



Crown-Indigenous Relations  
and Northern Affairs Canada

Relations Couronne-Autochtones  
et Affaires du Nord Canada



Government of  
Northwest Territories  
Gouvernement des  
Territoires du Nord-Ouest

# **GIANT MINE REMEDIATION PROJECT**

## **Closure and Reclamation Plan – Annual Update**

December 2024

(18102211-934-R-Rev0-46000D)

### **Version 3.0**

## LAND ACKNOWLEDGMENT

We acknowledge that the Giant Mine site is located in Chief Drygeese Territory. From time immemorial, it has been and is the traditional land of the Yellowknives Dene First Nation. The Giant Mine site is also within M̓qwhì Gogha Dè Nìłtłèè (Boundary from the Tłıchǫ Agreement) of the Tłıchǫ government and on the traditional homelands of the Indigenous Métis of the North Slave Métis Alliance. The Giant Mine Remediation Project respects the histories, languages, and cultures of First Nations, Metis, Inuit, and all First Peoples of Canada.

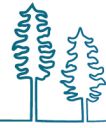


# Giant Mine Remediation Project

## Closure and Reclamation Plan – Annual Update

### VERSION HISTORY

Version	Date Issued/ Effective Date	Description of Version
1.0	19 December 2022	Submitted to Mackenzie Valley Land and Water Board as per Water Licence MV2007L8-0031, Part D, Condition 3 and Condition 84 of Type A Land Use Permit MV2019X0007.
2.0	20 December 2023	Submitted to Mackenzie Valley Land and Water Board as per Water Licence MV2007L8-0031, Part D, Condition 3 and Condition 84 of Type A Land Use Permit MV2019X0007.
3.0	20 December 2024	Submitted to Mackenzie Valley Land and Water Board as per Water Licence MV2007L8-0031, Part D, Condition 3 and Condition 84 of Type A Land Use Permit MV2019X0007.



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## List of Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AANDC	Aboriginal Affairs and Northern Development Canada
BGM	Bituminous Geomembrane
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CRP	Closure and Reclamation Plan
DIAND	Department of Indian Affairs and Northern Development
e.g.	for example
EA	Environmental Assessment
EEM	Environmental Effects Monitoring
ETP	effluent treatment plant
GMRP	Giant Mine Remediation Project
GNWT	Government of the Northwest Territories
i.e.	that is (Latin: <i>id est</i> )
L	Minewater level (e.g., 750L)
MMER	Metal Mining Effluent Regulations
MMP	Management and Monitoring Plan
MVLWB	Mackenzie Valley Land and Water Board
PCB	Polychlorinated Biphenyl
PHC	petroleum hydrocarbon
PMF	probable maximum flood
Site	Giant Mine
SRK	SRK Consulting Inc.
TCA	Tailings Containment Area
WTP	Water Treatment Plant

## List of Units and Symbols

Unit/Symbol	Definition
°	degree (angle)
°C	degrees Celsius
amsl	above mean sea level
km	kilometre
L/s	Litres per second
m	metre
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre

### 1 INTRODUCTION

The Giant Mine (Site) is located within the City of Yellowknife boundary, approximately 1.5 km from the community of Ndilq and 9 km from the community of Dettah. The Site is situated on land administered by the Government of the Northwest Territories (GNWT); two reserves (Reserve R662T and Reserve 85 J/8 257 2) have been established to allow for the implementation of the remediation of the Site. Ongoing care, maintenance and remediation of the Site is known as the Giant Mine Remediation Project (GMRP). Subsurface mineral rights are under federal jurisdiction and were withdrawn by Order in Council SI/2005-55 on 15 June 2005. The history of the Giant Mine and planned remediation activities are described in the Closure and Reclamation Plan (CRP).

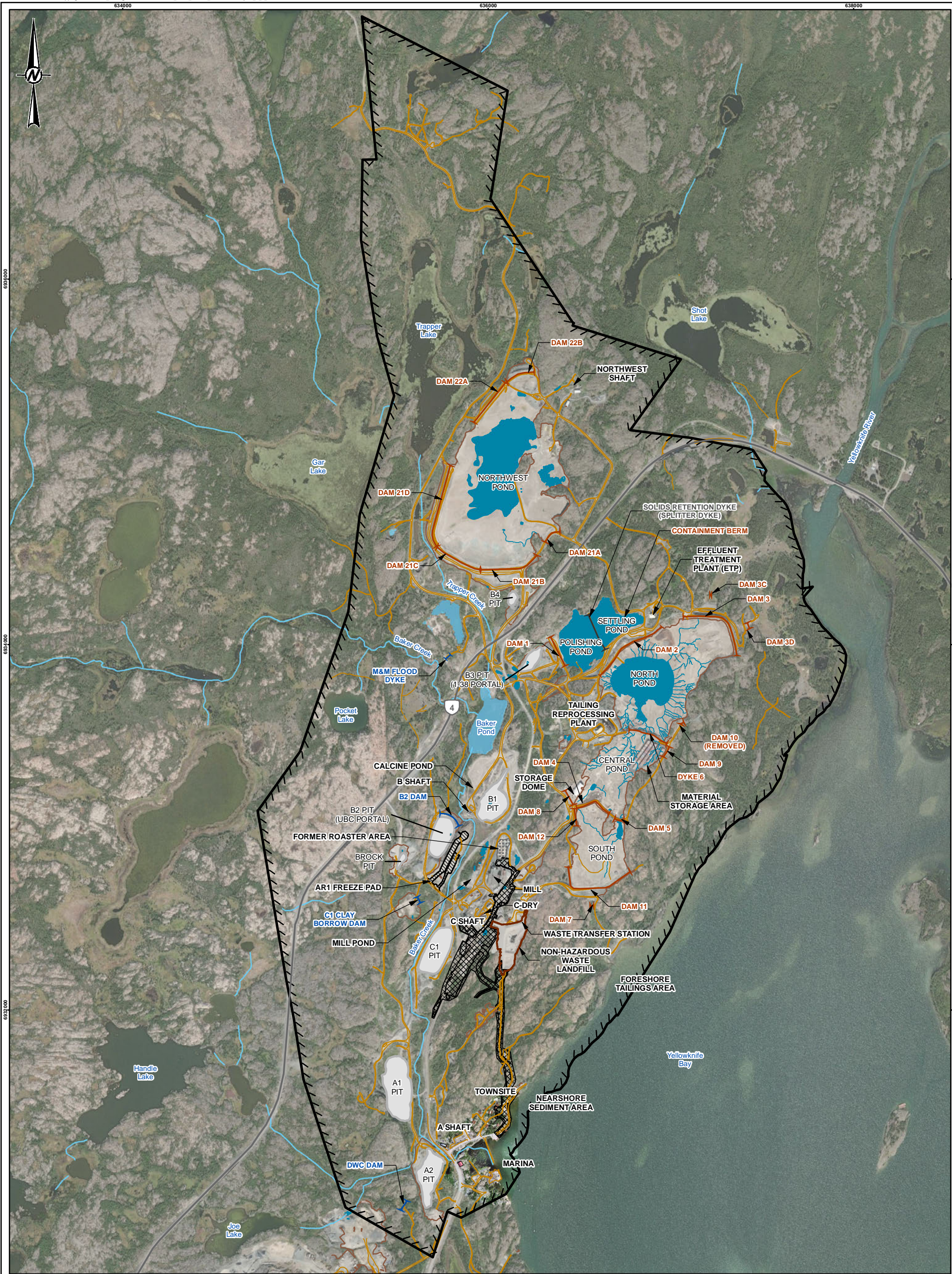
The Site consists of eight abandoned open pits; an underground mine with arsenic trioxide storage chambers; Tailings Containment Areas (TCAs) with associated rock fill dams; mine waste rock that buttresses Dams 11, 21B, and 21D; a tailings retreatment plant (out of service since 1990); an effluent treatment plant (ETP); a Mill Complex; several warehouses; and a Townsite. Baker Creek flows through the Site seasonally with one ponded area. The Site features are outlined in Figure 1-1.

The CRP Version 1.0 was submitted to the Mackenzie Valley Land and Water Board (MVLWB) in April 2019 as part of the Post-Environmental Assessment Information Package for Water Licence MVL2007L8-0031 and corresponding Land Use Permit Application for the Remediation of the Giant Mine Site.

Type A Water Licence MVL2007L8-0031 and Type A Land Use Permit MV2019X0007 were issued by the MVLWB in September 2020. Part D, Condition 2 of the Water Licence and Condition 83 of the Land Use Permit required a revised version of the CRP within six months of the effective date of the water licence. The CRP Version 2.0 was submitted to the MVLWB in December 2020 and Version 2.1 was approved by the MVLWB in March 2021.

An annual update to the CRP is required as per Part D, Condition 3 of the Water Licence and Condition 84 of the Land Use Permit. The first annual update to the CRP was submitted in December 2022 (Version 1.0) and the second annual update was submitted in December 2023 (Version 2.0). This document provides the 2024 annual update to the CRP (Version 3.0).





LEGEND

- |  |                                   |  |  |
|--|-----------------------------------|--|--|
|  | BUILDING                          |  | FREEZE PAD                             |
|  | GIANT MINE PROJECT BOUNDARY       |  | INDUSTRIAL WATERBODY                   |
|  | HIGHWAY                           |  | NON-HAZARDOUS WASTE LANDFILL           |
|  | INDUSTRIAL WATERCOURSE            |  | PIT BOUNDARY                           |
|  | INFRASTRUCTURE                    |  | WATER TREATMENT PLANT DEVELOPMENT AREA |
|  | ROAD                              |  | WATERBODY                              |
|  | SPLITTER DYKE                     |  |  |
|  | SURFACE WATER MANAGEMENT DAM/DYKE |  |  |
|  | TAILINGS OR SLUDGE RETENTION DAM  |  |  |
|  | WATERCOURSE                       |  |  |
|  | BUILDINGS REMOVED                 |  |  |



PROPONENT



Crown-Indigenous Relations and Northern Affairs Canada

Relations Couronne-Autochtones et Affaires du Nord Canada



YYYY-MM-DD	2023-08-16
DESIGNED	L. DARLING
PREPARED	A. AUCOIN
REVIEWED	L. DARLING
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REFERENCE(S)

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PROJECT



TITLE  
GIANT MINE SITE LAYOUT

PROJECT NO.	CONTROL	REV.	FIGURE
18102211	04-55-1743/384	0	1-1



### 1.1 Purpose and Scope

The purpose of the annual update to the CRP is to provide a document that reflects the up-to-date Project implementation plans (i.e., those approved through Design Plans) in one document.

The structure of the annual update includes:

- brief Project description section, including an updated project summary table (Table 3.4-1 from Version 2.1 of the CRP)
- a summary of the sections of the CRP Version 2.1 that have approved supplemental information (i.e., approved Design Plans), including links to all relevant files available on the MVLWB registry
- updated closure objectives and criteria table (Appendix 5.0A from Version 2.1 of the CRP)

### 1.2 Engagement

The CRP was shaped by ongoing engagement throughout its development (CIRNAC and GNWT 2019; DIAND 2007). Through regular engagement and specific engagement initiatives, design decisions have been made in a way that incorporates the feedback and preferences of those who have historically been most affected by the past operation of the Giant Mine. The GMRP continues to engage as per the approved Engagement Plan (Version 3.1).



## 2 PROJECT DESCRIPTION

This chapter provides an overview of the Giant Mine including a brief summary of site location and access (Section 2.1) and main project elements (Section 2.2). Also included is a table summarizing approved changes to the project description (Section 2.3, Table 2.3-1).

### 2.1 Location and Access

The Site is located approximately 5 km north of the Yellowknife city centre, at Longitude 114°21'W and Latitude 62°31'N. Access to the Site is from local roads branching from the Northwest Territories Territorial Highway 4 (also known as the Ingraham Trail). In 2013, Highway 4 was relocated west to bypass the majority of the Site; however, it still bisects the Site. The new highway alignment parallels the Site and then crosses Baker Creek above Reach 7 and runs adjacent to the Northwest Pond on the Site. Vee Lake Road, which is another publicly accessible road that terminates at Vee Lake, crosses through the Site beside the Northwest Pond and connects to Highway 4 at the south end of the road. The remaining segment of road entering the Site is now used as the access road to the Site.

The Site is closed to the public for safety reasons. This is indicated by signs posted along public access routes. The main gate to the Site is on the access road just north of the turnoff to the abandoned Townsite and City of Yellowknife Boat Launch. Entrances where gates are not practical have signage, boulders, or temporary fencing placed across the road to prevent access. Access roads can be opened to allow vehicles into the property as required. Access to the Townsite is limited to the Marina (operated by the Great Slave Sailing Club and City of Yellowknife public boat launch). The Marina and the public boat launch are within the project boundary but on land leased to the City of Yellowknife; neither of these areas are controlled or operated by the GMRP. The Marina is privately operated and maintained by the Great Slave Sailing Club and provides moorage for approximately 40 boats during the open water season as well as on-site dry dock storage during the off season.

### 2.2 Main Project Elements

In brief, the Site consists of the following components:

- an underground mine with numerous underground workings, including arsenic trioxide storage areas in stopes and purpose-built chambers
- eight abandoned open pits
- two TCAs and associated rockfill dams
- Baker Creek, which originates northwest of the Site, flows through the Site and drains some areas of the Site, and then flows into Yellowknife Bay of Great Slave Lake
- a seasonally operated ETP
- various buildings and Site infrastructure elements, including a tailings retreatment plant (out of service since 1990), a mill complex (which includes the area where the roaster stood and several warehouses), and the former Townsite

The planned closure and reclamation activities for these main project elements are described in Section 2.3.

### 2.3 Summary of the Closure and Reclamation Plan Activities

The planned closure and reclamation works have been grouped under 10 main project components. These are described in Chapter 5 of the CRP:

- underground mine workings (Section 5.1)
- freeze program (Section 5.2)
- open pit (Section 5.3)
- contaminated soils and sediments (Section 5.4)
- Baker Creek and surface water drainage (Section 5.5)
- TCAs (Section 5.6)
- borrow material (Section 5.7)
- water treatment plant (WTP) and outfall systems (Section 5.8)
- buildings and site infrastructure (Section 5.9)
- non-hazardous waste landfill (Section 5.10)

The above elements are outlined in Table 2.3-1, including a description of each project component, current status of the component in the context of the ongoing care and maintenance phase, key closure issues associated with the component (or subcomponent), a brief outline of the proposed closure and reclamation plan for the component, and where a Design Plan has been approved.



Table 2.3-1: Project Summary

Project Component	Overall Care and Maintenance Status Entering Remediation	Subcomponent	Key Closure Issues	Closure and Reclamation Plan	Changes / Updates to the Closure and Reclamation Plan based on Approved Design Plans
Underground mine workings (Section 5.1 of CRP Version 2.1)	<ul style="list-style-type: none"><li>A Site Stabilization Plan is in place to address stability concerns.</li><li>Arsenic stopes and chambers are monitored.</li><li>The mine dewatering system is in operation.</li><li>Backfilling of selected stopes has been completed to address most critical concerns (site stabilization program, four non-arsenic and two arsenic stopes).</li><li>A full-scale test of thermosyphons on Chamber 10 (Freeze Optimization Study) has been completed.</li><li>Regular maintenance of ground support systems in the access drifts and openings is performed.</li><li>Power systems, communications, support services (e.g., compressed air and water), ventilation, and mine safety infrastructure (e.g., refuge stations and general worker safety programs) are maintained.</li></ul>	Void stabilization	<ul style="list-style-type: none"><li>Stability of some voids is marginal and poses risks to public and worker health and safety.</li><li>A final disposal location is needed for arsenic-impacted material stored in containers ("sea-cans").</li></ul>	<ul style="list-style-type: none"><li>Selected voids will be stabilized by backfilling in support of pit floor stabilization needs or protection of closure infrastructure.</li><li>Backfill drifts connected to arsenic stopes and chambers to protect bulkheads.</li><li>Openings to surface will be closed by filling, plugging, and capping.</li><li>Containerized roaster and process waste will be disposed of underground and in B1 Pit, in future frozen zone.</li><li>Heavily contaminated soils from the roaster area will be disposed of underground in a future frozen zone or in B1 Pit.</li></ul>	<ul style="list-style-type: none"><li>No changes based on Version 1.4 of the Design Plan approved 07 December 2023.</li></ul>
		Minewater level management	<ul style="list-style-type: none"><li>Groundwater inflow could result in the transport of arsenic dust into the minewater pool.</li><li>Control of minewater level will require pumping during the 20-year Water Licence period.</li></ul>	<ul style="list-style-type: none"><li>Ongoing pumping and treatment of minewater will be carried out to maintain minewater below the 750L (-77 m amsl).</li><li>The new minewater supply well will be located near the C Shaft area by approximately 2026 (five years into the Water Licence period) which will replace the Northwest interim deep well pumping station.</li><li>Minewater will continue to be discharged to the Northwest Pond and treated using the existing ETP (summer only) until the new WTP is commissioned. The new WTP will release treated effluent year-round.</li><li>The Northwest Pond will be dewatered to the underground mine.</li><li>Establish new long-term underground mine access location.</li></ul>	
Freeze program (Section 5.2 of CRP Version 2.1)	<ul style="list-style-type: none"><li>Freeze optimization study performed on Chamber 10 to inform design for arsenic containment</li></ul>	Arsenic chambers and stopes (areas AR1, AR2, AR3 and AR4)	<ul style="list-style-type: none"><li>Arsenic dust is present in underground chambers and has the potential to impact human health and the environment.</li></ul>	<ul style="list-style-type: none"><li>Freeze the bedrock or fill around each arsenic containing chamber, stope, drift or pit fill using thermosyphons installed in boreholes to develop the frozen shell with ongoing monitoring of temperatures.</li><li>Chamber 10 (Freeze Optimization Study) requires additional work to convert to a fully passive system and achieve freeze containment.</li><li>Monitoring and modelling will further refine the estimated initial freeze completion dates.</li></ul>	<p>The freeze program design approved through version 1.1 of the Freeze Containment Design Plan is based on many of the same concepts presented in the CRP, with some refinements:</p> <ul style="list-style-type: none"><li>The design of the AR2 Freeze Pad in the CRP included a clay layer which was intended to provide an in-place capping system for the Mill Pond contaminated soils area within the AR2 footprint. The current design for the freeze assumes that the Mill Pond contaminated soils will be removed and replaced with clean fill. Further details on the Mill Pond design will be provided in the Contaminated Soils Design Plan.</li><li>The freezing requirements for Chamber 15 and the B1 Pit were identified in the CRP and the design has been updated to account for linkages in other design packages. The total number of thermosyphons has increased from the 688 reported in the CRP to 859. Of these, 707 are long thermosyphons and 152 are short thermosyphons. Twelve thermosyphons, currently installed around Chamber 10, will be maintained. Unlike the 2016 SRK layout, the current design does not have any thermosyphons being drilled directly through any arsenic dust stored in chambers or stopes. This reduces construction worker health and safety risk.</li><li>The CRP based the quantity of thermosyphons, pipe spacing, and lengths on the 2016 SRK Design Basis Report. Those thermosyphon parameters were established using an assumed initial freeze containment duration of 15 years along with a long-term climate change scenario accounting for a mean annual air temperature rise of 6.1 °C over 100 years. The presently approved freeze criterion is to passively reach a criterion of a 5 m thick frozen shell surrounding any chamber or stope/fill within 10 years using a higher mean annual air temperature rise of 7.3°C projected to the year 2125. Given the freeze criterion and the more stringent climate change assumptions, the quantity of thermosyphons has increased from those reported in the CRP.</li></ul>





Table 2.3-1: Project Summary

Project Component	Overall Care and Maintenance Status Entering Remediation	Subcomponent	Key Closure Issues	Closure and Reclamation Plan	Changes / Updates to the Closure and Reclamation Plan based on Approved Design Plans
Open pits (Section 5.3 of CRP Version 2.1)	<ul style="list-style-type: none"><li>Safe access is maintained to B2 and B3 pits (principal underground access portal).</li><li>Access control is in place for pits with no safe access.</li><li>Brock Pit is now a quarry.</li></ul>		<ul style="list-style-type: none"><li>Public health and safety is a concern (falls, unsafe access, subsidence of pit base).</li><li>There is a risk of flooding (sudden filling due to creek flooding, with impacts on minewater level, pit stability).</li></ul>	<ul style="list-style-type: none"><li>Pits will have a combination of clean rock and contaminated material placed in them.</li><li>A2, C1, B2, and B3 pits will have quarried rock borrow material placed, some of which will come from recontouring the slopes above A1 and A2 pits.</li><li>A1 Pit and the non-frozen portions of B1 Pit will have contaminated granular fill material placed.</li><li>Contaminated granular fill will be placed in B2 Pit, if additional capacity is required.</li><li>The frozen portions of B1 Pit will be filled with a combination of heavily contaminated granular fill, possibly some containerized roaster wastes, and contaminated granular fill required for grading.</li><li>B4 Pit will be recontoured or partially backfilled with borrow material.</li><li>Some pits will require underground stabilization activities to permit safe material placement. These activities will be defined on a pit-specific basis and will depend partly on the backfill material(s) selected.</li><li>Openings to surface inside will be closed by filling with rock or plugging with cemented paste.</li><li>Pits will be fully or partially filled and may include berms to divert water. Scour protection will be provided for water courses, berms, diversions and vulnerable topography.</li><li>Drainage patterns will be designed through surface grading and possible use of a cover to shed water.</li></ul>	<ul style="list-style-type: none"><li>Version 1.0 of the Design Plan was submitted 06 May 2024; version 1.1 targeted for submission in 2025</li></ul>
Contaminated soils and sediments (Section 5.4 of CRP Version 2.1)	<ul style="list-style-type: none"><li>Ongoing work in the care and maintenance (C&amp;M) period has resulted in characterization of both the nature and extent of soil and sediment contamination. This information has been used to develop plans for management.</li></ul>	Soils	<ul style="list-style-type: none"><li>Arsenic and PHC contamination of soils due to past mining operations has resulted in soil with concentrations in excess of applicable standards. Remediation is required to meet these standards.</li></ul>	<ul style="list-style-type: none"><li>Heavily contaminated granular fill from the mill/roaster area will be disposed of in the frozen portion of B1 Pit or within another suitable frozen zone.</li><li>Contaminated granular fill will be placed within A1 and B1 pits and TCAs.</li><li>Contaminated fine-grained soil will be disposed of in TCAs.</li><li>PHC contaminated soil will be disposed of in TCAs.</li><li>Tailings-impacted fine-grained soil downgradient of Dam 3 will be placed within the TCAs. Research into the remediation of this soil is required and is being considered through a Reclamation Research Plan.</li><li>Excavated areas will be backfilled with borrow material and graded.</li><li>Engineered soil covers will be constructed in areas where contaminated materials remain at a depth significantly greater than 2 m (e.g., Mill Pond, former Calcine Pond, and Area 4).</li><li>A fence will be built to surround the core area of site, surrounding area of primary roaster stack deposition.</li></ul>	<ul style="list-style-type: none"><li>Design Plan targeted for submission in 2025</li></ul>
		Sediments	<ul style="list-style-type: none"><li>Sediments in surface waterbodies may impact water quality and aquatic life.</li></ul>	<ul style="list-style-type: none"><li>Tailings located in historical Jo-Jo Lake will be removed and placed in the TCAs.</li><li>Contaminated sediment from Baker Creek Reaches 0 to 6 will be removed to the extent practicable and placed in the TCAs.</li><li>Contaminated sediment located along the shoreline of Yellowknife Bay, adjacent to the Townsite/Marina and Shoreline Lands, (i.e., nearshore sediment), will be partially excavated and placed in a TCA and/or capped with an engineered cover.</li></ul>	



Table 2.3-1: Project Summary

Project Component	Overall Care and Maintenance Status Entering Remediation	Subcomponent	Key Closure Issues	Closure and Reclamation Plan	Changes / Updates to the Closure and Reclamation Plan based on Approved Design Plans
Baker Creek and surface water drainage (Section 5.5 of CRP Version 2.1)	<ul style="list-style-type: none"><li>Baker Creek is the principal surface water feature on the site.</li><li>Surface water on site is subject to ongoing monitoring of quality and levels.</li><li>Surface water from Baker Creek is prevented from entering B2 Pit via the B2 Pit dam. This dam was reconstructed in winter of 2008 and is regularly monitored and inspected.</li><li>On-site water contacts site features such as the TCAs and pits, and is currently pumped to the Northwest Pond and treated prior to release.</li></ul>	Baker Creek	<ul style="list-style-type: none"><li>Adequate channel and flood plain dimensions need to be maintained to mitigate the risk of underground flooding.</li><li>There is a risk that contaminated sediments in Baker Creek could impact water quality.</li></ul>	<ul style="list-style-type: none"><li>Baker Creek will remain on site. Channel and flood plain design of Baker Creek will accommodate the PMF. The plan includes realignments of several reaches to provide adequate channel and flood plain dimensions and to mitigate the risk of underground flooding.</li><li>To maintain long-term stability of the channel materials, a seepage barrier is planned between Baker Creek and the subgrade below. Floodplain fill material, if needed, would be composed of coarse rockfill, over which active channel fill material would be placed.</li><li>Fish habitat will be replaced in Baker Creek; pending consultation with affected parties and Fisheries and Oceans Canada.</li><li>Contaminated sediments will be removed and disposed of in the TCAs.</li></ul>	<ul style="list-style-type: none"><li>Design Plan targeted for submission in 2025</li></ul>
		Site-wide site surface drainage	<ul style="list-style-type: none"><li>Site runoff (from areas such as covers) should be suitable for discharge to the environment. Site runoff will include both contact water and non-contact water.</li></ul>	<ul style="list-style-type: none"><li>Runoff water from engineered structures will be collected and treated prior to discharge. Once runoff from engineered structures has been confirmed to meet runoff water quality criteria, drainage patterns will be established to allow release directly to the environment.</li><li>Infiltration through reclaimed facilities will continue to flow to the underground.</li><li>Camp water and sewage will not be permanently stored on site.</li><li>Additional passive surface water treatment systems, such as wetlands, may be installed on site in low flow areas but further research into this is required and is being considered through a Reclamation Research Plan.</li></ul>	
Tailings Containment Areas (Section 5.6 of CRP Version 2.1)	<ul style="list-style-type: none"><li>There are over 20 dams on site, including dams that are used to retain tailings, as well as dams that have a role in water management.</li><li>All dams are inspected annually by a licensed geotechnical engineer, with regular inspection and monitoring of critical dams by the site C&amp;M operator.</li><li>Dam 1 was raised by 1.5 m.</li><li>Dam 21D was raised by up to 0.6 m.</li><li>Reconstruction work on the B2 Dam was carried out.</li><li>The M&amp;M dam was constructed.</li><li>The splitter dyke was rehabilitated.</li><li>The containment berm was constructed.</li></ul>	Northwest, North, Central, and South ponds	<ul style="list-style-type: none"><li>Tailings generally contain elevated concentrations of arsenic and can impact human health and the environment, either through direct contact or through impact on water quality.</li><li>Tailings are fine grained and subject to erosion.</li></ul>	<ul style="list-style-type: none"><li>South Pond tailings will be relocated into the remaining Original TCA, reducing the overall TCA footprint.</li><li>Dam 11 will be decommissioned as part of the relocation. Dam 7 will remain for surface water control until it can be demonstrated that surface water is suitable for direct discharge, at which time the dam will be decommissioned.</li><li>TCAs will be regraded and covered with a low-flux cover, consisting of a geosynthetic liner overlain by a protective bedding layer and rockfill, ensuring that surface runoff from the TCA area will be non-contact water, reducing infiltration to the tailings, and meeting expectations for the aesthetics of the closed facility.</li><li>Surface grading of the TCAs will allow discharge to spillway points. Re-grading will be undertaken as necessary to achieve this.</li><li>Contaminated soils and sediments will be placed in the tailings facilities, under the low-flux cover. This material will assist in establishing positive gradients over each TCA.</li><li>Tailings will be used for the generation of paste backfill for the underground remediation activities. Staging of cover placement will take into account this interaction.</li></ul>	<p>The tailings containment area design approved through version 1.1 of the Tailings Design Plan is based on many of the same concepts presented in the CRP, with some refinements:</p> <ul style="list-style-type: none"><li>Contaminated soils will be relocated to the TCAs for disposal with one addition: Contaminated material from the Calcine Pond, Mill Pond and PHC-contaminated material will be relocated to a BGM-lined cell that will be built in the North Pond. This is also outlined in the approved Waste MMP.</li><li>The estimated volume in the material in the South Pond has been revised from 700,000 m³ to approximately 1,000,000 m³.</li><li>Surface runoff from the covers will be temporarily stored over the covers at the remediated Northwest Pond, Polishing Pond, and North Pond.</li></ul>
		Tailings Foreshore Area	<ul style="list-style-type: none"><li>Erosion and re-suspension of tailings in the Foreshore Area, human contact with tailings</li></ul>	<ul style="list-style-type: none"><li>Tailings in the Foreshore Tailings Area will be capped.</li></ul>	
		Dams	<ul style="list-style-type: none"><li>Dams are subject to erosion and change over time. Dam instability can result in loss of dam function (water or tailings retention) with impacts beyond the current dam limits.</li></ul>	<ul style="list-style-type: none"><li>Dam stability will be reviewed, and improvements or regrading will be undertaken as required.</li><li>An Engineer of Record will be responsible for inspection of dams, with annual dam safety inspections conducted.</li><li>Periodic dam safety reviews will be conducted in accordance with Canadian Dam Association recommendations.</li></ul>	
		Settling and Polishing ponds	<ul style="list-style-type: none"><li>Issues are similar to those for the TCAs.</li></ul>	<ul style="list-style-type: none"><li>The Settling and Polishing ponds will be drained and covered with a low-flux cover, as per the TCAs. This will be done after the commissioning of the new WTP. Runoff from the Settling and Polishing ponds will be collected, tested and treated if necessary. Once runoff is confirmed to meet runoff quality criteria it will be routed directly to Baker Creek.</li></ul>	



Table 2.3-1: Project Summary

Project Component	Overall Care and Maintenance Status Entering Remediation	Subcomponent	Key Closure Issues	Closure and Reclamation Plan	Changes / Updates to the Closure and Reclamation Plan based on Approved Design Plans
Borrow material (Section 5.7 of CRP Version 2.1)	<ul style="list-style-type: none"><li>Work during the C&amp;M phase has included preliminary characterization and quantification of potential sources.</li></ul>	Rock quarry areas	<ul style="list-style-type: none"><li>Final closure will require rock and fine-grained soils for the construction of covers and other closure activities (including pit filling). Fill will be required for:</li><li>covers for TCAs and other areas</li><li>pit fill</li><li>freeze pad granular fill</li><li>foundations for new structures</li><li>landfill</li><li>Rockfill is required for pit backfilling and for construction of the covers on reclaimed areas.</li></ul>	<ul style="list-style-type: none"><li>Final rockfill volume requirements will be confirmed as part of detailed design. Preliminary calculations put requirements on the order of 3.6 million m³.</li><li>Each borrow area will be designed in accordance with clearly defined project needs, factoring in material volumes generated by other site activities (e.g., recontouring slopes for safety reasons, spillway for the Northwest Pond).</li><li>The volume of rockfill to be developed from borrow sources will be minimized through use of rockfill generated by other site activities such as spillway construction.</li><li>Stockpiles of fine- and coarse-grained material will be used for site closure activities such that new borrow volumes are reduced.</li><li>Potential quarry locations were identified within the project boundary in areas that do not impact culturally sensitive areas. Surficial material may need to be handled as arsenic-impacted.</li><li>Quarry areas will be constructed with side slopes compatible with surrounding topography, with consideration of site-wide drainage.</li></ul>	<p>The design approved through version 1.1 of the Borrow Material Design Plan is based on many of the same concepts presented in the CRP, with some refinements:</p> <ul style="list-style-type: none"><li>The following fine-grained borrow pits will not be developed:<ul style="list-style-type: none"><li>C1 Area</li><li>SP1 Area</li><li>Potential Source Area 1</li><li>Potential Source Area 2</li></ul></li><li>The following coarse-grained quarries will not be developed:<ul style="list-style-type: none"><li>Highwall Recontouring A1 Pit</li><li>Highwall Recontouring A2 Pit</li><li>Potential Source Area 3</li><li>Potential Source Area 4</li></ul></li><li>Some borrow sources have a modified geographic footprint:<ul style="list-style-type: none"><li>Limits adjusted for fine-grained sources: NW1 Area, ICG Area, Clearing Area, and Hill Area.</li><li>Inclusion of contingency sources (as defined in the CRP) fine-grained sources: Brock Area, B2 Area, A1 Area and BB Area.</li><li>Limits adjusted for coarse-grained borrow source North Pond Spillway Quarry.</li><li>Coarse-grained borrow sources NWP1 and NWP2 combined into NWP – 1 &amp; 2 Quarry with adjusted limits.</li><li>Limits of coarse-grained borrow source NWP3 adjusted.</li><li>Limits adjusted for coarse-grained borrow source Brock Quarry.</li><li>Limits adjusted for coarse-grained borrow source Baker Pond Quarry.</li><li>Inclusion of contingency (as defined in the CRP) coarse-grained source North Pond Quarry location (previously PSA5) with limits adjusted.</li></ul></li><li>Coarse-grained material has been further categorized in the Borrow Materials and Explosives MMP based on use-based geochemical criteria, these include: 1) Specialized Construction, 2) General Construction, and 3) Other Construction.</li><li>Up to 90% of fine-grained borrow demand can be generated from closure by-products, pending geochemical and geotechnical suitability. This results in a minor decrease of the amount of new fine-grained borrow required.</li><li>All of the coarse-grained closure by-product material will be consumed during remediation and additional coarse-grained borrow material will be needed and sourced from on-site.</li></ul>
		Borrow areas (fine-grained soil)	<ul style="list-style-type: none"><li>Fine-grained soils are required as a component of cover designs (for protection of geosynthetic materials).</li></ul>	<ul style="list-style-type: none"><li>Final fine-grained soil volume requirements will be confirmed as part of detailed design.</li><li>Potential borrow locations were identified within the project boundary. Surficial material may need to be handled as arsenic-impacted.</li><li>Following excavation of the borrow area, the surface will be graded.</li></ul>	





Table 2.3-1: Project Summary

Project Component	Overall Care and Maintenance Status Entering Remediation	Subcomponent	Key Closure Issues	Closure and Reclamation Plan	Changes / Updates to the Closure and Reclamation Plan based on Approved Design Plans
Water treatment plant and outfall systems (Section 5.8 of CRP Version 2.1)	<ul style="list-style-type: none"><li>The existing ETP is operated seasonally during non-frozen months.</li><li>Minewater is accumulated in the Northwest Pond, treated at the ETP, and discharged to the Settling and Polishing ponds prior to final discharge to the environment.</li></ul>	Existing ETP	<ul style="list-style-type: none"><li>Minewater is not suitable for direct discharge to the environment. Water treatment is needed for the full closure period to improve water quality.</li></ul>	<ul style="list-style-type: none"><li>Interim operation of the ETP will continue to treat water from the Northwest pond.</li><li>The existing ETP will be decommissioned and removed after the new WTP is commissioned.</li></ul>	<p>The water treatment design approved through version 1.1 of the Water Treatment Plant Design Plan is based on many of the same concepts presented in the CRP, with some refinements:</p> <ul style="list-style-type: none"><li>The final WTP location is at the existing administration building site. This is moved slightly from the location estimated in the CRP, which was near C-Dry.</li><li>Well pumps increased in size from 100 HP to 150 HP. Pumps will operate based on flow settings of WTP to align with average underground inflows as opposed to pumping increasing or decreasing with inflow and infiltration rates.</li><li>The number of treatment trains is modified from four x 10 L/s each) to two. The design basis for the number of treatment trains is to have an installed capacity greater or equal to 30 L/s and a firm capacity of greater or equal to 10 L/s. This is accomplished with two reaction tank/clarifier trains of 15 L/s and three filter and arsenic removal trains of 10 L/s.</li><li>Additional supporting WTP infrastructure has been added (backwash pumps, unit processes).</li><li>The WTP treatment process train has not changed except for dewatering. Recessed plate filter presses have replaced centrifuges for dewatering.</li></ul>
		New WTP		<ul style="list-style-type: none"><li>A new WTP will be constructed and will be located in central core near the C Shaft.</li><li>Minewater will be pumped directly to the WTP from the underground near the C Shaft area.</li><li>The new WTP will be commissioned and operated to treat minewater to meet the effluent quality criteria</li><li>WTP process residuals will be collected and disposed as non-hazardous waste in the on-site landfill, or disposed of off site.</li></ul>	
		Outfall	<ul style="list-style-type: none"><li>Impacts from discharge of treated water need to be minimized.</li></ul>	<ul style="list-style-type: none"><li>Treated water will be discharged year-round via a nearshore outfall in Yellowknife Bay, in the vicinity of Baker Creek.</li><li>Engineering controls will be in place at the outfall pipe location to prevent sediment scour and remobilization.</li></ul>	
Buildings and site infrastructure (Section 5.9 of CRP Version 2.1)	<ul style="list-style-type: none"><li>Some buildings and site infrastructure are used in support of ongoing C&amp;M activities. These are fully maintained.</li><li>The remaining buildings and site infrastructure have restricted access and are awaiting deconstruction.</li><li>Some structures have been demolished and removed from the site during the C&amp;M period. Non-hazardous and arsenic wastes have been stockpiled on site awaiting final disposal.</li></ul>	<ul style="list-style-type: none"><li>Buildings and structures</li><li>Transport network</li><li>Utilities</li><li>Debris and waste storage areas</li><li>Existing waste disposal locations</li></ul>	<ul style="list-style-type: none"><li>Buildings, site infrastructure, and debris areas left on site pose a risk to humans and the environment due to physical and chemical hazards, e.g., health risks due to the presence of contaminants such as arsenic, asbestos, and lead paint or stability issues from building collapse.</li></ul>	<ul style="list-style-type: none"><li>Buildings and site infrastructure with no future purpose will be decommissioned, demolished, and disposed of.</li><li>An abatement program will be undertaken to verify appropriate handling and disposal of hazardous wastes generated, including asbestos, arsenic-impacted materials, polychlorinated biphenyl (PCB), mercury-containing items, paint products, petroleum products, and process chemicals.</li><li>All hazardous wastes from building and infrastructure will be disposed off site in approved facilities. Non-hazardous waste will be disposed of on site in the landfill.</li></ul>	<ul style="list-style-type: none"><li>No changes based on Version 1.1 of the Design Plan (Site Infrastructure – Part 1) approved 3 May 2022</li></ul>
				<ul style="list-style-type: none"><li>New site infrastructure present on site after implementation of closure works will include:<ul style="list-style-type: none"><li>New WTP and Freeze instrumentation building</li><li>Fencing, signage, and security</li><li>Transport network including bridge over Baker Creek</li><li>Utilities to support ongoing operations, maintenance, and monitoring</li></ul></li></ul>	<ul style="list-style-type: none"><li>Design Plan (Site Infrastructure – Part 2) targeted for submission in 2025</li></ul>



Table 2.3-1: Project Summary

Project Component	Overall Care and Maintenance Status Entering Remediation	Subcomponent	Key Closure Issues	Closure and Reclamation Plan	Changes / Updates to the Closure and Reclamation Plan based on Approved Design Plans
Landfill (Section 5.10 of CRP Version 2.1)	<ul style="list-style-type: none"><li>Non-hazardous waste generated on site during C&amp;M is stored within the Northwest Pond. Addressed in Section 5.9 of CRP v2.1.</li><li>A hazardous waste storage facility is located in the Northwest Pond. Addressed in Section 5.9 of CRP v2.1.</li></ul>		<ul style="list-style-type: none"><li>Non-hazardous demolition debris and site waste will be generated as part of closure activities. A safe, secure facility for the final disposal of this material is required.</li><li>Residuals generated from the new WTP will required disposal.</li></ul>	<ul style="list-style-type: none"><li>A landfill for non-hazardous material will be built within the fenced area. The selected location is in the developed area east of the existing C Shaft area, providing a location away from natural bodies of water, flood plains, and public roads.</li><li>The landfill will consist of two cells:<ul style="list-style-type: none"><li>A non-hazardous waste cell, this cell has been designed with 100,500 m<sup>3</sup> capacity, with a 25,500 m<sup>2</sup> area and a height of 8.5 m. This cell will be closed and covered at the end of active remediation phase.</li><li>A WTP process residuals cell. This cell has been designed with 25,700 m<sup>3</sup> capacity, with a 7,500 m<sup>2</sup> area and a height of 8.5 m.</li></ul></li><li>Surface water runoff will be captured and treated during active remediation. Once it is confirmed that runoff meets runoff quality criteria it will be routed directly to the environment.</li></ul>	<p>The landfill design approved through version 1.1 of the Non-hazardous Waste Landfill Design Plan is based on many of the same concepts presented in the CRP, with some refinements:</p> <ul style="list-style-type: none"><li>Berm design—The berms for the landfill cell were identified in the CRP to be constructed entirely with granular material. The final design has the interior berms constructed with clay material; The exterior of the berms will still be constructed with granular material for erosion control.</li><li>Waste diversion—The CRP identifies that due to the identified challenges with the metal recycling concept, the landfill would be designed to accommodate all the identified non-hazardous wastes, including metal. The landfill cell is designed with a staged approach that allows for reduced airspace if the metal recycling program is successful.</li><li>Process residuals cell design—The process residuals cell was identified in the CRP as one cell for the disposal of all the process residuals for the 100-year design life of the operation of the new WTP. The final design includes phased construction of smaller cells lined with a bituminous geomembrane (base and cover) that can be filled and covered prior to construction of subsequent disposal cells.</li></ul>

amsl = above mean sea level; C&M = care and maintenance; CRP = Closure and Reclamation Plan; ETP = effluent treatment plant; L = level; MVLWB = Mackenzie Valley Land and Water Board; PCB = Polychlorinated Biphenyl; PHC = petroleum hydrocarbon; PMF = probable maximum flood; TBD = to be determined; TCA = Tailings Containment Area; WTP = water treatment plant.



### 3 PERMANENT CLOSURE AND RECLAMATION

The purpose of this section is to provide links to the approved versions of the CRP and Design Plans.

The CRP Version 1.0 was submitted to the MVLWB in April 2019 and in March 2021, Version 2.1 of the CRP was approved. As noted in the cover letter with submission of Version 2.0 of the CRP (letter from GMRP to MVLWB, dated 18 December 2020):

*Most of the appendices submitted as part of Version 1.0 of the CRP have not changed, and as directed by the MVLWB are not being resubmitted with Version 2.0. The appendices that are included in this submission are:*

- *Appendix 1.0A: Concordance Table*
  - o *Updated to reflect the directives provided in Water Licence Schedule 2, Condition 1, in addition to the commitments made during the Water Licence Process.*
- *Appendix 5.0A: Closure Objectives Tables*
  - o *Updated to reflect the Closure Objectives Table submitted as Technical Session 2, Information Request 1.*

*As agreed during the Water Licence Process, and reflected in the Water Licence, the controlled raise of the Minewater in the underground mine workings and associated Reclamation Research Plan was removed from the Application; the following appendix is no longer considered part of the CRP:*

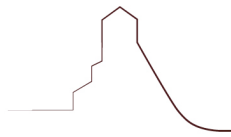
- *Appendix 5.1B: Planned Minewater Level Raise Reclamation Research Plan*

The approved chapters, sections, and appendices of the CRP can be found on the MVLWB Registry using the links provided in Table 3-1. The status of information available for each of the Project components is summarized in the following subsections.

**Table 3-1: Closure and Reclamation Plan File Locations**

File	Link
Letter from MVLWB to GMRP dated 23 April 2021 Re: Giant Mine remediation Project Closure and Reclamation Plan (Version 2.1) – Confirmation of Changes Giant Mine Remediation Project – Miscellaneous, Remediation, Yellowknife, NT	<a href="#">MV2007L8-0031 MV2019X0007 - DIAND-GIANT - CRP Version 2.1 - Confirmation of Conformity - Approved - Apr23-21.pdf</a>
Letter from the GMRP to the MVLWB dated 31 March 2021 Re: Giant Mine Remediation Project MV2007L8-0031 & MV2019X0007 Closure and Reclamation Plan Resubmission	<a href="#">MV2007L8-0031 MV2019X0007 - DIAND-GIANT - Closure and Reclamation Plan Version 2.1 - Cover Letter - Apr1-21.pdf</a>
MV2007L8-0031 and MV2019X0007 – Giant Mine Remediation Project – Closure and Reclamation Plan (CRP) Version 2.0 – Response to Staff Conformity of Version 2.0	<a href="#">MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan - Response to Staff Conformity of Version 2.0 - Apr1-21.pdf</a>





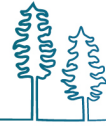
# Giant Mine Remediation Project



## Closure and Reclamation Plan – Annual Update

**Table 3-1: Closure and Reclamation Plan File Locations**

File	Link
Closure and Reclamation Plan Version 2.1 – Plain Language Summary, Chapters 1 to 4 (Chapter 1: Introduction; Chapter 2: Project Environment; Chapter 3: Project Description; Chapter 4: Progress Reclamation to 2018)	<a href="#">MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 1 - Ch1-4 - Apr 1-21.pdf</a>
Closure and Reclamation Plan Version 2.1 – Chapter 5, Sections 5.0 to 5.4 (Section 5.0: General Overview; Section 5.1: Underground Mine Workings; Section 5.2: Freeze Program; Section 5.3: Open Pits; Section 5.4: Contaminated Soils and Sediment)	<a href="#">MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.0-5.4 - Apr 1-21.pdf</a>
Closure and Reclamation Plan Version 2.1 – Chapter 5, Section 5.5: Baker Creek and Surface Water Drainage	<a href="#">MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.5 - Apr 1-21.pdf</a>
Closure and Reclamation Plan Version 2.1 – Chapter 5, Section 5.6: Tailings Containment Areas	<a href="#">MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.6 - Apr 1-21.pdf</a>
Closure and Reclamation Plan Version 2.1 – Chapter 5, Section 5.7 to Chapter 8 (Section 5.7: Borrow Material; Section 5.8 Water Treatment Plant and Outfall Systems; Section 5.9: Buildings and Infrastructure; Section 5.10: Non-Hazardous Waste Landfill; Section 5.11: Residual Effects; Section 5.12: Monitoring and Management; Section 5.13: Contingencies; Chapter 6: Schedule; Chapter 7: Post-Closure Site Assessment; Chapter 8: References)	<a href="#">MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.7-7 - Apr 1-21.pdf</a>
Closure and Reclamation Plan Version 2.1 – Appendix 1A Conformity Tables	<a href="#">Closure and Reclamation Plan Version 2.1 – Part 3 - App 1A Conformity Tables - Apr1-21.pdf</a>
Closure and Reclamation Plan Version 2.1 – Appendix 5A Closure Objectives	<a href="#">Closure and Reclamation Plan Version 2.1 – Part 4 - App 5A Closure Objectives - Apr1-21.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 1B Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 1B - SDE Options Evaluation Workshop - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 - Appendix 2A Site Images	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 2A - Site Photos - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 2B Giant Mine Remediation Project Baker Creek Ecosystem Synthesis Report	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 2B - Baker Creek Ecosystem Synthesis Report - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 2C Water Quality Tables	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 2C - Water Quality Tables - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 2D Giant Mine 2017 MMER/EEM Annual Report	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 2D - Giant Mine 2017 MMER-EEM Annual Report - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 2E Giant Mine Human Health and Ecological Risk Assessment (Part 1 of 4)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 2E - Human Health and Ecological Risk Assessment Part 1 - Apr1-19.pdf</a>



**Table 3-1: Closure and Reclamation Plan File Locations**

File	Link
Closure and Reclamation Plan Version 1.0 – Appendix 2E Giant Mine Human Health and Ecological Risk Assessment (Part 2 of 4)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 2E - Human Health and Ecological Risk Assessment Part 2 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 2E Giant Mine Human Health and Ecological Risk Assessment (Part 3 of 4)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 2E - Human Health and Ecological Risk Assessment Part 3 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 2E Giant Mine Human Health and Ecological Risk Assessment (Part 4 of 4)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 2E - Human Health and Ecological Risk Assessment Part 4 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 4A Lessons Learned	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 4A - Lessons Learned - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.1A Arsenic Waste Disposal Scenarios	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-1A - Arsenic Waste Disposal Scenarios Memo - Apr1-19.pdf</a>
Letter from GMRP to MVLWB (dated August 14, 2019) Re Giant Mine Remediation Project – MV2007L8-0031 and MV2019X007 – Removal of Partial Minewater Raise Reclamation and Research Plan (Appendix 5.1B)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Removal of Partial Minewater Raise RRP - Aug15-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.2A Giant Mine Freeze Program - Design Basis Report	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-2A - Freeze Program Design Basis Report - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.3A Description of Open Pits	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-3A - Description of Open Pits - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.3B Giant Mine Remediation Project Open Pit Closure Options Analysis	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-3B - Open Pit Closure Options Assessment - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.4A Remedial Strategy for Contaminated Soil and Sediment, Giant Mine, NT	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-4A - Strategy for Contaminated Soil and Sediment - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.4B Contamination Downgradient of Dam 3 Reclamation Research Plan	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-4B - Dam 3 Contamination Reclamation Research Plan - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.5A Baker Creek Diversion: Alternatives Evaluation	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-5A - Baker Creek Diversion Alternatives Evaluation - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.5B Reclamation and Research Plan Passive and Semi-passive Treatment Systems	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-5B - Reclamation Research - Treatment Systems - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.5C Baker Creek Flood Hazard Assessment	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-5C - Baker Creek Flood Hazard Asmt Part 1 and 2 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.6A Conceptual Tailings Cover Design	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-6A - Conceptual Tailings Cover Design - Apr1- 19.pdf</a>

**Table 3-1: Closure and Reclamation Plan File Locations**

File	Link
Closure and Reclamation Plan Version 1.0 – Appendix 5.6B Tailings Remedial Options Report	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-6B - Tailings Remedial Options Report Part 1 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.6B Geotechnical and Geochemical Factual Report – North, Central and South Ponds	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-6B - Tailings Remedial Options Report Part 2- Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.6B Core Photos	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-6B - Tailings Remedial Options Report Part 3- Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.6B Geophysical Investigation Results of the North, Central and South Ponds	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan Appendix 5-6B - Tailings Remedial Options Report Part 4 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.6C Geotechnical and Geochemical Investigation Factual Report – North, Central and South Ponds part 1	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-6C - Geotech and Geochem Invest Factual Report Part 1 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.6C Geotechnical and Geochemical Investigation Factual Report – North, Central and South Ponds – part 2	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-6C - Geotech and Geochem Invest Factual Report Part 2 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.6D Cover Design Remedial Options and Trade Off Report	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-6D - Cover Design Remedial Options and Trade-off Report - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.7A Supplemental Borrow Source Identification Report	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-7A - Supplemental Borrow Source Identification Report - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.8A Preliminary Design Report for Giant Mine Water Treatment Plant	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-8A - Prelim Design Report for Water Trtmt Plant - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.8B Giant Mine Remediation – New Effluent Treatment Plant – Outfall Location Options Analysis	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-8B - New ETP Outfall Location Options Analysis - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.9A Preliminary Design Report for Surface Demolition and Debris Removal part 1	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-9A - Prelim Design for Demo and Debris Removal Pt 1 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.9A Preliminary Design Report for Surface Demolition and Debris Removal part 2	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-9A - Prelim Design for Demo and Debris Removal Pt 2 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.9A Preliminary Design Report for Surface Demolition and Debris Removal part 3	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-9A - Prelim Design for Demo and Debris Removal Pt 3 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.9A Preliminary Design Report for Surface Demolition and Debris Removal part 4	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-9A - Prelim Design for Demo and Debris Removal Pt 4 - Apr1-19.pdf</a>
Closure and Reclamation Plan Version 1.0 – Appendix 5.10A Giant Mine Remediation Project Non-hazardous Waste Landfill – Preliminary Design Report	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-10A - Non-Haz Waste Landfill Prelim Design Report - Apr1-19.pdf</a>





**Table 3-1: Closure and Reclamation Plan File Locations**

File	Link
Closure and Reclamation Plan Version 1.0 – Appendix 5.10B Giant Mine Remediation Program Site Location Study for Non-Hazardous Waste Landfill	<a href="#">MV2007L8-0031 - DIAND-GIANT - Post EA - C and R Plan App 5-10B - Site Location for Non-hazardous Waste Landfill - Apr1-19.pdf</a>

### 3.1 Underground Mine Workings

The closure and reclamation of the underground mine workings is presented in Section 5.1 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.0-5.4 - Apr 1-21.pdf](#).

The Underground Design Plan Version 1.0 was submitted to the MVLWB on 26 February 2021. On 11 June 2021, the Underground Design Plan Version 1.1 was submitted to address MVLWB direction received 20 May 2021.

On 2 July 2021, the Underground Design Plan Version 1.2 was submitted to include a caveat acknowledging that changes to the minewater action levels were not approved and that further engagement would be held in the fall/winter of 2021.

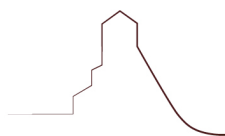
On 18 March 2022, Version 1.3 of the Underground Design Plan was submitted to include the documentation of the additional engagement conducted around minewater action levels and to update the wording for closure criterion UG2-1. On 2 June 2022, the MVLWB provided conditional approval of Version 1.3 of the Underground Design Plan.

To address the conditions, the GMRP submitted the Underground Design Plan version 1.4 on 02 August 2023. On 24 October 2023, the GMRP provided the MVLWB with responses to reviewer comments received on Version 1.4, and on 7 December 2023, the MVLWB approved Version 1.4 of the Underground Design Plan.

Version 1.4 of the Underground Design Plan can be found on the MVLWB Registry using the links provided in Table 3.1-1.

**Table 3.1-1: Underground Design Plan Version 1.4 File Locations**

File	Link
Letter from the MVLWB to the GMRP dated December 7, 2023 Re: Underground Design Plan, Version 1.4 – Approved – Giant Mine Remediation Project – Yellowknife NT	<a href="#">GMRP – Approval - Underground Design Plan v.14 - Dec 7 23.pdf</a>
Cover letter accompanying Underground Design Plan Version 1.4 submission by the GMRP to the MVLWB dated 02 August 2023	<a href="#">GMRP - Underground Design Plan - Version 1.4 - Cover letter - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (main document and Appendix A: Conformity Table)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (Appendix B1: Site Investigation Reports Completed since Closure and	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App B1-1 - Aug 2 23.pdf</a>



**Table 3.1-1: Underground Design Plan Version 1.4 File Locations**

File	Link
Reclamation Plan – Underground Stabilization Design Basis – Part 1)	
Underground Design Plan Version 1.4 (Appendix B1: Site Investigation Reports Completed since Closure and Reclamation Plan – Underground Stabilization Design Basis; Appendices A and B – Part 2)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App B1-2 - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (Appendix B1: Site Investigation Reports Completed since Closure and Reclamation Plan – Underground Stabilization Design Basis; Appendices A and B – Part 3; Appendix C Part 1: Underground Stabilization Drawings)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App B1-3 App B2 App C-1 - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (Appendix C: Underground Stabilization Drawings – Part 2)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App C-2 - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (Appendix D: Soil Excavation Drawings; Appendix E: Openings to Surface Drawings – Part 1)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App D App E-1 - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (Appendix E: Openings to Surface Drawings – Part 2; Appendix F: Long-term Portal Drawings – Part 1)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App E-2 App F-1 - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (Appendix F: Long-term Portal Drawings – Part 2; Appendix G: Drilling Drawings – Part 1)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App F-2 App G-1 - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (Appendix G: Drilling Drawings – Part 2)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App G-2 - Aug 2 23.pdf</a>
Underground Design Plan Version 1.4 (Appendix H: Monitoring Locations Across Site)	<a href="#">GMRP - Underground Design Plan - Version 1.4 - App H - Aug 2 23.pdf</a>

## 3.2 Freeze Program

The freeze program is presented in Section 5.2 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.0-5.4 - Apr 1-21.pdf](#).

The Freeze Containment Design Plan Version 1.0 was submitted to the MVLWB on 22 January 2021. On 28 May 2021, the Freeze Containment Design Plan Version 1.1 was submitted to address MVLWB direction received 13 April 2021. On 11 June 2021, Version 1.1 of the Freeze Containment Design Plan was approved by the MVLWB.

Version 1.1 of the Freeze Containment Design Plan can be found on the MVLWB Registry using the links provided in Table 3.2-1.

**Table 3.2-1: Freeze Containment Design Plan Version 1.1 File Locations**

File	Link
Letter from the MVLWB to the GMRP dated June 11, 2021 Re: Giant Mine Remediation Package – Freeze Containment Design Plan (Version 1.1) – Confirmation of Conformity – MV2007L8-0031 – Giant Mine, NT	<a href="#">MV2007L8-0031 - DIAND-GIANT - Freeze Design Plan - Version 1.1 - Staff Confirmation of Conformity - June 11 21.pdf</a>
Cover letter accompanying Freeze Containment Design Plan Version 1.1 submission by the GMRP to the MVLWB dated 28 May 2021.	<a href="#">MV2007L8-0031 MV2019X0007 - DIAND-GIANT - Cover Letter - Resubmission of Arsenic Trioxide MMP and Freeze DP - May28-21.pdf</a>
Freeze Containment Design Plan Version 1.1 (main document and Appendix A: Conformity Table)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Freeze Containment Program - V.1.1 - Part 1 - May28-21.pdf</a>
Freeze Containment Design Plan Version 1.1 (Appendix B: Giant Mine Coarse Grained Borrow Source – Acid Rock Drainage/Metal Leaching Geochemical Assessment; Appendix C1: Thermal Modelling Results for Freeze Areas AR1 and AR2; Appendix C2: Thermal Modelling Results for Areas AR3 and AR4)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Freeze Containment Program - V.1.1 - Part 2 - May28-21.pdf</a>
Freeze Containment Design Plan Version 1.1 (Appendix D1: Substantive Freeze Design Drawings for Areas AR1 and AR2 [Part 1 of 2])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Freeze Containment Program - V.1.1 - Part 3 - May28-21.pdf</a>
Freeze Containment Design Plan Version 1.1 (Appendix D1: Substantive Freeze Design Drawings for Areas AR1 and AR2 [Part 2 of 2])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Freeze Containment Program - V.1.1 - Part 4 - May28-21.pdf</a>
Freeze Containment Design Plan Version 1.1 (Appendix D2: Substantive Freeze Design Drawings for Areas AR3 and AR4 [Part 1 of 2])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Freeze Containment Program - V.1.1 - Part 5 - May28-21.pdf</a>
Freeze Containment Design Plan Version 1.1 (Appendix D2: Substantive Freeze Design Drawings for Areas AR3 and AR4 [Part 2 of 2])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Freeze Containment Program - V.1.1 - Part 6 - May28-21.pdf</a>

### 3.3 Open Pits

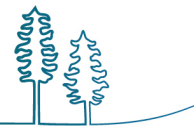
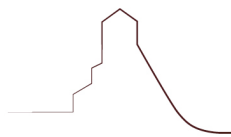
The closure and reclamation of the open pits is presented in Section 5.3 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.0-5.4 - Apr 1-21.pdf](#).

The Open Pits Design Plan Version 1.0 was submitted to the MVLWB on 07 May 2024. On 13 August 2024 the responses to comments were provided to the MVLWB. On 07 October 2024, the MVLWB provided direction on the response to comments and a requirement to submit Version 1.1 by 14 January 2025.

### 3.4 Contaminated Soils and Sediments

The closure and reclamation program for contaminated soils and sediments is presented in Section 5.4 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.0-5.4 - Apr 1-21.pdf](#).

The Contaminated Soils and Sediments Design Plan is targeted for submission to the MVLWB in 2025.



### 3.5 Baker Creek and Surface Water Drainage

The closure and reclamation activities for Baker Creek and surface water drainage are presented in Section 5.5 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.5 - Apr 1-21.pdf](#).

The Baker Creek and Surface Drainage Design Plan is targeted for submission to the MVLWB in 2025.

### 3.6 Tailings Containment Areas

The closure and reclamation of the TCAs is presented in Section 5.6 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.6 - Apr 1-21.pdf](#).

The Tailings Design Plan Version 1.0 was submitted to the MVLWB on 4 October 2022. On 31 March 2023, the Tailings Design Plan Version 1.1 was submitted to address MVLWB direction received 13 January 2023. On 04 April 2023, Version 1.1 of the Tailings Design Plan was approved by the MVLWB.

Version 1.1 of the Tailings Design Plan can be found on the MVLWB Registry using the links provided in Table 3.6-1.

**Table 3.6-1: Tailings Design Plan Version 1.1 File Locations**

File	Link
Letter from the MVLWB to the GMRP dated 04 April 2023 Re: Tailings Design Plan Version 1.1 and Tailings Management and Monitoring Plan, Version 2.1 – Approved – Giant Mine Remediation Project – Miscellaneous – Yellowknife, NT	<a href="#">GMRP - Tailings Design Plan V1.1 and Tailings MMP V2.1 - Board staff conformity - Apr 4 23.pdf</a>
Cover letter accompanying the Tailings Design Plan Version 1.1 and Tailings Management and Monitoring Plan Version 2.1 submission by the GMRP to the MVLWB dated 31 March 2023.	<a href="#">GMRP - Tailings Design Plan V1.1 and Tailings MMP V2.1 - Cover Letter - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (main document and Appendix A: Conformity Table)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 1 - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix B1: Tailings Containment Areas, Tailings Geotechnical Investigation Factual Report – Part 1)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 2 - App B1-I - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix B1: Tailings Containment Areas, Tailings Geotechnical Investigation Factual Report – Part 2)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 3 - App B1-I - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix B1: Tailings Containment Areas, Tailings Geotechnical Investigation Factual Report – Part 3)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 4 - App B1-III - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix B2: Nearshore / Foreshore Geotechnical Investigation Factual Report)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 5 - App B2 - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix B3: Dams, Stability Geotechnical Investigation Factual Report – Part 1)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 6 - App B3-I - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix B3: Dams, Stability Geotechnical Investigation Factual Report – Part 2)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 7 - App B3-II - Mar 31 23.pdf</a>



**Table 3.6-1: Tailings Design Plan Version 1.1 File Locations**

File	Link
Tailings Design Plan Version 1.1 (Appendix B3: Dams, Stability Geotechnical Investigation Factual Report – Part 3)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 8 - App B3-III - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix C: Erosion Risk Assessment of Tailings Areas; Appendix D1: Tailings Containment Areas – Design Drawings – Part 1)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 9 - App C-D1-I - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix D1: Tailings Containment Areas – Design Drawings – Part 2)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 10 - App D1-II - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix D1: Tailings Containment Areas – Design Drawings – Part 3; Appendix D2: Tailings Containment Areas Dams 2, 3, 4, 5 – Design Drawings – Part 1)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 11 - App D1-III-D2-I - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix D2: Tailings Containment Areas Dams 2, 3, 4, 5 – Design Drawings – Part 2; Appendix D3: Revegetation Plan for the Giant Mine South Pond Tailings Containment Area; Appendix D4: Tailings Containment Area Spillways – Design Drawings – Part 1)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 12 - App D2-II D3 D4-I - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix D4: Tailings Containment Area Spillways – Design Drawings – Part 2; Appendix D5: Nearshore Sediment Area / Foreshore Tailings Area – Design Drawings)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 13 - App D4-II D5 - Mar 31 23.pdf</a>
Tailings Design Plan Version 1.1 (Appendix D6: Boat Launch and Dock – Design Drawings; Appendix D7: YB-D-1 Channel – Design Drawings)	<a href="#">GMRP - Tailings Design Plan V1.1 - Part 14 - App D6 D7 - Mar 31 23.pdf</a>

## 3.7 Borrow Material

The closure and reclamation activities for borrow material are presented in Section 5.7 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.7-7 - Apr 1-21.pdf](#).

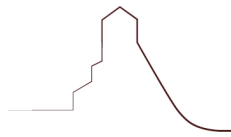
The Borrow Design Plan Version 1.0 was submitted to the MVLWB on 23 October 2023. On 26 March 2024, the Borrow Design Plan Version 1.1 was submitted to address MVLWB direction received 6 February 2024. On 29 May 2024, Version 1.1 of the Borrow Design Plan was approved by the MVLWB.

Version 1.1 of the Borrow Design Plan can be found on the MVLWB Registry using the links provided in Table 3.7-1.



**Table 3.7-1: Borrow Design Plan Version 1.1 File Locations**

File	Link
Letter from the MVLWB to the GMRP dated 29 May 2024 Re: Borrow Design Plan Version 1.1 – Approved – Giant Mine Remediation Project – Miscellaneous – Yellowknife, NT	<a href="#">GMRP – Approved - Borrow Design Plan Version 1.1 - May29 24.pdf</a>
Cover letter accompanying Borrow Design Plan Version 1.1 submission by the GMRP to the MVLWB dated 26 March 2024.	<a href="#">MV2007L8-0031- DIAND-GIANT - Cover Letter - Submission of Borrow DP – Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Main document and Appendix A: Conformity Table)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 1 – Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B.1: Borehole Logs - Fine-Grained Borrow Pits; Appendix B.2: Coarse Grain Borrow Sources Hand Sampling Program - Phase 2 Geotechnical Sampling Results Summary; Appendix B.3-I: Coarse Grain Borrow Source Supplementary Hand Sampling – Acid Rock Drainage / Metal Leaching Geochemical Assessment [Part 1 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 2 – AppB1-B3.I - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B.3-II: Coarse Grain Borrow Source Supplementary Hand Sampling – Acid Rock Drainage / Metal Leaching Geochemical Assessment; Appendix B4-I: Coarse Grain Borrow Source Phase 2 Drilling Program – Acid Rock Drainage / Metal Leaching Geochemical Assessment [Part 2 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 3 – AppB3-II-B4-I-Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B4-II: Coarse Grain Borrow Source Phase 2 Drilling Program – Acid Rock Drainage / Metal Leaching Geochemical Assessment [Part 3 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 4 – AppB4-II - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B4-III: Coarse Grain Borrow Source Phase 2 Drilling Program – Acid Rock Drainage / Metal Leaching Geochemical Assessment [Part 4 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 5 – AppB4-III - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B4-IV: Coarse Grain Borrow Source Phase 2 Drilling Program – Acid Rock Drainage / Metal Leaching Geochemical Assessment [Part 5 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 6 – AppB4-IV – Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B4-V: Coarse Grain Borrow Source Phase 2 Drilling Program – Acid Rock Drainage / Metal Leaching Geochemical Assessment; Appendix B5-I: Overburden Geotechnical Assessment of Coarse-Grained Borrow Areas [Part 6 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 7 – AppB4-V-B5-I - Mar27-24.pdf</a>



# Giant Mine Remediation Project



## Closure and Reclamation Plan – Annual Update

**Table 3.7-1: Borrow Design Plan Version 1.1 File Locations**

File	Link
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B5-II: Overburden Geotechnical Assessment of Coarse-Grained Borrow Areas [Part 7 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 8 – AppB5-II - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B5-III: Overburden Geotechnical Assessment of Coarse-Grained Borrow Areas [Part 8 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 9 – AppB5-III - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B5-IV: Overburden Geotechnical Assessment of Coarse-Grained Borrow Areas; Appendix B6: Overburden Geotechnical Assessment of Spillways [Part 9 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 10 – AppB5-IV-B6 - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B7-I: Coarse-Grained Borrow Kinetic Testing Program [Part 10 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 11 – AppB7-I Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B7-II: Coarse-Grained Borrow Kinetic Testing Program; Appendix B8-I: Coarse-Grained Borrow Post-Kinetic Testing and Analyses [Part 11 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 12 – AppB7-II-B8-I - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix B: Site Investigations Completed Since the Closure and Reclamation Plan; Appendix B8-II: Coarse-Grained Borrow Post-Kinetic Testing and Analyses [Part 12 of 12])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 13 – AppB8-II - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix C: Erosion Risk Assessment of Borrow Pits and Quarries [Part 1 of 2])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 14 – AppC-I - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix C: Erosion Risk Assessment of Borrow Pits and Quarries [Part 2 of 2])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 15 – AppC-II - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix D1 Design Drawings; Appendix D1-I: Fine-Grained Borrow Pits [Part 1 of 7])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 16 – AppD1-I - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix D1 Design Drawings; Appendix D1-II: Fine-Grained Borrow Pits [Part 2 of 7])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 17 – AppD1-II - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix D1 Design Drawings; Appendix D1-III: Fine-Grained Borrow Pits [Part 3 of 7])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 18 – AppD1-III - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix D1 and D2 Design Drawings; Appendix D1-IV: Fine-Grained Borrow Pits; Appendix D2-I: Coarse-Grained Quarries [Part 4 of 7])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 19 – AppD1-IV-D2-I - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix D2 Design Drawings; Appendix D2-II: Coarse-Grained Quarries [Part 5 of 7])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 20 – AppD2-II - Mar27-24.pdf</a>



**Table 3.7-1: Borrow Design Plan Version 1.1 File Locations**

File	Link
Borrow Design Plan Version 1.1 (Appendix D2 Design Drawings; Appendix D2-III: Coarse-Grained Quarries [Part 6 of 7])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 21 – AppD2-III - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix D3: Spillways (North Pond Spillway Quarry) [Part 7 of 7])	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 22 – AppD3 - Mar27-24.pdf</a>
Borrow Design Plan Version 1.1 (Appendix E: Fine-Grained Borrow Revegetation Plan)	<a href="#">MV2007L8-0031 - DIAND-GIANT - Design Plan for Borrow - V.1.1 - Part 23 – AppE - Mar27-24.pdf</a>

### 3.8 Water Treatment Plant and Outfall Systems

The new WTP and outfall are presented in Section 5.8 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.7-7 - Apr 1-21.pdf](#).

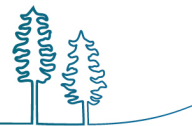
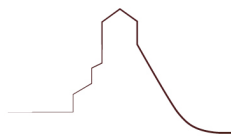
The WTP Design Plan Version 1.0 was submitted to the MVLWB on 12 December 2022. On 31 March 2023, the WTP Design Plan Version 1.1 was submitted to address MVLWB direction received 27 March 2023. On 3 April 2023, Version 1.1 of the WTP Design Plan was approved by the MVLWB.

Version 1.1 of the WTP Design Plan can be found on the MVLWB Registry using the links provided in Table 3.8-1.

**Table 3.8-1: Water Treatment Plant Design Plan Version 1.1 File Locations**

File	Link
Letter from the MVLWB to the GMRP dated 17 May 2023 Re: Water Treatment Plant Design Plan Version 1.1 – Approved – Giant Mine Remediation Project – Yellowknife, NT	<a href="#">GMRP – Approved - Water Treatment Plant Design Plan – Version 1.1 - May11_23.pdf</a>
Cover letter accompanying WTP Design Plan Version 1.1 submission by the GMRP to the MVLWB dated 03 April 2023	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Cover Letter - Apr 4_23.pdf</a>
WTP Design Plan Version 1.1 (main document; Appendix A: Conformity Table)	<a href="#">GMRP - Updated - Water Treatment Plant Design Plan V1.1 - Part 1 - Apr28_23.pdf</a>
WTP Design Plan Version 1.1 (Appendix B: Site Geotechnical Investigations Completed Since Closure and Reclamation Plan; Appendix C: Erosion Risk Assessment of Water Treatment Plant)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 2 - AppB and C - Apr 4_23.pdf</a>
WTP Design Plan Version 1.1 (Appendix D1: Water Treatment Plant Design Drawings – General – All Sheets, Civil – Sheets C010 to C052)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 3 - AppD1 - Apr 4_23.pdf</a>
WTP Design Plan Version 1.1 (Appendix D2: Water Treatment Plant Design Drawings – Civil – Sheets C100 to C415)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 4 - AppD2 - Apr 4_23.pdf</a>
WTP Design Plan Version 1.1 (Appendix D3: Water Treatment Plant Design Drawings – Architectural – All Sheets)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 5 - AppD3 - Apr 4_23.pdf</a>
WTP Design Plan Version 1.1 (Appendix D4: Water Treatment Plant Design Drawings – Structural – All Sheets)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 6 - AppD4 - Apr 4_23.pdf</a>
WTP Design Plan Version 1.1 (Appendix D5: Water Treatment Plant Design Drawings – Process – All Sheets)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 7 - AppD5 - Apr 4_23.pdf</a>





**Table 3.8-1: Water Treatment Plant Design Plan Version 1.1 File Locations**

File	Link
WTP Design Plan Version 1.1 (Appendix D6: Water Treatment Plant Design Drawings – Mechanical – All Sheets)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 8 - AppD6 - Apr 4 23.pdf</a>
WTP Design Plan Version 1.1 (Appendix D7: Water Treatment Plant Design Drawings – Electrical – Sheets E001 to E504)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 9 - AppD7 - Apr 4 23.pdf</a>
WTP Design Plan Version 1.1 (Appendix D8: Water Treatment Plant Design Drawings – Electrical – Sheets E601 to E614, Instrumental – All Sheets)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 10 - AppD8 - Apr 4 23.pdf</a>
WTP Design Plan Version 1.1 (Appendix D9: Water Treatment Plant Design Drawings – Drilling – All Sheets, Electrical Power – All Sheets; Appendix E: Geochemical Characterization of Blast Rock from the WTP Construction Footprint)	<a href="#">GMRP - Water Treatment Plant Design Plan V1.1 - Part 11 - AppD9 and E - Apr 4 23.pdf</a>

### 3.9 Buildings and Infrastructure

The closure and reclamation of site buildings and infrastructure, as well as new infrastructure that would be installed to support ongoing operation, maintenance, and monitoring activities, are presented in Section 5.9 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.7-7 - Apr 1-21.pdf](#).

The Site Infrastructure Design Plan (Part 1 – building decontamination and decommissioning) Version 1.0 was submitted to the MVLWB 17 February 2022. On 4 April 2022, the Site Infrastructure Design Plan (Part 1) Version 1.1 was submitted to address MVLWB direction received 15 March 2022. On 3 May 2022, Version 1.1 of the Site Infrastructure Design Plan (Part 1) was approved by the MVLWB.

Part 2 of the Site Infrastructure Design Plan is targeted for submission to the MVLWB in 2025.

Version 1.1 of the Site Infrastructure Design Plan (Part 1) can be found on the MVLWB Registry using the links provided in Table 3.9-1.

**Table 3.9-1: Site Infrastructure Design Plan (Part 1) Version 1.1 File Locations**

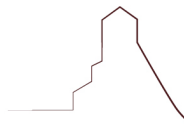
File	Link
Letter from the MVLWB to the GMRP dated May 3, 2022 Re: Site Infrastructure Design Plan – Part 1 - Version 1.1 – Approved – Giant Mine Remediation Project – Yellowknife NT	<a href="#">DIAND-GIANT - GMRP - Approved - Infrastructure Design Plan Part 1 - May3 22.pdf</a>
Cover letter accompanying Site Infrastructure Design Plan Part 1 Version 1.1 submission by the GMRP to the MVLWB dated 4 April 2022	<a href="#">DIAND-GIANT - GMRP - Site Infrastructure Design Plan V1.1 - Cover Letter - Apr4 22.pdf</a>
Site Infrastructure Part 1 Design Plan Version 1.1 (main document; Appendix A: Conformity Table; Appendix B: Design Drawings [B1: Northwest Pond and Tailings Reprocessing Plant Structures; B2: Effluent Treatment Plant Deconstruction])	<a href="#">DIAND-GIANT - GMRP - Site Infrastructure Design Plan V1.1 - Part 1 of 4 - Apr4 22.pdf</a>
Site Infrastructure Part 1 Design Plan Version 1.1 (Appendix B: Design Drawings [B3: Sheds, Pumphouses and Underground Support Structures Deconstruction])	<a href="#">DIAND-GIANT - GMRP - Site Infrastructure Design Plan V1.1 - Part 2 of 4 - Apr4 22.pdf</a>
Site Infrastructure Part 1 Design Plan Version 1.1 (Appendix B: Design Drawings [B4: Townsite Deconstruction])	<a href="#">DIAND-GIANT - GMRP - Site Infrastructure Design Plan V1.1 - Part 3 of 4 - Apr4 22.pdf</a>
Site Infrastructure Part 1 Design Plan Version 1.1 (Appendix B: Design Drawings [B5: Core Industrial Area Deconstruction])	<a href="#">DIAND-GIANT - GMRP - Site Infrastructure Design Plan V1.1 - Part 4 of 4 - Apr4 22.pdf</a>

### 3.10 Non-hazardous Waste Landfill

The construction of the non-hazardous waste landfill is presented in Section 5.10 of Version 2.1 of the CRP: [MV2007L8-0031 - DIAND-GIANT - GMRP Closure and Reclamation Plan Version 2.1 - Part 2 - Ch 5.7-7 - Apr 1-21.pdf](#).

The Non-hazardous Waste Landfill Design Plan Version 1.0 was submitted to the MVLWB on 23 March 2021. On 14 December 2021, the Non-hazardous Waste Landfill Design Plan Version 1.1 was submitted to address MVLWB direction received 4 June 2021. On 26 April 2022, Version 1.1 of the Non-hazardous Waste Landfill Design Plan was approved by the MVLWB.

Version 1.1 of the Non-hazardous Waste Landfill Design Plan can be found on the MVLWB Registry using the links provided in Table 3.10-1.



# Giant Mine Remediation Project



Closure and Reclamation Plan – Annual Update

**Table 3.10-1: Non-hazardous Waste Landfill Design Plan Version 1.1 File Locations**

File	Link
Letter from the MVLWB to the GMRP dated April 26, 2022, Re: Non-Hazardous Waste Landfill Design Plan, Version 1.1 – Approved – Giant Mine Remediation Project – Yellowknife NT	<a href="#">DIAND-GIANT - GMRP - NHWL Design Plan - Version 1.1 - Conformity Confirmation - Apr26 22.pdf</a>
Letter from GMRP to MVLWB dated April 25, 2022 Re: Giant Mine Remediation Project MV2007L8-0031 & MV2019X007 Non-Hazardous Waste Landfill Design Plan V1.1	<a href="#">DIAND-GIANT - GMRP - Non-Hazardous Waste Landfill Design Plan Version 1.1 - Response Letter - March 2022- Apr26 22.pdf</a>
Cover letter accompanying Non-hazardous Waste Landfill Design Plan Version 1.1 submission by the GMRP to the MVLWB dated 17 December 2021	<a href="#">DIAND-GIANT - GMRP - Non-Hazardous Waste Landfill Design Plan - Cover Letter - Dec17 21.pdf</a>
Non-hazardous Landfill Design Plan Version 1.1 (main document; Appendix A: Conformity Table; Appendix B1: Giant Mine Non-hazardous Waste – Geotechnical Test-pitting Program 2018; Appendix B2: Giant Mine Non-hazardous Waste – Geotechnical Test hole Program 2019; Appendix C: Giant Mine Non-hazardous Waste Landfill Design Drawings and Sections)	<a href="#">DIAND-GIANT - GMRP - Non-Hazardous Waste Landfill Design Plan - Version 1.1 - Dec17 21.pdf</a>

## 4 CLOSURE OBJECTIVES AND CRITERIA

Closure goals and principles as well as objectives and criteria were developed for the CRP. Closure objectives and criteria were developed to meet the intent of the Closure Guidelines (MVLWB/AANDC 2013) directed by the following sources of information:

- relevant acts and regulations and guidance
- EA Measures and Commitments
- Type A Water Licence (MV2007L8-0031)
- Type A Land Use Permit (MV2019X0007)
- affected party and regulatory input between 2010 and 2017
- engineering design and best practices
- risk assessment studies

Affected party and regulatory input included monthly Working Group and Giant Mine Advisory Committee meetings and extensive 2015-2016 affected party/regulatory meetings hosted as part of the Surface Design Engagement process, a community workshop (technical session) in September 2018, component specific-engagement on criteria, and a closure criteria workshop in November 2022 to discuss those closure criteria that were still considered “in-development.”

The approach to the objectives and criteria was as follows: avoid repetition, create a site-wide objective where numerous site activities influence one objective, allow criteria to be numeric or narrative but discrete and measurable, use lessons learned from any emergency works or closure actions taken at the Site, and acknowledge the regulatory approval process for additional criteria under approved management and monitoring plans not yet fully known. It is acknowledged that socio-economic objectives are necessary; these will be presented under separate cover and are not addressed in the CRP.

The full list of objectives, closure actions, and criteria for the CRP is found in Appendix 5.0A<sup>1</sup>, provided with this annual update document. Appendix 5.0A is an update to the appendix included in Version 2.1 of the CRP and includes those criteria approved through the CRP or design plans. All criteria that have not been approved remain “in-development” in Appendix 5.0A and are consistent with those included in Version 2.1 of the CRP.

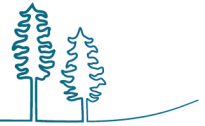
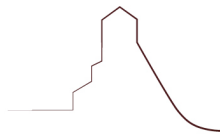
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<sup>1</sup> Note – the GMRP has named this Appendix 5.0A for consistency with the CRP.



### 5 REFERENCES

- CIRNAC and GNWT (Crown-Indigenous Relations and Northern Affairs Canada and Government of the Northwest Territories). 2019. Giant Mine Engagement Log. Prepared for the Mackenzie Valley Land and Water Board, Yellowknife, NT, Canada. January 2019.
- DIAND (Department of Indian and Northern Affairs). 2007. Supporting Document P1 – Giant Mine Remediation Plan Public Consultation and Communications. Department of Indian and Northern Affairs 2005, updated 2007. Available at: [http://registry.mvlwb.ca/Documents/MV2007L8-0031/SD%20P\\_Communications\\_Final\\_20070719.pdf](http://registry.mvlwb.ca/Documents/MV2007L8-0031/SD%20P_Communications_Final_20070719.pdf).
- MVLWB/AANDC (Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada). 2013. Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories. November 2013.



## **Appendix 5.0A – Closure Objectives**



Crown-Indigenous Relations  
and Northern Affairs Canada

Relations Couronne-Autochtones  
et Affaires du Nord Canada



# **GIANT MINE REMEDIATION PROJECT**

## **Appendix 5.0A Closure Objectives**

December 2024

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Table 5.0A-1: Site-Wide Closure Objectives and Criteria

Closure Objectives	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
			Approach	Reporting to MVLWB
SW1. Air quality is maintained at concentrations protective of human health and the environment	SW1-1	<ul style="list-style-type: none"><li>Canadian Ambient Air Quality Standards for PM 2.5 are met<sup>1</sup> NWT Ambient Air Quality Standards, or Ontario Ambient Air Quality Standards where there are no applicable NWT standards, are met for PM-10 and integrated total suspended particulate metals, including arsenic.</li></ul>	<ul style="list-style-type: none"><li>Qualitative and quantitative monitoring per Air Quality Monitoring Program(s) under the Dust Management and Monitoring Plan completed annually</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
SW2. Site-wide loading of contaminants to the environment is reduced to the extent practicable	SW2-1	<ul style="list-style-type: none"><li>Total arsenic in treated effluent decreases from an average of 300 ug/L to 10 ug/L</li></ul>	<ul style="list-style-type: none"><li>Numerous waste streams are routed to the underground and treated. Effluent quality criteria for the new water treatment plant, as outlined in the water licence, are met at end-of-pipe reducing contaminant load to the environment. Treated effluent is monitored through the SNP.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
	SW2-2	<ul style="list-style-type: none"><li>Water quality objectives in the receiving environment are met (see Objective WTP 2)</li></ul>	<ul style="list-style-type: none"><li>As per WTP 2-5</li></ul>	<ul style="list-style-type: none"><li>As per WTP 2-5</li></ul>
	SW2-3	<ul style="list-style-type: none"><li>Average total arsenic load to Yellowknife Bay from Baker Creek and the WTP is less than the pre-remediation average load of &lt;1200 kg/yr using normalized flow rate</li></ul>	<ul style="list-style-type: none"><li>Monitoring of flow rates and total arsenic concentrations will be conducted for 5 years post-closure. For each year, the combined annual load from the WTP (SNP 43-1A) and Baker Creek (SNP 43-23) will be calculated. Annual load will then be normalized to the pre-remediation average flow to remove interannual variability in flow. The resulting normalized annual loads will be averaged over a 5-year time period and compared to the pre-remediation average of 1,200 kg/yr (based on 2011 to 2018 loading as noted in the Effluent Quality Report).</li><li>Post-closure calculations will be outlined in the Post-Closure Monitoring and Maintenance Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
SW3. Remaining operational engineered structures/controls meet appropriate design levels required for long-term care	SW3-1	<ul style="list-style-type: none"><li>Minimise perpetual care requirements by considering practical closure options that are:<ul style="list-style-type: none"><li>Lower in maintenance</li><li>Lower long-term costs</li><li>Remaining operational controls</li><li>Low probability of failure of engineering controls</li><li>Demonstrated design redundancy</li></ul></li></ul>	<ul style="list-style-type: none"><li>Design and options analyses provided in CRP documents how these perpetual care requirements were incorporated in design and selection of main closure components. This includes review of maintenance, long-term cost, probability of failure.</li><li>Design Plans include the above information as well as information on design redundancy</li></ul>	<ul style="list-style-type: none"><li>Closure and Reclamation Plan</li><li>Design Plans submitted to MVLWB for approval</li></ul>



Table 5.0A-1: Site-Wide Closure Objectives and Criteria

Closure Objectives	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
			Approach	Reporting to MVLWB
SW4: Residual risks are identified, and local residents have been, and continue to be, informed of residual hazards (post-remediation)	SW4-1	<ul style="list-style-type: none"><li>Public communication initiatives as outlined in the Perpetual Care Plan / Engagement Plan are undertaken and evaluated.</li></ul>	<ul style="list-style-type: none"><li>Communication -will include multiple formats to reach various affected parties: standard communication like newsletters, site visits, maps, websites, local radio and television alerts. Further engagement on alternative forms of communication (e.g., mural, signs in various languages) will be discussed with affected parties. Communication format will be outlined in the Engagement Plan and Perpetual Care Plan and will include information on residual risks.</li><li>Evaluation of communication methods will be completed and reported in the Performance Assessment Report.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
	SW4-2	<ul style="list-style-type: none"><li>A land map with residual risks identified and available at Land Titles and project websites</li></ul>	<ul style="list-style-type: none"><li>A final report land map with residual risks/constraints identified will be made available to the Commissioner of the NWT, and posted on the Project website. The map will be in appropriate format to be determined at the time: electronic, hard copy, etc. This will also be managed through land tenure discussions (e.g., reserve of notation, land transfer, leases).</li></ul>	<ul style="list-style-type: none"><li>Submission to Land Titles confirmed in the Performance Assessment Report</li></ul>
	SW4-3	<ul style="list-style-type: none"><li>Perimeter barriers are installed near risk areas to reduce inadvertent access and are visually displeasing to communicate that residual risk is present (e.g., large grey boulders, earth embankments)</li><li>Refer to Objective SI3-2 (In-development)</li></ul>	<ul style="list-style-type: none"><li>Types of barriers or long-term communication tools or structures are to be outlined in the Perpetual Care Plan. Maintenance and inspection will be done regularly through on-site Operational Monitoring Plan and/or the Post-closure Monitoring and Maintenance Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
SW5: Remediated areas are stabilized and protected from erosion in final configuration	SW5-1	<ul style="list-style-type: none"><li>Remediated areas are designed to resist erosion including armouring and targeted revegetation with native species</li></ul>	<ul style="list-style-type: none"><li>Design plans will include details on erosion control measures:<ul style="list-style-type: none"><li>Areal extent of rock armouring on erosion susceptible areas, and typical rock armour specifications</li><li>Areas to be revegetated, and revegetation approach (e.g., native species to be planted or native seed mix)</li></ul></li><li>Design plans will also outline monitoring that will be done to verify erosion control measures stay in place</li></ul>	<ul style="list-style-type: none"><li>Design Plans</li><li>Performance Assessment Report (submitted periodically – nominally on a 5 year interval)</li></ul>
	SW5-2	<ul style="list-style-type: none"><li>Approved surface runoff quality criteria are met, as per the approved Water Management and Monitoring Plan</li></ul>	<ul style="list-style-type: none"><li>Water quality monitoring through the SNP and compared to criteria from the Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
	SW5-3	<ul style="list-style-type: none"><li>Water Quality Objectives in the receiving environment are met</li></ul>	<ul style="list-style-type: none"><li>As per WTP 2-5</li></ul>	<ul style="list-style-type: none"><li>As per WTP 2-5</li></ul>

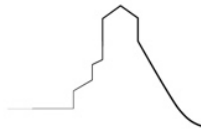


Table 5.0A-1: Site-Wide Closure Objectives and Criteria

Closure Objectives	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
			Approach	Reporting to MVLWB
SW6. Incorporate traditional and local knowledge and affected party input into closure design and implementation, where appropriate and available	SW6-1	<ul style="list-style-type: none"><li>Collect and utilize traditional and local knowledge for Site in environmental assessment process to inform remediation decisions where parties are interested, and information is available</li></ul>	<ul style="list-style-type: none"><li>Document where traditional and/or local knowledge was used from the environmental assessment of the remediation to inform the closure decisions outlined in the Closure and Reclamation Plan and in the Engagement Plan.</li></ul>	<ul style="list-style-type: none"><li>Closure and Reclamation Plan</li><li>Engagement Log</li><li>Engagement Plan</li></ul>
	SW6-2	<ul style="list-style-type: none"><li>Collect updated traditional and local knowledge for Site with relevant affected parties, where parties are interested and available</li></ul>	<ul style="list-style-type: none"><li>Engagement to solicit and incorporate traditional knowledge studies and local knowledge are documented in the Engagement log and the Engagement Plan.</li></ul>	<ul style="list-style-type: none"><li>Engagement Log and Engagement Plan</li></ul>
	SW6-3	<ul style="list-style-type: none"><li>Document for relevant design elements and monitoring programs that traditional knowledge was reviewed and incorporated, to the extent practical</li></ul>	<p>Documentation of the use of traditional and/or local knowledge will be provided in the following, at a minimum:</p> <ul style="list-style-type: none"><li>Quantitative Risk Assessment,</li><li><i>Fisheries Act</i> Authorization in design and monitoring of Baker Creek re-alignment and habitat replacement,</li><li>Documentation of input and involvement in Archaeological Impact Assessment Study and monitoring,</li><li>Aquatic Effects Monitoring Program</li><li>Wildlife and Wildlife Habitat Management and Monitoring Plan.</li><li>Engagement Plan and Engagement Log</li></ul> <p>This input is used to design monitoring and implement monitoring and interpret results</p>	<ul style="list-style-type: none"><li>Performance Assessment Report</li><li>Aquatic Effects Monitoring Plan Design Plan</li></ul>

Note: Site-wide objectives and criteria are linked to numerous remediation activities and as such specific activities are not listed in this table.

1) PM2.5 = particulate matter in the air that is two and one half microns or less in width.

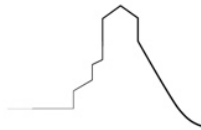


Table 5.0A-2: Underground Mine Workings Closure Objectives, Activities and Criteria (source: Section 5.1 and Underground Design Plan v1.4)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
UG1. Access to underground workings from surface openings is restricted for the safety of humans and wildlife	<ul style="list-style-type: none"><li>Seal existing vertical openings to surface with either a cast--in--place engineered concrete cap, or a pre-cast cap placed over the opening.</li><li>Seal existing horizontal openings to surface using waste rock, concrete, polyurethane foam, or combinations thereof.</li><li>Close existing openings to surface present within the open pits in a manner that supports pit closure criteria (see Section 5.3).</li><li>New long--term underground mine access (see UG-3) portal is secured with a locked gate until underground access is confirmed to not be required, then it will be sealed.</li></ul>	UG1-1	<ul style="list-style-type: none"><li>All existing openings to surface that are connected to the underground are secured in a manner that meets the NWT <i>Mine Health and Safety Act</i>.</li></ul>	<ul style="list-style-type: none"><li>Security for the existing openings to the underground will be designed to meet the NWT <i>Mine Health Safety Act</i>. A satisfactory final inspection by Mines Inspector will be used to confirm the regulation was met once constructed.</li></ul>	<ul style="list-style-type: none"><li>Results from the final inspection report from the Mines Inspector included in Annual Water Licence Report</li></ul>
		UG1-2	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met, such that access to the underground is restricted.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As--built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		UG1-3	<ul style="list-style-type: none"><li>There is no unauthorized access to the underground via the new portal.</li><li>Refer Surface Infrastructure 3-2 regarding post-closure access</li></ul>	<ul style="list-style-type: none"><li>Periodic security inspections confirm wildlife and humans are not accessing the portal (<i>refer to Objective S/3-2</i>)</li></ul>	<ul style="list-style-type: none"><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
UG2. Minewater elevation will be managed to maintain mine physical stability and chemical stability	<ul style="list-style-type: none"><li>Construct the new deep well station in the C Shaft area to pump water from the mine pool to the new WTP (refer to Objective WTP2)</li><li>Maintain the minewater elevation such that it forms a groundwater sink for chemical stability of the underground and surrounding area (see Water Management and Monitoring Plan for details on pumping and elevation)</li></ul>	n/a	<ul style="list-style-type: none"><li>See UG3 and WTP4.</li></ul>	<ul style="list-style-type: none"><li>n/a</li></ul>	<ul style="list-style-type: none"><li>n/a</li></ul>



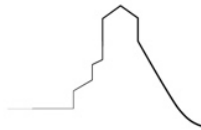


Table 5.0A-2: Underground Mine Workings Closure Objectives, Activities and Criteria (source: Section 5.1 and Underground Design Plan v1.4)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
UG3. Structures, controls, and adaptive management approaches used for the remediation of the arsenic trioxide meet appropriate design levels required to support the 100-year design life of the frozen zones.	<ul style="list-style-type: none"><li>• Plug underground openings connected to arsenic stopes and chambers and backfill all voids on top of arsenic stopes and chambers to provide thermal continuity to the frozen shell.</li><li>• Backfill voids on top of arsenic stopes and chambers and near-surface non-arsenic stopes and boundary pillars as necessary</li><li>• Establish new long-term underground mine access location within the Core Industrial Area.</li></ul>	UG3-1	<ul style="list-style-type: none"><li>• Meets the NWT <i>Mine Health and Safety Act</i> for plugging underground openings and backfilling voids and the establishment of the new long-term underground mine access</li></ul>	<ul style="list-style-type: none"><li>• Satisfactory final inspections are performed by a Qualified Professional and by the Mines Inspector. Because the underground will be remediated in stages and accordingly, some areas of the mine may no longer be accessible, it is assumed multiple inspections by the Mines Inspector will be required.</li></ul>	<ul style="list-style-type: none"><li>• Results from the final inspection report from the Mines Inspector included in Annual Water Licence Report</li></ul>
		UG3-2	<ul style="list-style-type: none"><li>• Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met, so that the voids and backfill provide stabilization.</li></ul>	<ul style="list-style-type: none"><li>• Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>• Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>• Design Plan</li><li>• Construction Plan</li><li>• As-built report provided in the Reclamation Completion Report</li><li>• Final Closure and Reclamation Completion Report</li></ul>
		UG3-3	No more than 1.5 m of the rock in the crown pillar of an arsenic stope or chamber, or in the top of an adjacent non-arsenic stope separated by a boundary pillar, can fall into void spaces, such that subsidence does not damage critical infrastructure <sup>(a)</sup>	<ul style="list-style-type: none"><li>• Monitoring of crown pillar movement using extensometers into the crown pillar of arsenic stopes and chambers and into the boundary pillar between arsenic and non-arsenic stopes.</li><li>• Ongoing monitoring for first 5 years of digital instruments and bi-annual for manual monitoring. Reduced to periodically every 5 years until the arsenic chambers and stopes are frozen after which excessive settlement of the stope fill should not occur and monitoring will cease.</li></ul>	<ul style="list-style-type: none"><li>• Design plan</li><li>• Annual Water Licence Report</li><li>• Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>



Table 5.0A-2: Underground Mine Workings Closure Objectives, Activities and Criteria (source: Section 5.1 and Underground Design Plan v1.4)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
<b>UG4.</b> Underground is stabilized (geotechnically and physically) to reduce risks for public, workers, and wildlife safety	<ul style="list-style-type: none"><li>Stabilize voids under surface crown pillars and under pits with paste tailings or other suitable materials as required based on stability assessments.</li><li>Backfill drifts connected to arsenic stopes and chambers to protect bulkheads in the event of unexpected mine flood or thawing of arsenic in chambers.</li></ul>	<b>UG4-1</b>	<ul style="list-style-type: none"><li>Design engineering drawings for underground backfill are signed and stamped by a Qualified Professional and the specifications outlined therein are met</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>UG4-2</b>	<ul style="list-style-type: none"><li>Drifts connected to arsenic stopes will be filled to the extent of the frozen shell (see F1-2 related to definition of shell)</li></ul>	<ul style="list-style-type: none"><li>Design specification outlines full extent of drifts connected to arsenic stopes within the frozen shell. A satisfactory final inspection by a Qualified Professional confirms this was met.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final inspection copy included in Annual Water Licence Report and Reclamation Completion Report</li></ul>
		<b>UG4-3</b>	<ul style="list-style-type: none"><li>Paste backfill meets minimum 100 kPa specification; to prevent liquefaction during seismic event</li></ul>	<ul style="list-style-type: none"><li>Design specification outlines minimum 100 kPa and a satisfactory final inspection by a Qualified Professional confirms this was met as well as satisfactory inspection by Mines Inspector</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final inspection copy included in Annual Water Licence Report and Reclamation Completion Report</li></ul>
		<b>UG4-4</b>	<ul style="list-style-type: none"><li>A minimum crown pillar rock thickness of 5 m (thickness of intact bedrock below overburden and above void) will be maintained where initial crown pillar thickness permits (Refer to criterion UG4-5 for the criterion applicable when the existing crown pillar thickness is less than 5 m.)</li></ul>	<ul style="list-style-type: none"><li>Stabilize voids under surface crown pillars and under pits with paste tailings or other suitable materials as required based on stability assessments.</li><li>Backfill drifts connected to arsenic stopes and chambers to protect bulkheads in the event of unexpected mine flood or thawing of arsenic in chambers</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		<b>UG4-5</b>	<ul style="list-style-type: none"><li>Voids under pits and Stope DWC will be filled so that no more than 1 m subsidence would occur at ground surface</li></ul>	<ul style="list-style-type: none"><li>Stabilize voids under surface crown pillars and under pits with paste tailings or other suitable materials as required based on stability assessments.</li><li>Backfill drifts connected to arsenic stopes and chambers to protect bulkheads in the event of unexpected mine flood or thawing of arsenic in chambers.</li><li>Stabilize with cemented paste backfill the bottom of backfilled stopes under critical areas such as arsenic stopes and chambers or pits. This stabilization is to prevent negative impacts of minewater fluctuation on the stope backfill placed at the top of the stope.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>

Notes:

(a) Critical Infrastructure is defined as the freeze pads, thermosyphons, and arsenic bulkheads.

NWT = Northwest Territories; MVLWB = Mackenzie Valley Land and Water Board; WTP = water treatment plant; L = level.



Table 5.0A-3: Freeze Program Closure Objectives, Activities and Criteria (source: Section 5.2 and Freeze Containment Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
F1. Arsenic trioxide dust and arsenic-impacted waste disposal areas are not, and will not become, a source of contamination to the environment	<ul style="list-style-type: none"><li>Place containerized roaster and process waste underground and in B1 Pit, in future frozen zone (also see Section 5.1 on the underground). Refer related objectives CS1 and SI1.</li><li>Prepare and install supporting site infrastructure for the freeze program:<ul style="list-style-type: none"><li>Civil works including access roads, backfilling, and pads.</li><li>Underground mine works (refer to Objectives UG3 and UG4).</li><li>Electrical works, instrumentation, and monitoring equipment.</li></ul></li><li>Freeze the bedrock or fill around each arsenic containing chamber, stope, drift or pit fill using thermosyphons to develop the frozen shell.</li></ul>	F1-1	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met, to contain the arsenic trioxide waste and dust.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li><li>Documentation of where waste was placed will be provided in the Reclamation Completion Report.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		F1-2	<ul style="list-style-type: none"><li>The dust and waste will be considered contained when a 5-m –wide frozen shell at -5°C or colder exists in the bedrock or fill around each arsenic containing chamber, stope, drift or fill in pit.</li></ul>	<p>The Design Plan will include monitoring as follows:</p> <ul style="list-style-type: none"><li>Monitoring of frozen shell temperatures to show evidence that they remain at, or colder than -5°C, 5 m from an arsenic containing chamber, stope, drift or fill in pits. Any warming trends will be evaluated and if necessary, mitigation efforts to protect the frozen shell will be undertaken.</li><li>Post-closure monitoring will be used to evaluate climate change impacts on the frozen shell with action being taken if needed to satisfy the criteria.</li><li>Review and regular calibration of thermal models based on in-situ monitoring results to confirm frozen shell performance.</li><li>Inspection of thermosyphons, electrical, instrumentation, and monitoring equipment.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
F2. Reversibility for future technology developments in remediation has been maintained	<ul style="list-style-type: none"><li>Freeze the bedrock or fill around each arsenic containing chamber, stope, drift or pit fill using thermosyphons to develop the frozen shell (See Section 5.2.4 for details on the dry frozen shell method)</li><li>Plug drifts connected to arsenic stopes and chambers with a fine-grained cemented material that can be excavated later if access through the long-term portal to the arsenic impacted waste dust is required in the future (refer to Objective UG3).</li><li>Document where containerized roaster and process waste is placed underground and in B1 Pit, in future frozen zone.</li></ul>	F2-1	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met, such that reversibility for future access is maintained.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li><li>Documentation of where waste was placed will be provided in the Reclamation Completion Report.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		F2-2	<ul style="list-style-type: none"><li>Each chamber, stope, drift or pit filled with arsenic trioxide dust and/or arsenic-impacted waste is contained in a frozen shell, which can be reversed by thawing and/or excavation</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final inspection copy included in Annual Water Licence Report and Reclamation Completion Report</li></ul>
		F2-3	<ul style="list-style-type: none"><li>Backfill at minimum 100 kPa strength can be excavated to access chambers.</li><li>Refer to UG4-2.</li></ul>	<ul style="list-style-type: none"><li>100 kPa is excavatable by construction equipment, therefore can be reversed if needed. Design specification outlines minimum 100 kPa and a satisfactory final inspection by a Qualified Professional will confirm this was met.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final inspection copy included in Annual Water Licence Report and Reclamation Completion Report</li></ul>

MVLWB = Mackenzie Valley Land and Water Board; QA/QC = quality assurance/quality control.

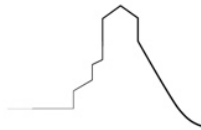


Table 5.0A-4: Open Pits Mine Workings Closure Objectives, Activities and Criteria (source: Section 5.3)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
P1. Potential for flooding the underground by way of the pits is reduced	<ul style="list-style-type: none"><li>Re-align Baker Creek such that potential for pit flooding is reduced (refer to Objective BC1).</li><li>Install water diversions/berms, when needed to protect underground water quantity (refer to Objective UG2)</li><li>Install scour protection between water courses and the pits that protect berms, diversions and vulnerable topography*</li><li>Install engineered cover over pit when needed to protect underground water quantity or quality (refer to Objective UG1)</li></ul>	P1-1	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met, such that potential flooding for the underground through the pits is reduced.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		P1-2	<ul style="list-style-type: none"><li>Berms/Diversions are built to an elevation of Baker Creek PMF</li></ul>	<ul style="list-style-type: none"><li>Design specification for berms/diversion is at the elevation of the Baker PMF and outlined in the Design Plan. The specific elevation is variable across site and this will be outlined in the Design Plan for each berm/diversion</li><li>Satisfactory final inspection by a Qualified Professional</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final inspection results included in Annual Water Licence Report and Reclamation Completion Report</li></ul>
		P1-3	<ul style="list-style-type: none"><li>Diversions/berms include low flux features** to limit water entering the underground to achieve UG2 criteria of maintaining the minewater level.</li><li>Refer to Objective BC1 for criteria related to the re-alignment of Baker Creek</li></ul>	<ul style="list-style-type: none"><li>Design specification for berms/diversion around the pits includes low flux features** to further reduce possible infiltration to the underground.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final inspection results included in Annual Water Licence Report and Reclamation Completion Report</li></ul>
		P1-4	<i>Criteria in Development pending engineering work</i> <ul style="list-style-type: none"><li>Where berms or diversions are predicted to be in contact with the PMF, the minimum size of scour protection will be calculated based on water flow velocity and depth during PMF.</li></ul>	<i>In development; To be finalized through a forthcoming Open Pit Design Plan</i>	<i>In development; To be finalized through a forthcoming Open Pit Design Plan</i>

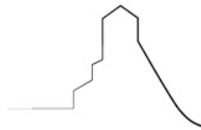


Table 5.0A-4: Open Pits Mine Workings Closure Objectives, Activities and Criteria (source: Section 5.3)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
P2. Public, worker, and wildlife safety risks associated with pits are reduced	<ul style="list-style-type: none"><li>Backfill underground voids connected to pits as required (refer to Objective UG4)</li><li>Fully or partially fill pits and re-contour the smaller B4 Pit.</li><li>Recontour remnant high walls above A1 and A2 pits.</li><li>Cap each pit with clean, coarse material of large size to discourage public and animal use</li></ul>	P2-1	<ul style="list-style-type: none"><li>Design engineering drawings for fill placement into pits are signed and stamped by a Qualified Professional and the specifications outlined therein are met</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		P2-2	<ul style="list-style-type: none"><li>Pits will not retain ponded water</li></ul>	<ul style="list-style-type: none"><li>A satisfactory final inspection of grade and shape of fill in pits will be performed by a Qualified Professional.</li><li>Design plan will outline monitoring to check for in-filling of pits with water. Short-term standing water is acceptable, but no permanent retention. On-site monitoring is expected to address this criterion including includes:<ul style="list-style-type: none"><li>Monitor for settlement and erosion annually and after each major flood event.</li><li>Monitoring of fill in pits</li><li>Survey of fill of pits as required.</li><li>Inspections for ponded water in pits.</li></ul></li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report and Reclamation Completion Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		P2-3	<i>Criteria in Development pending engineering work</i> <ul style="list-style-type: none"><li>Recontour high walls to appropriate slope (pending further engineering work)</li></ul>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>
		P2-4	<i>Criteria in Development pending engineering work</i> <ul style="list-style-type: none"><li>Settlement and erosion of fill in pit/cap occurs within standard parameters (appropriate numbers to be determined differential settlement of 1% of fill height pending further engineering work)</li></ul>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>
		Deleted, moved to P3-3. Added cross reference	<ul style="list-style-type: none"><li>Refer to Objective P3-3 for pit cover (In-development)</li><li>Refer to Objective SI3-2 (In-development) regarding post closure access</li></ul>		





Table 5.0A-4: Open Pits Mine Workings Closure Objectives, Activities and Criteria (source: Section 5.3)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
P3. Pit fill material will not become a source of contamination to the environment	<ul style="list-style-type: none"><li>Fill pits with a combination of borrow and contaminated granular fill from the Site.</li><li>Cap each pit with clean, coarse material of large size to reduce potential for dust.</li><li>Install engineered cover over pits if needed to protect water quality</li><li>Fully or partially fill pits with free draining material, any water draining through filled/partially filled pits reports to the underground for treatment.</li></ul>	P3-1	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met, such that fill in the pits will not become a source of contamination.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		P3-2	<ul style="list-style-type: none"><li>Runoff off from engineered covers over pits meets surface runoff water quality criteria, as per the approved Water Management and Monitoring Plan</li></ul> <i>Refer to Q2-1 regarding geochemical suitability of pit cover</i>	<ul style="list-style-type: none"><li>Water quality monitoring through the SNP and compared to criteria from the Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		P3-3 (moved from P1/P2)	<i>Criteria in Development pending engineering work</i> <ul style="list-style-type: none"><li>Pit cover criterion (to be determined pending further engineering work)</li><li>Refer to Objective SW1 for Air Quality standards are met</li><li>Refer to Objective UG2 and WTP2, related to water from pits draining to underground whereby EQC are achieved</li></ul>	<i>In development; To be finalized through a forthcoming Open Pit Design Plan</i>	<i>In development; To be finalized through a forthcoming Open Pit Design Plan</i>

Note:

\* Vulnerable topography = landforms or infrastructure that are susceptible to flooding either because they are in a flow path, are easily erodible or have high value aesthetically or for the community and require protection from flooding.

\*\*A low flux feature is a design element used to restrict flow of water through an earthen structure. Typical low flux features include fine grained soil layers or geosynthetic barriers.

PMF = probable maximal flood; MVLWB = Mackenzie Valley Land and Water Board.



Table 5.0A-5: Contaminated Soils and Sediment (source: Section 5.4)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
CS1. Contaminated materials (i.e., soil, sediment, granular fill, and tailings) are remediated or risk-managed to reduce risk to humans and to aquatic and terrestrial ecosystems	<ul style="list-style-type: none"><li>Remove and dispose of heavily contaminated granular fill from the mill/roaster area in the frozen portion of B1 Pit or within another suitable frozen zone.</li><li>Remove and dispose of contaminated granular fill in A1 and B1 Pits and TCAs.</li><li>Remove and dispose of contaminated fine-grained soil in TCAs.</li><li>Remove and dispose of PHC contaminated soil in TCAs.</li><li>Excavate tailings-impacted fine-grained soil downgradient of Dam 3 and place within the TCAs.</li><li>Excavate Baker Pond contaminated sediment and Jo-Jo Lake tailings and dispose of in the TCAs.</li><li>Remove contaminated sediment from Baker Creek and dispose of in the TCAs.</li><li>Construct engineered soil covers in areas where contaminated materials remain at a depth significantly greater than 2 m (e.g., Mill Pond, former Calcine Pond, and Area 4).</li><li>Backfill excavated areas with new quarried rock.</li><li>Partially excavate and/or cover nearshore sediments with clean backfill material.</li><li>Construct fence in the core area of site, surrounding area of primary roaster stack deposition.</li></ul>	CS1-1	<ul style="list-style-type: none"><li>Design engineering drawings for soil covers are signed and stamped by a Qualified Professional and the specifications outlined therein are met.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		CS1-2	<ul style="list-style-type: none"><li>Final backfill grading will not retain ponded water.</li></ul>	<ul style="list-style-type: none"><li>The Design plan will outline visual monitoring to check for in-filling with water. Short-term standing water is acceptable, but no permanent retention.</li><li>Results of inspections will be reported in Annual Water Licence Report</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		CS1-3	<ul style="list-style-type: none"><li>Industrial soil quality objective of 340 mg/kg for total arsenic is met in Developed Areas.</li></ul>	<ul style="list-style-type: none"><li>Soil sampling post-construction from the limits of excavations in Developed Areas verifies GNWT ENR guidelines for contaminated site remediation for industrial areas are met.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		CS1-4	<ul style="list-style-type: none"><li>Residential soil quality objective of 160 mg/kg for total arsenic is met in the Townsite, Shoreline Lands, and Marina area.</li></ul>	<ul style="list-style-type: none"><li>Soil sampling post construction from the limits of excavations in the Townsite, Shoreline Lands, and Marina area verifies GNWT ENR guidelines for contaminated site remediation for residential use is met.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		CS1-5	<ul style="list-style-type: none"><li>Runoff from engineered soil covers meets surface runoff water quality criteria as per the approved Water Management and Monitoring Plan</li></ul>	<ul style="list-style-type: none"><li>Water quality monitoring through the SNP and compared to criteria from the Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li></ul>
		CS1-6	<ul style="list-style-type: none"><li>Fence installed to encompass area most impacted by roaster emissions fallout</li></ul>	<ul style="list-style-type: none"><li>Satisfactory final inspection by a Qualified Professional</li></ul>	<ul style="list-style-type: none"><li>As-built report provided in the Reclamation Completion Report</li></ul>
		CS1-7	<ul style="list-style-type: none"><li>Contaminated sediment in Baker Creek removed down to bedrock or underlying native soil</li></ul>	<ul style="list-style-type: none"><li>Sediment sampling and inspection in Baker Creek confirms contaminated sediment was removed to native soil/bedrock.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		CS1-8	<i>Criterion in Development with Contamination Downgradient of Dam 3 Reclamation Research Plan</i> <ul style="list-style-type: none"><li>Tailings-impacted area downgradient of Dam 3 to be determined.</li></ul>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>
		CS1-9	<i>Criteria in Development pending engineering work and related to Fisheries Act Authorization</i> <ul style="list-style-type: none"><li>Shoreline lands sediment cover to be determined</li></ul>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>
			<ul style="list-style-type: none"><li>Refer to Objective SW4; Administrative controls in place; such as signs for activities/criteria/approach and reporting that are applicable to areas that will be risk managed outside of the fenced area.</li></ul>	—	—

PHCs = petroleum hydrocarbons; TCA = Tailings Containment Area; MVLWB = Mackenzie Valley Land and Water Board; GNWT = Government of the Northwest Territories; ENR = Environment and Natural Resources; TBD = to be determined.

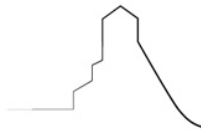


Table 5.0A-6: Baker Creek and Surface Water (source: Section 5.5)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
<b>BC1.</b> Baker Creek is prevented from entering the underground workings and the arsenic chambers	<ul style="list-style-type: none"><li>Build a geomorphic channel and flood plain that accommodates the probable maximum flood (PMF).</li><li>Realign reaches to avoid openings to the underground and pits and to provide adequate channel and flood plain dimensions and straighter flow path.</li><li>Install surface water diversions where required in large sub watersheds to convey runoff around pits to Baker Creek (refer to Objective P1).</li><li>Seal openings to surface from underground (refer to Objective UG1).</li></ul>	<b>BC1-1</b>	<ul style="list-style-type: none"><li>Design engineering drawings for Baker Creek are signed and stamped by a Qualified Professional and the specifications outlined therein are met, including accommodation of a geomorphic channel and flood plain that allows passage of the probable maximum flood (PMF).</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As -built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>BC1-2</b>	<ul style="list-style-type: none"><li>Geomorphic low flow channel designed to convey at least the 2-yr flood event</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings.</li><li>Final As -built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li><li>Satisfactory final inspection by a Qualified Professional.</li></ul>	<ul style="list-style-type: none"><li>Design Plan submitted to the MVLWB</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>BC1-3</b>	<ul style="list-style-type: none"><li>Slopes of berms and diversions will be designed with a minimum static geotechnical factor of safety of 1.3</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built- reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built- report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>BC1-4</b>	<ul style="list-style-type: none"><li>No sinkholes or openings to underground are observed below PMF elevation in annual inspections.</li></ul>	<ul style="list-style-type: none"><li>Through the on-site Operational Monitoring Plan annual pre- and post-freshet inspections of Baker Creek channel document presence of sinkholes or openings to underground.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Reclamation Completion Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
			<ul style="list-style-type: none"><li>Refer to P1-4: scour protection criterion</li></ul>	—	—



Table 5.0A-6: Baker Creek and Surface Water (source: Section 5.5)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
<b>BC2.</b> Baker Creek is physically stabilized and capable of providing adequate flood conveyance throughout the site without long-term active care/ maintenance	<ul style="list-style-type: none"><li>Construct a flood plain in various reaches of Baker Creek to convey extreme flood (PMF), with mitigation for channel ice deposits.</li><li>Construct channel bed foundation such that it mitigates potential subsurface instabilities due to changes in thermal regime.</li><li>Construct erosion resistant channel to be dynamically stable during PMF events.</li></ul>	<b>BC2-1</b>	<ul style="list-style-type: none"><li>Design engineering drawings for Baker Creek are signed and stamped by a Qualified Professional and the specifications outlined therein are met, including accommodation for the PMF.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>BC2-2</b>	<ul style="list-style-type: none"><li>Flood plain design geometry provides capacity for a minimum of 2m ice storage.</li></ul>	<ul style="list-style-type: none"><li>Design will be based on a 1m depth of low flow channel plus 1m above the flood plain (2m total)</li><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings.</li><li>Final As--built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li><li>Satisfactory final inspection by a Qualified Professional.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built- report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>BC2-3</b>	<ul style="list-style-type: none"><li><b>BC2-3</b> Lateral migration of the low flow channel does not impinge on vulnerable topography*</li></ul>	<ul style="list-style-type: none"><li>On-site monitoring will be outlined in the Design Plan for MVLWB approval; monitoring includes annual inspections of Baker Creek including presence of ice build-up in channel, as well as hydrometric monitoring of the creek.</li><li>The results of inspections will be summarized in the Annual Water Licence Report.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		<b>BC2-4</b>	<i>Criteria in Development pending engineering work</i> <ul style="list-style-type: none"><li>Permeable channel substrates; granular channel bed material provides for interstitial seepage as mitigation for channel ice deposits*</li></ul>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>
		<b>BC2-5</b>	<i>Criteria in Development pending engineering work</i> <ul style="list-style-type: none"><li>Design includes geotechnical and permafrost evaluation for alignment selection, design considers appropriate mitigations for vulnerable topography</li></ul>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>
			<ul style="list-style-type: none"><li><i>Refer to BC1-3:</i> No sinkholes or openings to underground are observed below PMF elevation in annual inspections.</li></ul>	—	—



Table 5.0A-6: Baker Creek and Surface Water (source: Section 5.5)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
BC3. Surface natural drainage patterns are re-established to the extent practicable and to provide conveyance of site runoff, while managing flood risk to closure infrastructure	<ul style="list-style-type: none"><li>Restore pre-development drainage patterns, to the extent practicable.</li><li>Design conveyance channels, ponds, and wetlands with appropriate erosion resistance to mitigate surface runoff flood risk to closure infrastructure.</li><li>Eliminate permanent surface storage of minewater and runoff (refer to Objective WTP1).</li></ul>	BC3-1	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met, such that natural drainage patterns are reinstated, and surface water is conveyed.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.-</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		BC3-2	<ul style="list-style-type: none"><li>Location of confluence(s) of on-site tributary channels with Baker Creek in the final configuration are similar to pre-development based on natural topography and sub-watersheds.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li><li>Satisfactory final inspection by a Qualified Professional</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		BC3-3	<ul style="list-style-type: none"><li>Surface runoff is conveyed by natural watercourses to the extent practicable.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Air photo analysis is used to identify natural watercourses that were unaltered by past mining or remediation (unless required for erosion and stability control)</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li><li>Satisfactory final inspection by a Qualified Professional</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>





Table 5.0A-6: Baker Creek and Surface Water (source: Section 5.5)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
BC4. Water quality and sediment quality in Baker Creek are improved to reduce exposure of aquatic and terrestrial organisms to contaminants	Stop effluent discharge into Baker Creek from the existing ETP and install and operate new WTP with outfall to Yellowknife Bay (refer to Objectives WTP1 and WTP2). Remove sediments in Baker Creek and backfill the area with uncontaminated material. Dispose camp water and sewage off site. Implement site remediation activities to reduce loadings to surface water in Baker Creek (cover TCAs and pits, decommission settling and polishing ponds, excavate contaminated soil areas and backfill). Collect runoff from engineered structures and convey to the minewater pool until it meets Surface runoff quality criteria, as per the approved Water Management and Monitoring Plan	BC4-1	<ul style="list-style-type: none"><li>Permanent cessation of treated effluent discharge to Baker Creek</li></ul>	<ul style="list-style-type: none"><li>Notice of commissioning of a new WTP and the decommission of the ETP is provided to MVLWB.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		BC4-2	<ul style="list-style-type: none"><li>Site-specific water quality objectives are met in Yellowknife Bay at the edge of the mixing zone-</li></ul>	<ul style="list-style-type: none"><li>Stations at the edge of the mixing zone are monitored through SNP and analyzed and reported through the Aquatic Effects Monitoring Plan</li></ul>	<ul style="list-style-type: none"><li>Annual AEMP Report</li><li>Annual Water Licence report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		BC4-3	<ul style="list-style-type: none"><li>Approved surface runoff quality criteria are met, as per the approved Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Water quality monitoring through the SNP and compared to criteria from the Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		BC4-4	<ul style="list-style-type: none"><li>Concentrations of total arsenic in Baker Creek on site are reduced in comparison to preremediation conditions.</li></ul>	<ul style="list-style-type: none"><li>Concentrations of total arsenic from Baker Creek SNP station 43-235-(May to October) are compared to concentrations of the 5-year mean of total arsenic preremediation in Baker Creek onsite (open-water season data from SNP 43-5 and Baker Creek Exposure Point from 2011 to 2018).</li><li>The details of the analyses will be in the Post-Closure Monitoring and Maintenance Plan</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5year interval)</li></ul>
		BC4-5	<i>Criteria in Development Passive and Semi Passive Treatment Technology Reclamation Research Plan</i> <ul style="list-style-type: none"><li>Water quality in Baker Creek on site (SNP43-23) is similar to upstream concentrations (SNP4311) after remediation activities are complete.</li></ul>	<i>In development; To be finalized through a forthcoming Design Plan</i>	<i>-In development; To be finalized through a forthcoming Design Plan</i>
			<ul style="list-style-type: none"><li>Refer to CS-1 for sediment excavation demonstrating contaminated sediments removed from creek</li></ul>	—	—

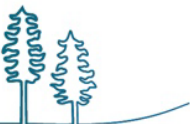


Table 5.0A-6: Baker Creek and Surface Water (source: Section 5.5)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
BC5. Once realigned, Baker Creek is restored to a state that encourages natural rehabilitation	<ul style="list-style-type: none"><li>Perform grading according to overall site surface drainage plan.</li><li>Provide physical habitat modifications to the channel to provide appropriate habitat and re-colonization for a range of aquatic species at relevant life stages; as per <i>Fisheries Act</i> Authorization requirements; including the removal of culvert in Reach 2.</li><li>Revegetate shoreline with native species to reduce erosion and increase fish habitat features.</li><li>Restore natural drainage patterns, where possible.</li></ul>	BC5-1	<ul style="list-style-type: none"><li>Design and build the physical habitat modifications as per the requirements of <i>Fisheries Act</i> Authorization, including re-vegetation.</li></ul>	<ul style="list-style-type: none"><li>As-built engineering drawings signed and stamped by Qualified Professional and submitted to MVLWB and Fisheries and Oceans Canada.</li><li>Satisfactory final inspection is carried out by a Qualified Professional and a notice from Fisheries and Oceans Canada that the requirements of the Authorization related to construction were met.</li></ul>	<ul style="list-style-type: none"><li>Final Closure and Reclamation Completion Report including as--builts drawings and notifications from Fisheries and Oceans Canada</li></ul>
		BC5-2	<i>Criterion in Development</i> through the outcomes of <i>Fisheries Act</i> Authorization <ul style="list-style-type: none"><li>Benthic invertebrates are present after Baker Creek realignment and sediment replacement in numbers similar to or greater than pre-remediation surveys in 2011 and 2019</li></ul>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>
		BC5-3	<i>Criterion in Development</i> through the outcomes of <i>Fisheries Act</i> Authorization <ul style="list-style-type: none"><li>Aquatic monitoring confirms spring spawning in Baker Creek by Longnose Sucker and Arctic Grayling including presence of adults, eggs, and young of year that out migrate out of creek in late spring.</li></ul>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>	<i>In development;</i> <i>To be finalized through a forthcoming Design Plan</i>

\* Vulnerable topography = landforms or infrastructure that are susceptible to flooding either because they are in a flow path, are easily erodible or have high value aesthetically or for the community or are culturally significant and require protection from flooding.  
PMF = Probable Maximum Flood; MVLWB = Mackenzie Valley Land and Water Board; ETP = effluent treatment plant; TCA = Tailings Containment Area; WTP = water treatment plant; TBD = to be determined.

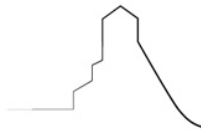


Table 5.0A-7: Tailings Containment Areas and Dams Closure Objectives (source: Section 5.6 and Tailings Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
T1. Contaminant loading from the tailings containment area to the environment is reduced	<ul style="list-style-type: none"><li>Reduce overall footprint of tailings (see Objective T5).</li><li>Grade tailings to promote positive drainage of precipitation off the TCAs and avoid ponding.</li><li>Cover tailings in the TCAs with a low permeability geosynthetic cover to minimize the possibility that precipitation will come in contact with or seep through tailings.</li><li>Protect the geosynthetic material with a 1 m layer of fine and coarse material, promoting its long-term integrity.</li><li>Construct spillway channels to route surface water to receiving environment (see Objective BC3), once surface runoff quality criteria are met.</li></ul>	T1-1	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met, such that contaminant loading to the environment is reduced.</li></ul>	<ul style="list-style-type: none"><li>Designs will be provided to the MVLWB prior to commencement of construction, including stamped design drawings. The supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>The final as-built report will be prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		T1-2	<ul style="list-style-type: none"><li>Runoff water quality from North Pond, Central Pond, and Northwest Pond meets or is lower than applicable surface runoff quality criteria as per the approved Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Water samples will be collected from SNP locations outlined in the SNP near the outlet of the spillways from the TCAs (<i>Detail in Tailings MMP Section 3.3.1</i>). Results will be compared to the surface runoff criteria from the Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		T1-3	<ul style="list-style-type: none"><li>Runoff water quality from former South Pond area meets or is lower than applicable surface runoff quality criteria for direct discharge to Yellowknife Bay. as per the approved Water Management and Monitoring Plan.</li><li>Refer to CS1-1</li></ul>	<ul style="list-style-type: none"><li>Water samples will be collected from SNP locations outlined in the SNP near the outlet of South Pond. (<i>Detail in Tailings MMP Section 3.3.1</i>). Results will be compared to the surface runoff criteria from the Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		n/a	<ul style="list-style-type: none"><li>Cross-reference SW1, meeting air quality standards for improvement in air quality and reduction in dust from TCAs</li></ul>	n/a	n/a
T2. Risk of tailings erosion and human contact with tailings in the foreshore area is reduced	<ul style="list-style-type: none"><li>Design and place cover on tailings in the foreshore tailings area.</li><li>Administrative controls, refer to Objective SW4.</li></ul>	T2-1	<ul style="list-style-type: none"><li>Design engineering drawings for the foreshore tailings cover are signed and stamped by a Qualified Professional and the specifications outlined therein are met.</li></ul>	<ul style="list-style-type: none"><li>Designs will be provided to the MVLWB prior to commencement of construction, including stamped design drawings. The supervising engineer will provide construction oversight, QA/QC approval as outlined in a construction plan.</li><li>The final as-built report will be prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		T2-2	<ul style="list-style-type: none"><li>A minimum 0.7 m of riprap layer will need to be maintained over the area of the cover.</li></ul>	<ul style="list-style-type: none"><li>Visual inspections and topographic surveying (above and below water) will be completed to confirm performance is as expected. (<i>Details in Tailings MMP Section 3.3.2</i>)</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		T2-3	<ul style="list-style-type: none"><li>The cover extends down to below the calculated critical water depth for sediment erosion at a lakebed elevation of 153 masl.</li></ul>	<ul style="list-style-type: none"><li>Visual inspections and topographic surveying will be completed to confirm that the perimeter of the cover in the lake side is approximately 3.0 m deep in dry years (lake elevation 156.04 masl) and 4.1 m deep in wet years (lake elevation 157.14 masl).</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>



Table 5.0A-7: Tailings Containment Areas and Dams Closure Objectives (source: Section 5.6 and Tailings Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
T3. Dam stability is maintained	<ul style="list-style-type: none"><li>Evaluate stability of dams in their closure configuration. Where necessary, undertake stabilization works such as buttressing or reconstruction to confirm that all permanent dams meet stability criteria.</li><li>Re-evaluate dam stability following construction to confirm compliance with CDA criteria.</li></ul>	T3-1	<ul style="list-style-type: none"><li>Design engineering drawings for dam remediation – rehabilitation works are signed and stamped by a Qualified Professional and the specifications outlined therein are met.</li></ul>	<ul style="list-style-type: none"><li>Designs will be provided to the MVLWB prior to commencement of construction, including stamped design drawings. The supervising engineer will provide construction oversight, QA/QC approval as outlined in a construction plan.</li><li>The final as-built report will be prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		T3-2	<ul style="list-style-type: none"><li>Dam stability, management and operation will meet applicable CDA guidelines.</li></ul>	<ul style="list-style-type: none"><li>The overall approach to dam monitoring and maintenance has been developed in accordance with CDA guidelines and is described in Tailings MMP Section 3.3.1. The approach includes:<ul style="list-style-type: none"><li>visual inspections completed annually by the engineer of record to confirm performance is as expected</li><li>regular, more frequent visual inspections by the surface care and maintenance contractor</li><li>data collection from all instrumentation on the dams, with annual review by the engineer of record. The types of instrumentation to be monitored are included in Tailings MMP Section 3.1.4</li></ul></li><li>The OMS Manual provides additional detail on the monitoring and maintenance approach</li></ul>	<ul style="list-style-type: none"><li>Results from Annual Dam Safety Inspection Report (per CDA guidance) and Dam Safety Review (per CDA guidance) provided in Annual Water Licence Report:</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
T4. Avoid surface water ponding on Tailings Containment Areas	<ul style="list-style-type: none"><li>Contour tailings and cover tailings to stable grades, the grade should promote drainage to avoid surface water ponding.</li></ul>	T4-1	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met.</li></ul>	<ul style="list-style-type: none"><li>Design will be provided to the MVLWB prior to commencement of construction, including stamped design drawings. The supervising engineer will provide construction oversight, QA/QC approval as outlined in a construction plan.</li><li>The final as-built report will be prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		T4-2	<ul style="list-style-type: none"><li>Cover meets minimum 0.5% grade for site drainage.</li></ul>	<ul style="list-style-type: none"><li>Visual inspections of the engineered cover will be carried out by a qualified professional geotechnical engineer, as described in the Tailings MMP (Section 3.1.1 and 3.3.1), including assessment of positive drainage. Surveys will also be carried out periodically to supplement observations and confirm gradients.</li><li>Annual inspections will be carried out for the first 10 years after cover construction (Tailings MMP Table 3.3-3), with the potential to reduce the future frequency, depending on the results of observations in that initial period.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li></ul>



Table 5.0A-7: Tailings Containment Areas and Dams Closure Objectives (source: Section 5.6 and Tailings Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
T5. Footprint of tailings is reduced	<ul style="list-style-type: none"><li>Relocate South Pond to within the remaining TCAs to provide a reduction in the total area covered by tailings.</li><li>Relocate Jo-Jo tailings and Dam 3 tailings-impacted soils to remaining TCAs (see Objective CS1).</li></ul>	T5-1	<ul style="list-style-type: none"><li>The total tailings impoundment footprint is reduced by approximately 90,000 m².</li></ul>	<ul style="list-style-type: none"><li>The final as-built report will be prepared and stamped, documenting that approved design has been constructed in accordance with design intent, with survey results documenting the change in the tailings impoundment footprint. The volume of material moved is recorded in as-built drawings.</li></ul>	<ul style="list-style-type: none"><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
T6. Access to tailings cover areas is discouraged	<ul style="list-style-type: none"><li>Tailings covers are rough / coarse gradation / rock cover.</li><li>Boulders placed in access areas.</li></ul>	T6-1	<ul style="list-style-type: none"><li>Cover is constructed in accordance with design specification including a rough surface on TCA's and coarse gradation of material, with a minimum mean grain diameter (D50) of 75 mm.</li></ul>	<ul style="list-style-type: none"><li>Designs will be provided to the board prior to commencement of construction, including stamped design drawings. The supervising engineer will provide construction oversight, QA/QC approval</li><li>The final as-built report will be prepared and stamped, documenting that approved design has been constructed in accordance with design intent</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		T6-2	<ul style="list-style-type: none"><li>Site inspections verify area access is limited; confirm no damage to the cover by ATV or other vehicles</li><li>Refer to Objective SI3-2 (In-development) regarding post closure access</li></ul>	<ul style="list-style-type: none"><li>Visual inspections of the engineered cover will be carried out by a qualified professional geotechnical engineer, as described in the Tailings MMP (Section 3.1.1 and 3.3.1) and will include documentation of the inspection results in the form of field notes and photographs. This will include annual inspection for the first 10 years after cover construction (Tailings MMP Table 3.3-3), with the potential to reduce the future frequency, depending on the results of observations in that initial period.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li></ul>





Table 5.0A-7: Tailings Containment Areas and Dams Closure Objectives (source: Section 5.6 and Tailings Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
CS1. Contaminated materials (i.e., soil, sediment, granular fill, and tailings) are remediated or risk-managed to reduce risk to humans and to aquatic and terrestrial ecosystems <sup>(a)</sup>	<ul style="list-style-type: none"><li>Remove and dispose of heavily contaminated granular fill from the mill/roaster area in the frozen portion of B1 Pit or within another suitable frozen zone.</li><li><i>*Remove and dispose of contaminated granular fill in A1 and B1 Pits and TCAs.</i></li><li><i>*Remove and dispose of contaminated fine-grained soil in TCAs.</i></li><li><i>*Remove and dispose of PHC contaminated soil in TCAs.</i></li><li><i>*Excavate tailings-impacted fine-grained soil downgradient of Dam 3 and place within the TCAs.</i></li><li><i>*Excavate Baker Pond contaminated sediment and Jo-Jo Lake tailings and dispose of in the TCAs.</i></li><li><i>*Remove contaminated sediment from Baker Creek and dispose of in the TCAs.</i></li><li>Backfill excavated areas with new quarried rock.</li><li>Construct engineered soil covers in areas where contaminated materials remain at a depth significantly greater than 2 m (e.g., Mill Pond, former Calcine Pond, and Area 4).</li><li><i>*Partially excavate and/or cover nearshore sediments with clean backfill material.</i></li><li>Construct fence in the core area of site, surrounding area of primary roaster stack deposition.</li></ul>	CS1-1	<ul style="list-style-type: none"><li>Design engineering drawings for contaminated soil excavations and the nearshore covers are signed and stamped by a Qualified Professional and the specifications outlined therein are met.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
	<p><i>*Note: closure activities listed here are relevant to the Contaminated Soil Design Plan and italics identify the specific subset of activities relevant to the Tailings Design Plan.</i></p>	CS1-7	<ul style="list-style-type: none"><li>A minimum riprap thickness of 0.7 m will be maintained over the Nearshore Sediment Area cover.</li></ul>	<ul style="list-style-type: none"><li>Visual inspections and topographic surveying will be completed to confirm performance is as expected. <i>Detail in Tailings MMP Section 3.3.2</i></li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>

Notes:

(a) Two closure criteria associated with Closure Objective CS1 are included in the Tailings Containment Areas and Dams Closure Objectives table because approval of these was requested and received through the Tailings Design Plan.

TCA = Tailings Containment Area; EQC = effluent quality criteria; TBD = to be determined; MVLWB = Mackenzie Valley Land and Water Board; CDA = Canadian Dam Association; TMMP = Tailings Management and Monitoring Plan; D50 = mean grain size diameter, where 50% of the sample mass is coarser than the specified D50 value.



Table 5.0A-8: Closure Objectives and Criteria for Borrow Pits and Quarries (source: Section 5.7 and Borrow Materials Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
Q1. New disturbance due to borrow quarry areas is minimized, to the extent practicable	<ul style="list-style-type: none"><li>Conduct stakeholder engagement on borrow locations.</li><li>Preferentially use materials from Closure project by-products.</li><li>Design each borrow area in accordance with clearly defined project needs, factoring in material volumes generated by other site activities and using opportunities to minimize project borrow needs e.g.:<ul style="list-style-type: none"><li>recontouring slopes for safety reasons</li><li>expanding North Pond Spillway footprint</li></ul></li><li>Use stockpiles of fine- and coarse-grained material for site closure activities such that new borrow volumes are reduced.</li><li>Document and manage archaeological or heritage sites appropriately, if encountered.</li></ul>	Q1-1	<ul style="list-style-type: none"><li>Design borrow and quarry areas to:<ul style="list-style-type: none"><li>Preferentially use materials from Closure project by-products</li><li>Limit aesthetic impact (visibility to public) of borrow areas</li><li>Limit impacts to culturally sensitive areas</li></ul></li></ul>	<ul style="list-style-type: none"><li>Borrow and Explosive Management and Monitoring Plan provided to MVLWB for approval prior to commencement of works.</li><li>Design Plan provided to the MVLWB prior to commencement of construction, including stamped design drawings. Design plan includes consideration of archaeological impact assessments.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent, submitted in the Reclamation Completion Report(s).</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>



Table 5.0A-8: Closure Objectives and Criteria for Borrow Pits and Quarries (source: Section 5.7 and Borrow Materials Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
Q2: Borrow and quarry materials/areas are not a source of environmental contamination and do not pose a safety risk	<ul style="list-style-type: none"><li>Conduct investigations of potential quarry areas to confirm that materials are geochemically suitable.</li><li>Strip and remove geochemically unsuitable fine-grained soils and dispose in the TCAs.</li><li>Meet site water management program objectives and manage residuals from blasting.</li><li>Excavate to rock at fine grained borrow sources, to the extent practical to meet project objectives. Revegetate areas of exposed fine-grained soils that remain after the exploitation of borrow areas to reduce potential for erosion (refer to SW5).</li><li>Manage blasting, excavation, site access, and coordinate traffic from haul trucks for worker and public safety.</li><li>Complete areas with final slopes that do not present hazards significantly greater than the surrounding natural environment.</li><li>Perform final grading of borrow areas including backfill of sumps.</li></ul>	Q2-1	<ul style="list-style-type: none"><li>NWT Quarrying Regulations and Pits and Quarries Northern Land Use Guidelines are met</li></ul>	<ul style="list-style-type: none"><li>Borrow areas meet the guidelines, demonstrated in the documentation submitted to the MVLWB:<ul style="list-style-type: none"><li>Borrow and Explosive Management and Monitoring Plan provided to MVLWB prior to commencement of works.</li><li>Design Plan provided to the MVLWB prior to commencement of construction, including stamped design drawings.</li></ul></li><li>Letter of final clearance from the land use regulator.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Borrow and Material and Explosive Management and Monitoring Plan</li><li>Letter of final clearance provided in Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		Q2-2	<ul style="list-style-type: none"><li>Use geochemically suitable borrow sources as defined in the Borrow and Explosives Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Borrow areas identified for use, and their geochemical suitability, will be submitted to the MVLWB in the following documents:<ul style="list-style-type: none"><li>Borrow and Explosive Management and Monitoring Plan provided to MVLWB prior to commencement of works.</li><li>Design Plan provided to the MVLWB prior to commencement of construction, including stamped design drawings.</li></ul></li><li>Verification sampling during borrow development verifies the use of geochemically suitable borrow materials are sourced in accordance with the Borrow and Explosive Management and Monitoring Plan e.g., Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li></ul>	<ul style="list-style-type: none"><li>Borrow and Material and Explosive Management and Monitoring Plan</li><li>Design Plan</li><li>Annual Water Licence Report</li><li>Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		Q2-3	<ul style="list-style-type: none"><li>Slope grades in remediated borrow areas are completed such that final developed slopes do not present hazards greater than the surrounding natural environment, and a minimum static geotechnical factor of safety of 1.3 is applied for developed slopes.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings.</li><li>Final As-Built reporting, prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-Built Report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		Q2-4	<ul style="list-style-type: none"><li>Runoff water from the borrow areas meets the criteria for Post-Construction Water (Category 3) as outlined in the Water Management and Monitoring Plan</li></ul>	<ul style="list-style-type: none"><li>Runoff from the borrow areas is collected within the borrow area limits as outlined in the design plan until runoff water meets the criteria for Post-Construction Water (Category 3) criteria from the approved Water Management and Monitoring Plan.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Reclamation Completion Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
			Refer to Objective <b>SW1</b> : Air Quality is maintained at concentrations protective of human health and the environment		
			Refer to Criteria <b>SW5-1</b> : Remediated areas are designed to resist erosion including armouring and targeted revegetation with native species		
Q3: New borrow and quarry areas are reclaimed at the end of their production	<ul style="list-style-type: none"><li>Perform final grading of borrow areas including backfill of sumps.</li><li>Prevent erosion where borrow source development leaves fine-grained sediments exposed. Erosion prevention preferred methods are either armouring with coarse fill or targeted revegetation with native species.</li><li>Grade/contour to match existing landform.</li></ul>	Q3-1	<p>Design of backfill meets minimum of 0.5% grade for drainage.</p>	<ul style="list-style-type: none"><li>Designs provided to the board prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval.</li><li>Satisfactory final inspection of grade in borrow areas will be performed by a Qualified Professional.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent and submitted in the Reclamation Completion Report and in the Annual Water Licence Report.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-Built Report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
			Refer to Criteria <b>SW5-1</b> : Remediated areas are designed to resist erosion including armouring and targeted revegetation with native species		

MVLWB = Mackenzie Valley Land and Water Board; INAC = Indigenous and Northern Affairs Canada; NWT = Northwest Territories.



Table 5.0A-9: Closure Objectives for the Water Treatment Plant (source: Section 5.8 and WTP Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
<b>WTP1.</b> Treated minewater to Yellowknife Bay is discharged at a designated near-shore outfall. The outfall location is selected such that site-specific water quality objectives are met in the receiving environment	<ul style="list-style-type: none"><li>Commission and operate the new WTP to treat minewater and discharge treated water year-round at the near shore outfall pipe.</li><li>Construct engineering controls at the outfall pipe location to prevent sediment scour and remobilization.</li><li>Decommission, demolish, and dispose of existing ETP, associated surface/settling ponds (see Section 5.6), and related infrastructure (see Section 5.9).</li></ul>	<b>WTP1-1</b>	<ul style="list-style-type: none"><li>Treated water discharge to Baker Creek ceases and effluent is discharged to Yellowknife Bay</li></ul>	<ul style="list-style-type: none"><li>When the WTP is successfully commissioned, discharge to Baker Creek ceases. Notice issued to the MVLWB upon commissioning of new WTP.</li></ul>	<ul style="list-style-type: none"><li>Notice of commissioning of WTP</li></ul>
		<b>WTP1-2</b>	<ul style="list-style-type: none"><li>Install outfall at minimum water depth of 6 m</li></ul>	<ul style="list-style-type: none"><li>Design plan submitted to the MVLWB for approval.</li><li>As-built report contain information on outfall construction, verifying minimum water depth achieved.</li><li>Satisfactory final inspection by Qualified Professional</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li><li>Summaries of final inspections reported in Annual Water Licence Report</li></ul>
			<ul style="list-style-type: none"><li>Refer Objective SI1 for removal of ETP.</li></ul>	—	—
			<ul style="list-style-type: none"><li>Refer to Objective WTP2 for details on meeting effluent quality criteria at the end of pipe, and site specific water quality objectives</li></ul>	—	—
<b>WTP2.</b> Water treatment plant discharge meets approved effluent quality criteria, derived such that site-specific water quality objectives are met in the receiving environment	<ul style="list-style-type: none"><li>Commission and operate the new WTP to treat minewater using a treatment train with ion exchange</li><li>Operate the WTP to meet the effluent quality criteria / design specifications (see EQC Report for details)</li></ul>	<b>WTP2-1</b>	<ul style="list-style-type: none"><li>Outfall does not scour or re-suspend arsenic from sediments during operation.</li></ul>	<ul style="list-style-type: none"><li>Design Plan include outfall specifications</li><li>AEMP Design Plan outlines monitoring/plume study</li><li>Outfall pipe is inspected, and plume study is completed. See WTP 2-4 in relation to water quality monitoring at the edge of the mixing zone monitored through the SNP and AEMP programs</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Plume Study design submitted in AEMP Design Plan</li><li>Inspection results included in the corresponding Annual Water Licence Report and the plume study in an AEMP Report</li></ul>
		<b>WTP2-2</b>	<ul style="list-style-type: none"><li>Treated effluent is not acutely toxic, i.e., no acute lethality to Daphnia or Rainbow Trout from exposure to WTP discharge</li></ul>	<ul style="list-style-type: none"><li>Monitor through the SNP end-of-pipe station (SNP 43-1A) for acute toxicity The Aquatic Effect Monitoring Plan monitors water quality to verify site specific water quality objectives are met.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval).</li></ul>
		<b>WTP2-3</b>	<ul style="list-style-type: none"><li>Average total arsenic concentrations in WTP discharge are at or below 10 µg/L at SNP 43-1A.</li></ul>	<ul style="list-style-type: none"><li>Effluent is monitored in the WTP</li><li>End-of-pipe is monitored through the SNP for water quality (SNP 43-1A)</li><li>Monthly averages are calculated as per the requirements in the water licence</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5year interval).</li></ul>
		<b>WTP2-4</b>	<ul style="list-style-type: none"><li>Approved effluent quality criteria, as prescribed by the Water Licence, are met.</li></ul>	<ul style="list-style-type: none"><li>Stations at the end-of-pipe are monitored through SNP (SNP 43-1A)</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval).</li></ul>
		<b>WTP2-5</b>	<ul style="list-style-type: none"><li>Site-specific water quality objectives are met in Yellowknife Bay at the edge of the mixing zone (SNP43-27a, SNP 43-27b, SNP 43-27c).</li></ul>	<ul style="list-style-type: none"><li>Stations at the edge of the mixing zone are monitored through SNP (SNP43-27a, SNP 43-27b, SNP 43-27c) to verify the water quality objectives are met. The results are analyzed and reported through the monthly and annual Water Licence Reports and full analysis is in the annual Aquatic Effects Monitoring Plan Report</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Annual AEMP Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval).</li></ul>



Table 5.0A-9: Closure Objectives for the Water Treatment Plant (source: Section 5.8 and WTP Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
<b>WTP3.</b> Water treatment plant waste is disposed of in a controlled manner, so it is not, and will not become, a source of contamination to the environment	<ul style="list-style-type: none"><li>Dispose spent ion exchange media, sludge, and other process residuals in the on-site landfill in a separate engineered cell (refer to Objective L2).</li><li>Dispose of biomass ash from the wood pellet boiler that heats the WTP building in the landfill.</li><li>Test materials to go into the on-site landfill according to the Toxicity characteristic leaching procedure (TCLP) as required in the GNWT Guidelines for Industrial Waste Discharge</li></ul>	<b>WTP3-1</b>	<ul style="list-style-type: none"><li>Spent ion exchange media, sludge, and other process residuals will meet the 2017 NWT Guideline for Hazardous Waste Management leachate criteria prior to landfill disposal</li></ul>	<ul style="list-style-type: none"><li>Spent ion exchange media, sludge, and other process residuals testing will be completed and results will be reported annually.</li><li>Water treatment plant waste residuals that meet the analytical requirements of the 2017 NWT Guideline for Hazardous Waste Management will be placed in the on-site landfill</li><li>Results of volumes and waste streams will be reported annually.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
			<ul style="list-style-type: none"><li>Refer to Objective L2 Landfill is not, and will not become, a source of contamination to the environment</li></ul>		
<b>WTP4:</b> Management actions maintain minewater levels within project operating range and project commitments	<ul style="list-style-type: none"><li>Maintain the minewater elevation such that it forms a groundwater sink and remains within operational range discussed with Rights holders and stakeholders (see Water Management and Monitoring Plan for details on pumping and elevation).</li></ul>	<b>WTP4-1</b>	<ul style="list-style-type: none"><li>Maintain minewater level at -77 m above mean sea level (amsl) plus seasonal fluctuation.</li></ul>	<ul style="list-style-type: none"><li>The minewater elevation operational range is -77 m amsl up to -67 m amsl. Seasonal fluctuations could increase water levels to -57 m amsl, on occasion. Minewater elevation will be monitored with pressure sensors in the underground and at intake wells for the WTP. The average elevation will be reported through the Annual Water Licence Report.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval).</li></ul>

WTP = water treatment plant; ETP = effluent treatment plant; MVLWB = Mackenzie Valley Land and Water Board; EQC = effluent quality criteria; L = level; EPA = United States Environmental Protection Agency.





Table 5.0A-10: Site Infrastructure Closure Objectives and Criteria (source: Section 5.9)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
SI1. Site infrastructure with no future use has been removed and contaminated portions have been remediated so they are not, and will not become, a safety hazard or a source of contamination to the environment	<ul style="list-style-type: none"><li>Decommission and demolish site infrastructure with no future use, consisting of approximately 101 structures, 25 debris stockpiles, up to 30 km of road network, utilities, and fencing.</li><li>Submittal of a demolition plan in accordance with WSCC and Mine Manager as per <i>Mines Health and Safety Act</i>.</li></ul>	SI1-1	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met; Building decontamination and demolition plans to be prepared and signed and stamped by a Qualified Professional.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
	<ul style="list-style-type: none"><li>Remove hazardous waste and arsenic hazardous waste from site infrastructure using appropriate decontamination methods.</li><li>Prior to deconstruction, remove and dispose of any documented heavily-impacted arsenic wastes within a frozen shell (see Section 5.2), dispose of hazardous waste in an approved off-site hazardous waste facility and place non-hazardous waste in the landfill (see Section 5.10).</li></ul>	SI1-2	<ul style="list-style-type: none"><li>Wastes are appropriately handled, containerized, and disposed of and results from confirmation testing are within WSCC/GNWT industrial hygiene standards, including standards such as Guideline for Hazardous Waste Management (GNWT, 2017); Guideline for the Management of Waste Asbestos (GNWT, 2004); Asbestos Abatement, Northwest Territories and Nunavut Codes of Practice, WSCC (Sept 2018).</li></ul>	<ul style="list-style-type: none"><li>Waste sorting and handling will be done as per the Waste Management and Monitoring Plan.</li><li>The Waste Management and Monitoring Plan will follow applicable guidelines such as Guideline for Hazardous Waste Management (GNWT, 2017); guideline for Management of Waste Asbestos (GNWT, 2004); Asbestos Abatement, Northwest Territories and Nunavut Codes of Practice, WSCC (Sept 2018). Waste disposal volumes and types will be reported annually to the MVLWB.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li></ul>
	<ul style="list-style-type: none"><li>Contour and grade surfaces to match existing/natural topography leaving limited visual evidence of previous site infrastructure presence, e.g., areas of decommissioned site infrastructure (transport routes, buildings) are scarified and contoured to match the natural topography.</li></ul>	SI1-3	<ul style="list-style-type: none"><li>Surface drainage is not interrupted, as evidenced by no ponding of water</li></ul>	<ul style="list-style-type: none"><li>Verification of no ponded water is reported in the Reclamation Completion Report on an interim basis then in a Final Closure and Reclamation Report</li><li>Monitoring done to verify ponded water is not present around remaining infrastructure</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report and Reclamation Completion Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>



Table 5.0A-10: Site Infrastructure Closure Objectives and Criteria (source: Section 5.9)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
<b>SI2.</b> Site infrastructure that remains during the long-term operation and maintenance phase is not, and will not become, a safety hazard, or a source of contamination to the environment	<ul style="list-style-type: none"><li>Construct, or maintain, the road network (bridges, roads, culverts) confirming physical stability.</li><li>Construct or maintain, the power supply to support long term operations and monitoring</li><li>Construct security measures, including core infrastructure area fence.</li><li>Remove and dispose of any remaining hazardous materials (asbestos, PCBs, lead, mercury, ODS) from any remaining infrastructure.</li><li>Construct any new infrastructure to meet the design intent as described in each of the sections of Chapter 5.</li><li>Remove hazards to humans/wildlife.</li></ul>	<b>SI2-1</b>	<ul style="list-style-type: none"><li>New facilities designed to meet requirements of National Building Code, National Fire Code, National Plumbing Code.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li><li>Inspection by appropriate inspector(s) confirms codes are met</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Summaries of final inspection reported in Annual Water Licence Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>SI2-2</b>	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met for the remaining infrastructure (roads, WTP, culverts, etc.)</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>SI2-3</b>	<ul style="list-style-type: none"><li>Permanent buildings, such as the WTP, are founded on bedrock.</li></ul>	<ul style="list-style-type: none"><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		<b>SI2-4</b>	<ul style="list-style-type: none"><li>WSCC Mines Inspector and Qualified Professional Engineer inspection confirms Building Codes met.</li></ul>	<ul style="list-style-type: none"><li>As-built report contains final information on building construction.</li><li>Satisfactory final inspection of remaining infrastructure by Qualified Professional. Mines Inspector also provides inspection of remaining mining infrastructure. Inspections expected to be completed in a staggered manner as building development proceeds and reported annually.</li></ul>	<ul style="list-style-type: none"><li>As-built report provided in the Reclamation Completion Report</li><li>Summaries of final inspection reported in Annual Water Licence Report</li></ul>
		<i>SI2-5</i>	<i>Criterion in Development pending engagement with Working Group</i> <ul style="list-style-type: none"><li><i>New confirmatory-type criteria for waste classification and tracking. New criterion to provide positive confirmation and documentation that all inventoried hazardous materials have been removed</i></li></ul>	<i>In development;</i> <ul style="list-style-type: none"><li><i>To be finalized through engagement with Working Group-and a forthcoming design plan</i></li></ul>	<ul style="list-style-type: none"><li><i>In development; To be finalized through engagement with Working Group and a forthcoming design plan</i></li></ul>

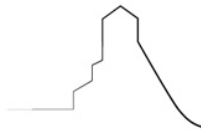


Table 5.0A-10: Site Infrastructure Closure Objectives and Criteria (source: Section 5.9)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
SI3. Post-closure access to remaining Site infrastructure has been designed for the safety of humans and wildlife	<ul style="list-style-type: none"><li>Fence the Core Industrial Area as per Objective CS1, which also restricts access to key infrastructure.</li><li>Site presence and on-site security used to discourage unauthorized entry to restricted areas.</li><li>Implement administrative controls to communicate residual hazards such as by installing signs (see Objective SW4).</li><li>Engineering controls are in place to manage residual risks. Restrict access to operational transport and utility routes using fences and barricades.</li></ul>	SI3-1	<ul style="list-style-type: none"><li>Engineered controls are in place, and are maintained / monitored, to manage residual risks (e.g., signs and physical barriers along the shoreline near the outfall pipe are in place) (refer to Objective SW4).</li><li>Refer to <b>CS1</b> for fence criterion</li></ul>	<ul style="list-style-type: none"><li>Planning of types of signs and barriers done through the Perpetual Care Plan (also see Objective SW4 on residual risk communication).</li><li>As-built report contains final information on building construction</li><li>Periodic inspections of access control, e.g., fences and signage done through on-site Operational Monitoring Plan</li><li>Monitoring of wildlife presence near infrastructure (roads, bridges, water treatment plant done through the Wildlife and Wildlife Habitat Management and Monitoring Plan and the Post-Closure Monitoring and Maintenance Plan</li></ul>	<ul style="list-style-type: none"><li>As-built report provided in the Reclamation Completion Report</li><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		SI3-2	<i>Criteria in Development pending engineering work</i> <ul style="list-style-type: none"><li>Trespasser sightings in restricted areas criterion (to be determined)</li></ul>	<i>In development; To be finalized through a forthcoming Design Plan</i>	<i>In development; To be finalized through a forthcoming Design Plan</i>

GNWT = Government of the Northwest Territories; MVLWB = Mackenzie Valley Land and Water Board; NWT = Northwest Territories; WTP = water treatment plant.



Table 5.0A-11: Closure Objectives and Criteria for the Non-Hazardous Waste Landfill (source: Section 5.10 and Landfill Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
L1. Inadvertent access to landfill by humans and wildlife has been prevented	<ul style="list-style-type: none"><li>Fence the Core Industrial Area to restrict access to the landfill.</li><li>Site presence and on-site security will discourage unauthorized entry to restricted areas.</li><li>Close and contain the non-hazardous waste cell with perimeter berms. Cover the surface of this cell with a granular layer including a low permeability cover, graded to promote surface runoff.</li><li>Contain the WTP process residual cell with perimeter berms. During operation, use a temporary cover over the active portion of the cell to cover the wastes. Close the cell by covering with a granular surface layer that includes a low permeability cover, graded to promote surface runoff. Progress the permanent cover as sections of the cell can be closed.</li></ul>	L1-1	<ul style="list-style-type: none"><li>Landfill is installed within the fence perimeter area to prevent inadvertent access.</li></ul>	<ul style="list-style-type: none"><li>Design Plan provided to the MVLWB prior to commencement of construction, including stamped design drawings.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent, submitted in the Reclamation Completion Report(s). Landfill construction is completed as planned within fence.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		L1-2	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications outlined therein are met</li><li>Refer to Objective SI3-2 (In-development) for site access management</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		L1-3	<ul style="list-style-type: none"><li>Landfill rock cover (of minimum thickness 500 mm) maintained to prevent exposure to non-hazardous wastes.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final as-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li><li>Annual inspection of cover thickness including measurements.</li></ul>	<ul style="list-style-type: none"><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
L2. Landfill is not, and will not become, a source of contamination to the environment	<ul style="list-style-type: none"><li>Dispose only non-hazardous waste in the NHWL Cell and the WTP Process Residuals Cell</li><li>Non-hazardous wastes are contained within berms.</li><li>Install internal sump within each cell to collect contact water for treatment</li><li>Grade the base of the landfill cells to promote water drainage within the cells to an internal collection sump during landfill operations</li><li>Close the cells with low permeability cover and grade the cover to minimize surface water infiltration.</li><li>Grade surface water to external sumps, collect and treat water from external sumps, as required, until surface runoff quality criteria are met, and water can be released to the environment.</li></ul>	L2-1	<ul style="list-style-type: none"><li>Follow the applicable guidelines for waste management including Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories (Government of Northwest Territories, 2003); Solid Waste Management for Northern and Remote Communities – Planning and Technical Guidance Document (Environment and Climate Change Canada, 2017); Guideline for Hazardous Waste Management (GNWT, 2017).</li></ul>	<ul style="list-style-type: none"><li>The Waste Management and Monitoring Plan will follow applicable guidelines. Waste will be sorted and handled as per the Waste Management and Monitoring Plan and waste disposal volumes and types will be reported annually to the MVLWB.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		L2-2	<ul style="list-style-type: none"><li>Design engineering drawings are signed and stamped by a Qualified Professional and the specifications have been met</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the MVLWB prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval as outlined in a construction plan.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>



Table 5.0A-11: Closure Objectives and Criteria for the Non-Hazardous Waste Landfill (source: Section 5.10 and Landfill Design Plan v1.1)

Closure Objectives	Closure Activity	Final Number	Closure Criteria	Monitoring/Maintenance and Inspection	
				Approach	Reporting to MVLWB
L2. Landfill is not, and will not become, a source of contamination to the environment	<ul style="list-style-type: none"><li>Dispose only non-hazardous waste in the NHWL Cell and the WTP Process Residuals Cell</li><li>Non-hazardous wastes are contained within berms.</li><li>Install internal sump within each cell to collect contact water for treatment</li><li>Grade the base of the landfill cells to promote water drainage within the cells to an internal collection sump during landfill operations</li><li>Close the cells with low permeability cover and grade the cover to minimize surface water infiltration.</li><li>Grade surface water to external sumps, collect and treat water from external sumps, as required, until surface runoff quality criteria are met, and water can be released to the environment.</li></ul>	L2-3	<ul style="list-style-type: none"><li>Perimeter berm slopes designed to achieve a minimum Factor of Safety of 1.3.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the board prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent and submitted in the Reclamation Completion Report and in the Annual Water Licence Report.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		L2-4	<ul style="list-style-type: none"><li>Design base of cell to minimum 0.75% grade to facilitate contact water collection during operations.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the board prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent and submitted in the Reclamation Completion Report and in the Annual Water Licence Report.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		L2-5	<ul style="list-style-type: none"><li>Design of landfill cover to minimum 1% grade to shed surface water from the cover.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the board prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent and submitted in the Reclamation Completion Report and in the Annual Water Licence Report.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		L2-6	<ul style="list-style-type: none"><li>Low permeability landfill cover to achieve a hydraulic conductivity equivalent to 10<sup>-7</sup>m/s.</li></ul>	<ul style="list-style-type: none"><li>Designs provided to the board prior to commencement of construction, including stamped design drawings. Supervising engineer provides construction oversight, QA/QC approval.</li><li>Final As-built reporting prepared and stamped, documenting that approved design has been constructed in accordance with design intent and submitted in the Reclamation Completion Report and in the Annual Water Licence Report.</li></ul>	<ul style="list-style-type: none"><li>Design Plan</li><li>Construction Plan</li><li>As-built report provided in the Reclamation Completion Report</li><li>Final Closure and Reclamation Completion Report</li></ul>
		L2-7	<ul style="list-style-type: none"><li>Surface water quality from landfill cover meets surface runoff criteria as per the approved Water Management and Monitoring Plan</li></ul>	<ul style="list-style-type: none"><li>SNP monitoring at Stations SNP43-26a SNP43-26b, and SNP43-26c verifies runoff from the landfill cover meets surface runoff quality criteria</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>
		L2-8	<ul style="list-style-type: none"><li>Should seepage from the non-hazardous waste landfill occur, it will not adversely impact groundwater quality downgradient of the landfill</li></ul>	<ul style="list-style-type: none"><li>Groundwater monitoring wells will be used to confirm the landfill does not worsen groundwater quality. Wells will be monitored at the perimeter of the landfill, with samples collected seasonally as part of the SNP program (Station names to be finalized in the landfill Design Plan).</li><li>Statistical evaluation of sampling results will be used to define ‘baseline’ geochemical conditions. Groundwater conditions will then be established during post-closure monitoring (minimum 5 years) and compared to the conditions at the end of active remediation.</li></ul>	<ul style="list-style-type: none"><li>Annual Water Licence Report</li><li>Performance Assessment Report (submitted periodically – nominally on a 5-year interval)</li></ul>

WTP = water treatment plant; NWT = Northwest Territories; GMRP = Giant Mine Remediation Project; TBD = to be developed; NHWL = non hazardous waste landfill.