TSS = total suspended solids; WAD = weak acid dissociable; mg/L = milligrams per litre; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre

APPENDIX H
PREDICTED MAXIMUM MONTHLY AVERAGE CONCENTRATIONS PER MINE PHASE AT EACH PREDICATION NODE FOR LOWER AND UPPER BOUND CONCENTRATIONS (5TH AND 95TH PERCENTILES)

Table H-1 Predicted Maximum Monthly Average Concentrations per Mine Phase at Each Prediction Node for Lower Bound Concentration (5th Percentile)

Constituents	Units	MDMER Limit[a]	PN04			PN05			PN06			PN08			PN09[b]
			Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations
Alkalinity	mg/L		6.5	5.6	6.1	2.8	2.8	2.1	2.0	2.0	2.0	10.5	6.1	6.0	2.3
Aluminum	mg/L		0.14	0.14	0.11	0.074	0.074	0.021	0.013	0.013	0.013	0.051	0.045	0.045	0.037
Un-ionized ammonia	mg-N/L	0.5	0.025	0.21	0.2	0.0004	0.00038	0.000067	0.00040	0.00040	0.00040	0.00048	0.00040	0.00037	0.00039
Antimony	mg/L		0.00023	0.00035	0.00034	0.000085	0.00011	0.000064	0.000051	0.000051	0.000051	0.00040	0.00021	0.00021	0.000064
Arsenic	mg/L	0.1	0.017	0.03	0.032	0.0018	0.0018	0.00075	0.00024	0.00024	0.00024	0.030	0.014	0.014	0.00085
Barium	mg/L		0.0085	0.006	0.006	0.0053	0.075	0.023	0.0051	0.0051	0.0051	0.0058	0.0055	0.0055	0.0052
Beryllium	mg/L		0.00019	0.00018	0.00016	0.0002	0.00019	0.00018	0.00020	0.00020	0.00020	0.00020	0.00019	0.00019	0.00020
Bismuth	mg/L		0.00047	0.00046	0.00040	0.00050	0.00093	0.00057	0.00050	0.00050	0.0005	0.00050	0.00049	0.00049	0.00049
Boron	mg/L		0.034	0.03	0.031	0.005	0.051	0.016	0.0050	0.0050	0.0050	0.15	0.13	0.070	0.0049
Cadmium	mg/L		0.000012	0.000012	0.000012	0.000010	0.000019	0.000012	0.000010	0.000010	0.000010	0.000022	0.000015	0.000015	0.000010
Calcium	mg/L		4.1	9.7	8.8	2.7	190	49	2.2	2.2	2.2	9.0	5.3	5.3	2.4
Chloride	mg/L		5.4	4.5	4.0	1.0	110	91	1.0	1.0	1.0	2.9	1.9	1.9	0.98
Chromium	mg/L		0.00037	0.0005	0.00045	0.00026	0.00026	0.00017	0.00015	0.00015	0.00015	0.00048	0.00048	0.00032	0.00019
Cobalt	mg/L		0.0017	0.0024	0.0024	0.00077	0.00077	0.00027	0.00014	0.00014	0.00014	0.0027	0.0015	0.0015	0.00039
Copper	mg/L	0.1	0.0015	0.0027	0.0027	0.0015	0.0015	0.0013	0.0014	0.0014	0.0014	0.0027	0.0020	0.0020	0.0014
Cyanate	mg/L		0.0000066	1.5	0.79	0.0000093	0.0000086	0.0000094	0	0	0	0	0	0	0
Fluoride	mg/L		0.02	0.02	0.019	0.02	0.02	0.018	0.020	0.020	0.020	0.024	0.022	0.022	0.020
Free Cyanide	mg/L		0	0	0	0	0	0	0	0	0	0	0	0	0
Hardness	mg/L		53	25	31	11	530	140	11	11	11	130	66	66	11
Iron	mg/L		0.18	0.21	0.19	0.09	0.09	0.037	0.016	0.016	0.016	0.083	0.064	0.064	0.046
Lead	mg/L	0.08	0.00013	0.0011	0.0009	0.000053	0.00010	0.000060	0.000050	0.000050	0.000050	0.00031	0.00031	0.00016	0.000051
Lithium	mg/L		0.0047	0.0059	0.0060	0.0050	0.086	0.025	0.0050	0.0050	0.0050	0.013	0.013	0.0088	0.0049
Magnesium	mg/L		2.0	1.5	1.5	1.4	13	4.1	1.3	1.3	1.3	2.6	1.9	1.9	1.3
Manganese	mg/L		0.015	0.015	0.016	0.0073	0.039	0.012	0.0020	0.0020	0.0020	0.068	0.033	0.033	0.0041
Mercury	mg/L		0.0000068	0.000005	0.0000045	0.0000050	0.0000050	0.0000045	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Molybdenum	mg/L		0.00041	0.00093	0.00083	0.000078	0.00055	0.00018	0.000051	0.000051	0.000051	0.00075	0.00037	0.00037	0.000062
Nickel	mg/L	0.25	0.0076	0.0075	0.0075	0.0054	0.0054	0.0034	0.0034	0.0034	0.0034	0.011	0.0074	0.0074	0.0042
Nitrate	mg-N/L		0.52	1.5	1.6	0.012	0.021	0.014	0.0065	0.0065	0.0065	0.32	0.15	0.15	0.0064
Nitrite	mg-N/L		0.033	0.027	0.027	0.001	0.0024	0.0013	0.0010	0.0010	0.0010	0.08	0.036	0.036	0.00098
Orthophosphate	mg-P/L		0.00094	0.00092	0.00074	0.001	0.0015	0.0011	0.0010	0.0010	0.0010	0.00099	0.00092	0.00092	0.00098

Constituents	Units	MDMER Limit[a]	PN04			PN05			PN06			PN08			PN09[b]
			Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations
Phosphate	mg-P/L		0.0015	0.000012	0.0000096	0.00000038	0.0025	0.00064	0	0	0	0	0	0	0
Phosphorus	mg/L		0.014	0.0055	0.0078	0.0022	0.0094	0.011	0.0019	0.0019	0.0019	0.033	0.016	0.016	0.0020
Potassium	mg/L		1.7	2.4	2.3	0.34	3.2	1.0	0.34	0.34	0.34	7.7	6.9	3.6	0.34
Selenium	mg/L		0.00014	0.00022	0.00022	0.00011	0.00020	0.00012	0.00010	0.00010	0.00010	0.00036	0.00022	0.00022	0.00010
Silicon	mg/L		1.4	1.5	1.5	0.47	0.47	0.3	0.28	0.28	0.28	5.2	2.8	2.5	0.36
Silver	mg/L		0.00001	0.000017	0.000017	0.00001	0.000019	0.000012	0.000010	0.000010	0.000010	0.000014	0.000012	0.000012	0.000010
Sodium	mg/L		6.3	110	87	0.66	79	21	0.66	0.66	0.66	3.7	2	2	0.65
Strontium	mg/L		0.028	0.035	0.032	0.0094	3.8	0.98	0.0094	0.0094	0.0094	0.050	0.046	0.028	0.0093
Sulphate	mg/L		15	170	140	5.2	6.3	4.5	4.1	4.1	4.1	34	18	18	4.6
TDS	mg/L		25	21	19	23	460	170	23	23	23	23	21	21	23
Tellurium	mg/L		0.0019	0.0018	0.0015	0.002	0.0019	0.0018	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.002
Thallium	mg/L		0.000047	0.000046	0.000039	0.00005	0.000093	0.000057	0.000050	0.000050	0.000050	0.000066	0.000066	0.000056	0.000049
Thiocyanate	mg/L		0.0000079	0.46	0.00083	0	0	0	0	0	0	0	0	0	0
Thorium	mg/L		0.000015	0.000019	0.000018	<0.0000001	0.00000024	<0.0000001	0	0	0	0.000036	0.000016	0.000016	0
Tin	mg/L		0.0002	0.00015	0.00016	0.0001	0.0002	0.00012	0.00010	0.00010	0.00010	0.00080	0.00073	0.00041	0.000098
Titanium	mg/L		0.013	0.013	0.011	0.012	0.012	0.0094	0.010	0.010	0.010	0.013	0.012	0.012	0.011
TOC	mg/L		3.8	3.7	3.0	4.0	3.9	3.5	4.0	4.0	4.0	4.0	3.7	3.7	3.9
Total Cyanide	mg/L	0.5	0.0022	0.0021	0.0014	0.0023	0.0022	0.00039	0.0023	0.0023	0.0023	0.0023	0.0021	0.0021	0.0023
TSS	mg/L	15	2.8	2.8	2.2	3.0	2.9	2.7	3.0	3.0	3.0	3.0	2.8	2.8	3.0
Uranium	mg/L		0.00064	0.00055	0.00057	0.000011	0.000037	0.000016	0.000010	0.000010	0.000010	0.0039	0.0035	0.0017	0.00001
Vanadium	mg/L		0.00069	0.00039	0.00046	0.000083	0.00045	0.00015	0.000054	0.000054	0.000054	0.0037	0.0033	0.0017	0.000066
WAD Cyanide	mg/L		0.0000015	0.000032	0.000026	<0.000001	<0.000001	<0.000001	0	0	0	0	0	0	0
Zinc	mg/L	0.4	0.0039	0.0039	0.0037	0.0034	0.0062	0.0036	0.0030	0.0030	0.0030	0.0047	0.0039	0.0039	0.0032
Zirconium	mg/L		0.00044	0.00037	0.0004	0.0004	0.00039	0.00035	0.00040	0.00040	0.00040	0.00092	0.00063	0.00063	0.00039

Note:

(a) Refer to Table 5-2 for MDMER discharge limits

(b) PN09 is not active after Operations (i.e., at the start of closure)

TDS = total dissolved solids; TOC = total organic carbon; TSS = total suspended solids; WAD = weak acid dissociable; mg/L = milligrams per litre; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre

Table H-2 Predicted Maximum Monthly Average Concentrations per Mine Phase at Each Prediction Node for Upper Bound Concentration (95th Percentile)

Constituents	Units	MDMER Limit[a]	PN04			PN05			PN06			PN08			PN09[b]
			Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations
Alkalinity	mg/L		6.2	8.3	6.8	2.8	2.9	2.2	2.0	2.0	2.0	10.5	6.1	6.0	2.3
Aluminum	mg/L		0.14	0.14	0.13	0.074	0.074	0.022	0.013	0.013	0.013	0.051	0.045	0.045	0.037
Un-ionized ammonia	mg-N/L	0.5	0.025	0.33	0.28	0.00040	0.00038	0.000084	0.00040	0.00040	0.00040	0.0013	0.00065	0.00037	0.00039
Antimony	mg/L		0.00012	0.00058	0.00039	0.000085	0.00013	0.000073	0.000051	0.000051	0.000051	0.0004	0.00021	0.00021	0.000064
Arsenic	mg/L	0.1	0.0036	0.080	0.050	0.0018	0.0024	0.00097	0.00024	0.00024	0.00024	0.03	0.014	0.014	0.00085
Barium	mg/L		0.0085	0.0079	0.0068	0.0053	0.11	0.035	0.0051	0.0051	0.0051	0.0058	0.0055	0.0055	0.0052
Beryllium	mg/L		0.00019	0.00018	0.00017	0.00020	0.00019	0.00018	0.00020	0.00020	0.00020	0.00020	0.00019	0.00019	0.00020
Bismuth	mg/L		0.00049	0.00046	0.00044	0.00050	0.0012	0.00065	0.00050	0.00050	0.00050	0.0005	0.00049	0.00049	0.00049
Boron	mg/L		0.0052	0.050	0.036	0.0050	0.075	0.024	0.0050	0.0050	0.0050	0.15	0.13	0.070	0.0049
Cadmium	mg/L		0.0000098	0.000016	0.000014	0.000010	0.000025	0.000013	0.000010	0.000010	0.000010	0.000022	0.000015	0.000015	0.000010
Calcium	mg/L		4.1	16	11	2.7	280	82	2.2	2.2	2.2	9	5.3	5.3	2.4
Chloride	mg/L		5.4	8.3	5.1	1.0	110	160	1.0	1.0	1.0	2.9	1.9	1.9	1.0
Chromium	mg/L		0.00037	0.00066	0.00052	0.00026	0.00026	0.00018	0.00015	0.00015	0.00015	0.00048	0.00048	0.00032	0.00019
Cobalt	mg/L		0.0015	0.0036	0.0027	0.00077	0.00077	0.00032	0.00014	0.00014	0.00014	0.0027	0.0015	0.0015	0.00039
Copper	mg/L	0.1	0.0016	0.0041	0.0032	0.0015	0.0015	0.0013	0.0014	0.0014	0.0014	0.0027	0.0020	0.0020	0.0014
Cyanate	mg/L		<0.00001	3.3	1.3	0.000015	0.000014	0.000015	0	0	0	0	0	0	0
Fluoride	mg/L		0.020	0.025	0.022	0.020	0.020	0.018	0.020	0.020	0.020	0.024	0.022	0.022	0.020
Free Cyanide	mg/L		0	0	0	0	0	0	0	0	0	0	0	0	0
Hardness	mg/L		18	32	35	11	790	230	11	11	11	132	66	66	11
Iron	mg/L		0.18	0.28	0.22	0.090	0.10	0.045	0.016	0.016	0.016	0.083	0.064	0.064	0.046
Lead	mg/L	0.08	0.000055	0.0022	0.0012	0.000053	0.00013	0.000069	0.000050	0.000050	0.000050	0.00031	0.00031	0.00016	0.000051
Lithium	mg/L		0.0049	0.0083	0.0068	0.0050	0.13	0.040	0.0050	0.0050	0.0050	0.013	0.013	0.0088	0.0049
Magnesium	mg/L		2.0	1.8	1.7	1.4	19	6.1	1.3	1.3	1.3	2.6	1.9	1.9	1.3
Manganese	mg/L		0.013	0.019	0.017	0.0073	0.057	0.018	0.0020	0.0020	0.0020	0.068	0.033	0.033	0.0041
Mercury	mg/L		0.0000068	0.0000059	0.0000052	0.0000050	0.0000050	0.0000046	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Molybdenum	mg/L		0.00011	0.0017	0.0010	0.000078	0.00080	0.00026	0.000051	0.000051	0.000051	0.00075	0.00037	0.00037	0.000062
Nickel	mg/L	0.25	0.0076	0.0085	0.0083	0.0054	0.0054	0.0034	0.0034	0.0034	0.0034	0.011	0.0074	0.0074	0.0042
Nitrate	mg-N/L		0.52	2.9	2.0	0.012	0.025	0.015	0.0065	0.0065	0.0065	0.32	0.15	0.15	0.0064
Nitrite	mg-N/L		0.026	0.041	0.034	0.0010	0.0031	0.0015	0.0010	0.0010	0.0010	0.080	0.037	0.036	0.00098
Orthophosphate	mg-P/L		0.00096	0.00092	0.00077	0.0010	0.0019	0.0012	0.0010	0.0010	0.0010	0.00099	0.00092	0.00092	0.00098
Phosphate	mg-P/L		0.0015	0.000027	0.000014	0.0000010	0.0038	0.0011	0	0	0	0	0	0	0

Constituents	Units	MDMER Limit[a]	PN04			PN05			PN06			PN08			PN09[b]
			Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations	Closure	Post-Closure	Operations
Phosphorus	mg/L		0.0027	0.0073	0.0089	0.0022	0.0094	0.018	0.0019	0.0019	0.0019	0.033	0.016	0.016	0.0020
Potassium	mg/L		0.62	4.4	2.8	0.34	4.6	1.5	0.34	0.34	0.34	7.7	6.9	3.6	0.34
Selenium	mg/L		0.00012	0.00034	0.00024	0.00011	0.00025	0.00013	0.00010	0.00010	0.00010	0.00036	0.00022	0.00022	0.00010
Silicon	mg/L		0.67	2.2	1.7	0.47	0.47	0.31	0.28	0.28	0.28	5.2	2.8	2.5	0.36
Silver	mg/L		0.00001	0.000027	0.000019	0.000010	0.000024	0.000013	0.000010	0.000010	0.000010	0.000014	0.000012	0.000012	0.000010
Sodium	mg/L		<1	210	110	0.66	120	34	<1	<1	<1	1	2	2	<1
Strontium	mg/L		0.028	0.066	0.04	0.0099	5.7	1.7	0.0094	0.0094	0.0094	0.05	0.046	0.028	0.0093
Sulphate	mg/L		6.5	340	180	5.2	7.6	4.8	4.1	4.1	4.1	34	18	18	4.6
TDS	mg/L		25	23	21	23	460	280	23	23	23	23	21	21	23
Tellurium	mg/L		0.0019	0.0018	0.0016	0.0020	0.0019	0.0018	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Thallium	mg/L		0.000049	0.000047	0.000042	0.000050	0.00012	0.000065	0.000050	0.000050	0.000050	0.000066	0.000066	0.000056	0.000049
Thiocyanate	mg/L		0	1.9	0.12	0	0	0	0	0	0	0	0	0	0
Thorium	mg/L		0	0.000034	0.000022	<0.0000001	0.00000036	0.00000010	0	0	0	0.000036	0.000016	0.000016	0
Tin	mg/L		0.000097	0.0002	0.00018	0.00010	0.00025	0.00013	0.00010	0.00010	0.00010	0.0008	0.00073	0.00041	0.000098
Titanium	mg/L		0.013	0.013	0.012	0.012	0.012	0.0095	0.010	0.010	0.010	0.013	0.012	0.012	0.011
TOC	mg/L		3.9	3.7	3.1	4.0	3.9	3.6	4.0	4.0	4.0	4.0	3.7	3.7	3.9
Total Cyanide	mg/L	0.5	0.0022	0.0021	0.0016	0.0023	0.0022	0.00049	0.0023	0.0023	0.0023	0.0023	0.0021	0.0021	0.0023
TSS	mg/L	15	2.9	2.8	2.3	3.0	2.9	2.7	3.0	3.0	3.0	3.0	2.8	2.8	3.0
Uranium	mg/L		0.000011	0.0010	0.00069	0.000011	0.000050	0.000021	0.000010	0.000010	0.000010	0.0039	0.0035	0.0017	0.000010
Vanadium	mg/L		0.00012	0.00057	0.00051	0.000083	0.00066	0.00022	0.000054	0.000054	0.000054	0.0037	0.0033	0.0017	0.000066
WAD Cyanide	mg/L		0	0.000063	0.000034	<0.000001	<0.000001	<0.000001	0	0	0	0	0	0	0
Zinc	mg/L	0.4	0.0039	0.0043	0.0041	0.0034	0.0079	0.0042	0.0030	0.0030	0.0030	0.0047	0.0039	0.0039	0.0032
Zirconium	mg/L		0.00039	0.00040	0.00043	0.00040	0.00039	0.00036	0.00040	0.00040	0.00040	0.00092	0.00063	0.00063	0.00039

Note:

(a) Refer to Table 5-2 for MDMER discharge limits

(b) PN09 is not active after Operations (i.e., at the start of closure)

TDS = total dissolved solids; TOC = total organic carbon; TSS = total suspended solids; WAD = weak acid dissociable; mg/L = milligrams per litre; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre