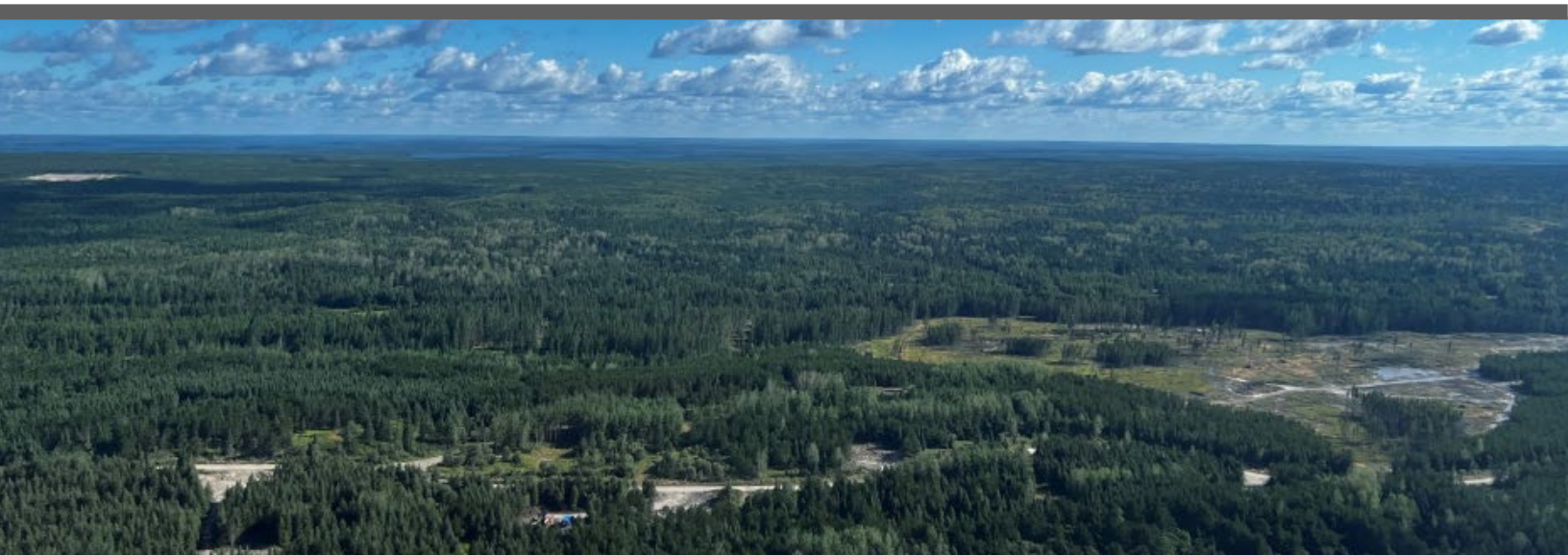
KINROSS Great Bear

Great Bear Gold Project
Impact Statement

Appendix S:

Preliminary Closure Plan for Impact Statement



GREAT BEAR RESOURCES LTD.

GREAT BEAR PROJECT PRELIMINARY CLOSURE PLAN FOR IMPACT STATEMENT

MARCH 2026

GREAT BEAR PROJECT

PRELIMINARY CLOSURE PLAN FOR IMPACT STATEMENT

GREAT BEAR RESOURCES LTD.

PROJECT NO.: OMEMA2303
MARCH 2026

WSP CANADA INC.
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MISSISSAUGA, ON, CANADA L5N 7K2

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GLOSSARY AND ABBREVIATIONS

ABA	Acid base accounting
ANA	Asubpeeschoseewagong Netum Anishinabek
AEX	Advanced exploration
CWP	Collection water pond
CCME	Canadian Council of Ministers of the Environment
ETP	Effluent treatment plant
FMU	Forest Management Unit
ICP	Inductively coupled plasma spectroscopy
iPWQO	Interim provincial water quality objectives
LGO	Low grade ore stockpile
LSFN	Lac Seul First Nation
MECP	Ontario Ministry of the Environment, Conservation and Parks
MEM	Ontario Ministry of Energy and Mines
ML / ARD	Metal leaching / acid rock drainage
MNR	Ministry of Natural Resources
MRS	Mine rock stockpile
MWP	Mine water pond
NML	Non-metal leaching
NPAG	Non-potentially acid generating
NWOMC	Northwestern Ontario Métis Community
O.Reg.	Ontario regulation
OVB	Overburden stockpile
PAG	Potentially acid generating
PWQO	Provincial water quality objectives for protection of aquatic life
ROW	Right of way
ROM	Run of mine
SAR	Species at risk
SFE	Shake flask extraction
TDS	Total dissolved solids
TMF	Tailings management facility
VMF	Viggo management facility
WFN	Wabauskang First Nation
WGL PAL	Water quality guidelines for the protection of aquatic life
WSC	Water Survey of Canada
WTP	Water treatment plant

UNITS

ha	hectares
km	kilometres
km^2	square kilometres
kV	kilovolt
L	litres
m	metres
mm	millimetres
m^3	cubic metres
m^3/s	cubic metres per second
masl	metres above sea level
mg/L	milligram per litre
mg/kg	milligram per kilogram
Mt	Million tonnes
MW	megawatt
t	tonnes
tpd	tonnes per day

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FIGURES

PREFACE

Closure of the Great Bear Project will be governed primarily by the Ontario *Mining Act* as amended by *Building More Mines Act*, and its associated Regulations and Codes. The *Mining Act* requires that a Closure Plan be certified to the Mine Rehabilitation Code by qualified professionals, prior to disturbance associated with the mining project being initiated. The *Mining Act* also requires that financial assurance be provided to the Provincial Crown (government) before any substantive development takes place such that funds are in place to carry out the described activities.

Great Bear Resources Ltd. is subsidiary of Kinross Gold Corporation and will comply with its Closure and Reclamation Standard. In accordance with that standard, closure of the Great Bear Project will include achieving physical, chemical and biological stable conditions. The future land use objectives will comply with the regulatory requirements and industry associations to which Kinross belongs, including the Mining Association of Canada. The Mining Association of Canada Towards Sustainable Mining standard includes guiding principles backed by their protocols for Community and People and Environment and Climate Change which incorporates protocols for:

- Tailings management
- Biodiversity conservation management
- Water stewardship
- Climate change.

This Preliminary Closure Plan has been prepared in the structure required by the Mine Rehabilitation Code of Ontario, to support the federal Impact Statement for the for the Great Bear Project. This document is being provided with the Impact Statement to facilitate ongoing consultation engagement activities. As part of the Impact Statement process, Great Bear Resources has completed workshops on closure planning for the Great Bear Project. Closure planning workshops were held from April 22 to 25, 2025. As part of these workshops key values were identified and included: native seeding, wild rice, wildlife and future land uses. Additional details on consultation and engagement for the Great Bear Project are provided in Section 3 of the Impact Statement. The Closure Plan will be refined based on feedback received through the Impact Assessment process prior to certification by qualified professionals. Certain elements required by the Ministry of Energy and Mines, including forms and a detailed reclamation cost estimate, have not been provided with this preliminary version, but will be included with the certified version.

1 CERTIFICATION

1.1 COMPANY CERTIFICATION – FORM 1

Form 1 required by Mine Rehabilitation Code of the Ontario *Mining Act* will be provided with the certified final Closure Plan as required. Form 1 is signed by the proponent (Great Bear Resources) and includes, but is not limited to the following types of information:

- Certification that the Closure Plan complies with the *Mining Act* and its regulations including the Mine Rehabilitation Code
- Cost estimates for the rehabilitation work described in the Closure Plan (not provided in this version of the Closure Plan) are based on the market value cost of goods and services required for the rehabilitation work
- The financial assurance amount is adequate and sufficient to cover the costs of the rehabilitation work to comply with the *Mining Act* and its regulations including the Mine Rehabilitation Code
- Proponent complies with Aboriginal consultation provided by the Minister
- The Closure Plan constitutes rehabilitation to work required to restore the site to its former use or condition to the extent required in the Ontario Regulation (O. Reg.). O. Reg. 35/24 including the Mine Rehabilitation Code, or if applicable, change the use or condition of site to a different use or condition as appropriate.

In the event of conditional filing for a mine that does not meet the requirements of O. Reg. 35/24, is submitted with a conditional filing and Form 2 is provided, this is not anticipated for the Great Bear Project.

2 PROFESSIONAL CERTIFICATIONS

Professional certifications as required by the Mine Rehabilitation Code will be included with the certified final Closure Plan prepared for the Province. Professional certifications that the Plan adheres to the Code requirements for closure, and professional competency, are expected to be provided for:

- Qualified Person's name and applicable parts of the Closure Plan that person is providing certification for
- Qualified Person's membership such as Professional Engineers Ontario, Association of Professional Geoscientists of Ontario, Ontario Association of Landscape Architects, Ontario Institute of Professional Agrologists or other
- Certify they have examined the Closure Plan and are familiar with O. Reg. 35/24 made under the *Mining Act* including the Mine Rehabilitation Code, as relevant to the areas they are certifying.

3 PROJECT INFORMATION

3.1 PROPONENT NAME AND ADDRESS

Great Bear Resources Ltd. (Great Bear Resources) is wholly (100%) owned subsidiary of Kinross Gold Corporation (Kinross), a Canadian-based gold and sliver mining company founded in 1993, headquartered in Toronto, Ontario, Canada. Kinross is a senior gold mining company with a diverse portfolio including six operating mines and several mining projects in various jurisdictions, including in Canada and the United States. Kinross is listed on the Toronto Stock Exchange (TSX:K) and New York Stock Exchange (NYSE:KGC). Kinross focuses on delivering value through operational excellence, balance sheet strength, disciplined growth, and responsible mining. With this vision in mind, Kinross acquired Great Bear Resources Ltd. and the Great Bear Property (Property) located in the Red Lake mining district of Ontario, Canada in February 2022. Kinross is committed to establishing a long-term presence in northern Ontario and the Red Lake area specifically, returning to its roots in the Province.

Name of Project:

Great Bear Project (Project)

Project Location:

The Project is situated approximately 25 kilometres (km) southeast of the Municipality of Red Lake, Ontario in northwestern Ontario. The Project site is accessible from paved Highway 105 by means of an existing all-weather gravel road, known locally as Tuzyk's Road (Figure 3-1).

Name and Corporate Address:

Great Bear Resources Ltd.
25 York Street, Suite 1700
Toronto, Ontario, M5J 2V5

Project Authorized Contact Person:

Aaron MacDonell
Director, Environmental Services
Aaron.Macdonell@Kinross.com
Tel: 807.620.8573

3.2 BOUNDARIES OF PROJECT SITE AND LAND TENURE

Great Bear Resources is the 100% owner of the 11,780 ha Property consisting of mining claims and leases, located in the unorganized townships of Faulkenham Lake, South of Byshe, Dixie Lake and Bruce Lake. There are a number of land tenure exclusions within the Property boundary, including for regional infrastructure and aggregate lands. These facilities are not in conflict with the proposed Project, and lands associated with these facilities and land tenure held by others will be avoided by the Project.

The process to lease surface and mining rights for a portion of the Property proposed for development by Great Bear Resources was initiated with the Ministry of Energy and Mines (MEM) and the required leases have been obtained or are in progress. The land tenure and Great Bear Property (Property) are illustrated in Figure 3-2. The following leases have recently been issued to Great Bear Resources for portions of the Property by the MEM:

- LEA - 110123 (42180-2798)
- LEA - 110126 (42180-2801)
- LEA - 110127 (42180-2802)
- LEA - 110167 (42180-2824)

- LEA - 110168 (42180-2820)
- LEA - 110128 (42180-2803)
- LEA - 110142 (42180-2800)
- LEA - 110166 (42180-2819)
- LEA - 110124 (42180-2799).

In addition, Great Bear Resources has requested surface rights leases for two areas:

- MIL 9 02/25
- MIL 9 16/24.

3.3 SITE PLAN

The site layout provided in Figure 3-3 places the required mine-related facilities on Great Bear Resources-held mining leases, near the open pits and openings to the underground to minimize the overall Project footprint. Extensive engineering and environmental studies have been completed to design the Project.

The major components of the Project are:

- Underground mine
- Open pits (two): LP Central pit and Viggo pit
- Surface stockpiles: overburden stockpile (OVB), mine rock stockpile (MRS), low grade ore stockpile (LGO) and run of mine ore stockpile (ROM)
- Process plant
- Facilities to manage tailings from the processing of ore: tailings management facility (TMF) and Viggo management facility (VMF)
- Water management and treatment works (including discharge location)
- Dedicated aggregate operations to produce aggregate for onsite use
- Other onsite buildings, facilities, areas and infrastructure.

3.4 PLANS AND SECTIONS OF UNDERGROUND DEVELOPMENT

Mine development will begin from the Advanced Exploration (AEX) Program twin ramps, eventually extending the underground workings to an approximate depth of 1,500 metres (m) below surface. As mining continues, ore zones will be accessed by extending from the ramps laterally and vertically. A production shaft is proposed that is projected to extend up to 1,300 m underground. Ore and mine rock will be trucked to surface via the ramps or conveyed to the shaft and hoisted to the surface. The underground workings are illustrated in Figure 3-4 through Figure 3-6.

3.5 OPEN PIT DEVELOPMENT

3.5.1 VIGGO PIT

Mining and blasting at the Viggo pit will start near the beginning of the construction phase and will continue for approximately 2.5 years, for completion before the end of construction. A two lobe open pit is proposed as shown in Figure 3-3. This mine production schedule has purposefully been established to provide rock for construction, and limit the requirement for dedicated aggregate sources and additional environmental disturbance.

By utilizing this mine scheduling approach, it also provides for:

- Availability of the depleted east lobe of the Viggo pit for the storage of concentrate tailings and contact water management from the start of the operations phase
- The depleted west lobe of the Viggo pit will be available and re-used for the temporary storage of reject solution from select contact water treatment using membrane filtration from the start of operations.

Viggo pit has a surface area of approximately 22.8 ha and a maximum depth of about 120 m. The pit has been designed with approximate bench heights of 10 m for single benches and 20 m for double benches. A minimum single bench width of 7.5 m is proposed but bench widths will vary as needed. The overall slope angle in hard rock is approximately 45° varying for rock type and geotechnical stability assessment. The ramps from surface will be either single or double lane width (25 to 35 m width), designed to accommodate the heavy equipment and have an approximate 10% slope.

3.5.2 LP CENTRAL PIT

Mining of rock at the LP Central pit is planned to start near the end of the second year of construction and will continue for a total of approximately nine years until the near surface ore is depleted. Once sufficient bedrock is exposed through overburden stripping, ore and mine rock will be extracted from the pit using explosives and conventional mining equipment.

LP Central pit has a surface area of approximately 87 ha as shown in Figure 3-3, and a depth of 255 m. The pit has been designed with approximately 10 m benches and 20 m catch berm widths. Average pit slope in hard rock is 45° depending upon the rock type. The ramps from surface have an approximate 10% design gradient and will be either single or double lane width (25 to 35 m width), designed to accommodate the heavy equipment.

3.6 DEFINITIONS AND CLARIFICATIONS

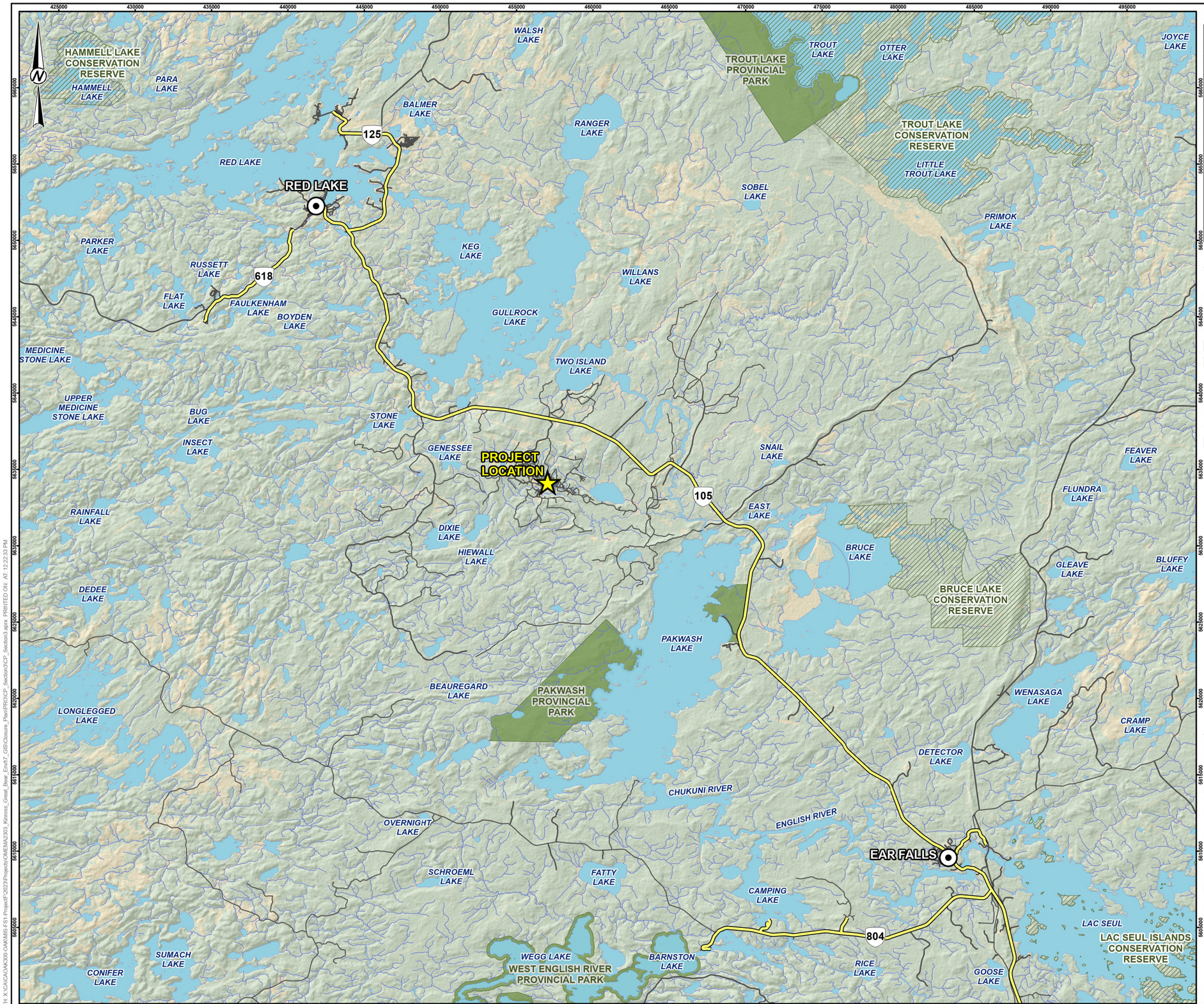
For the purposes of this Closure Plan, Director refers to the Director of Mine Rehabilitation, MEM.

Further to Section 145 of the *Mining Act*, the rehabilitation measures as set out in Section 7, Section 8 and Section 9 of this Closure Plan (and any future amendments) that may be carried out by the Provincial Crown or an agent thereof are not limited to the rehabilitation measures explicitly set out in this Closure Plan; rather in those circumstances, the term rehabilitation measures include any rehabilitation measure that the Director acting reasonably, believes is necessary in the circumstances.

3.7 CLOSURE PLAN OBJECTIVES

The objectives for the Closure Plan with respect to the Project, are to:

- Provide for the rehabilitation of affected landscapes to a stable and safe condition and the return of affected ecosystems to a self-sustaining and functioning state that considers the desires of local Indigenous groups to the extent practical, by promoting vegetation communities that will support habitat for local terrestrial and aquatic-based wildlife species diversity and aquatic habitat that will support healthy fish populations.
- Prevent, reduce or mitigate the adverse environmental effects associated with the Project during construction, operations closure and post-closure
- Promote development of self-sustaining covers that reduce the need for long-term monitoring and maintenance of the Project site and area.



KEY MAP

SCALE: 1:30,000,000

LEGEND

- PROJECT LOCATION
- TOWN
- CONSERVATION RESERVE
- PROVINCIAL PARK
- HIGHWAY
- LOCAL ROAD
- RESOURCE / RECREATION ROAD
- WATERCOURSE
- WATERBODY

0 2.5 5 10

1:250,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR.
3. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
PROJECT LOCATION

CONSULTANT

wsp

YYYY-MM-DD	2025-11-11
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	3-1

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25mm

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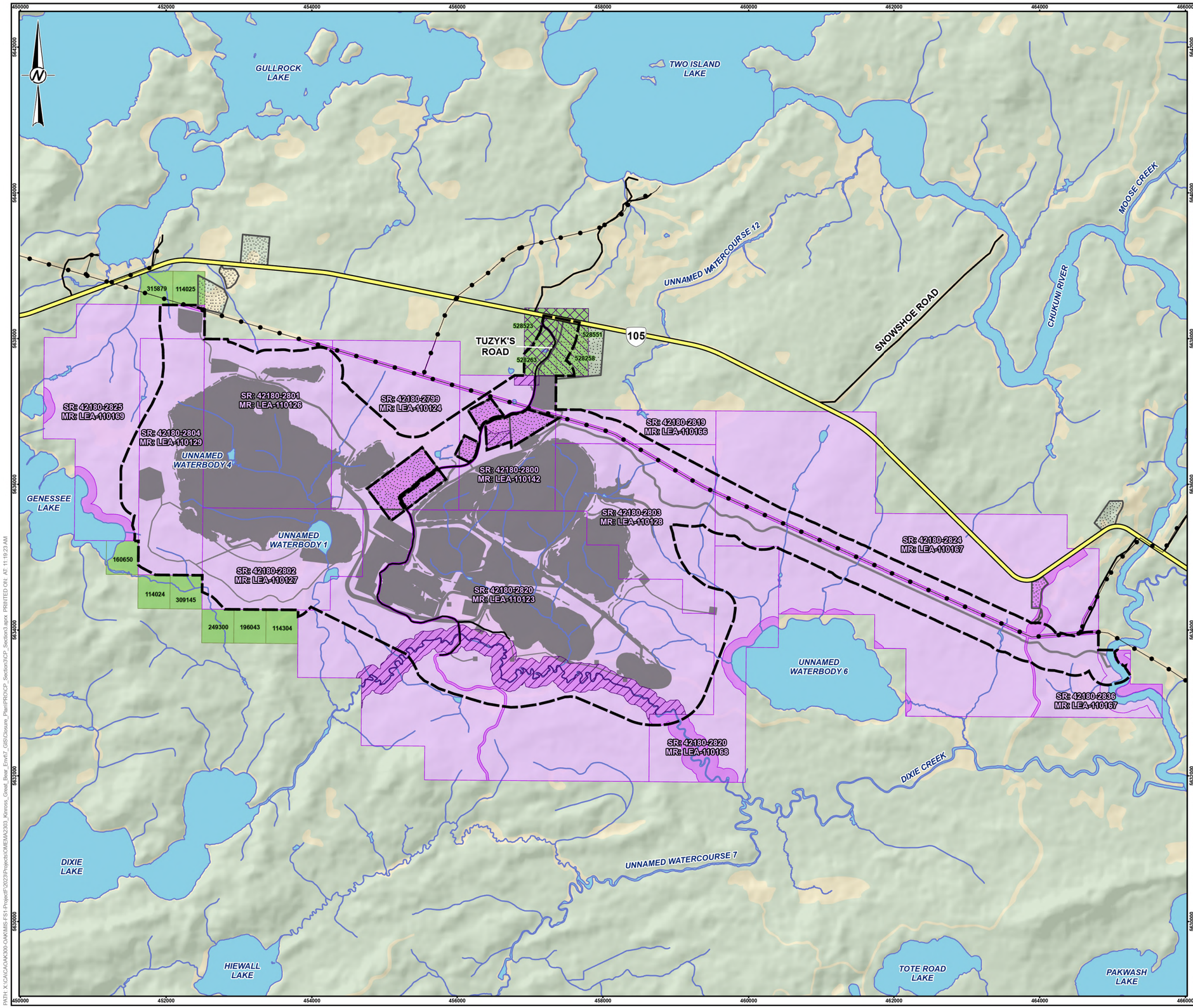

LEGEND

- CLOSURE PLAN BOUNDARY
- GREAT BEAR PROJECT FOOTPRINT
- AGGREGATE PIT / QUARRY
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

GREAT BEAR RESOURCES LAND TENURE

- LEASE (SURFACE AND MINING RIGHTS)
- LEASE (MINING RIGHTS)
- REQUESTED LEASE (SURFACE AND MINING RIGHTS)
- REQUESTED LEASE (SURFACE RIGHTS)
- REQUESTED LEASE (MINING RIGHTS)
- CLAIM

0 0.5 1 2

1:52,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. SR: SURFACE RIGHTS, MR: MINING RIGHTS

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. LAND TENURE PROVIDED BY GREAT BEAR RESOURCES, MARCH 2026.
3. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
4. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
5. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
LAND TENURE

CONSULTANT

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	3-2

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25mm

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452000 453000 454000 455000 456000 457000 458000 459000

6639000 6638000 6637000 6636000 6635000 6634000 6633000

105

PROCYK'S ROAD

UNNAMED WATERCOURSE 12

TUZYK'S ROAD

UNNAMED WATERCOURSE 8B

BS3

BS3B

OVB4

Q2

Q2

Q1

TAILINGS MANAGEMENT FACILITY (TMF)

OVB5

TMF POND

MINE WATER POND

CAMP

CORE SHEDS

NATURAL GAS PIPELINE

SUBSTATION

UNNAMED WATERBODY 5

OVB3

OVB2

MINE ROCK STOCKPILE (MRS)

EXISTING 115 KV E2R (EAR FALLS TO RED LAKE)

EAST POND

MINE ACCESS ROAD

PROCESS PLANT

LGO1

LGO2

OVB1

EFFLUENT / FRESH WATER PIPELINE CORRIDOR

UNNAMED WATERBODY 2

ROM

AEX PORTALS

COLLECTION WATER POND

CRF PLANT

HOLDING POND

HEADFRAME

EXPLOSIVES MAGAZINE

EXPLOSIVES FACTORY

WATER TREATMENT PLANT

LP CENTRAL PIT

PASTE PLANT

MAIN COLLECTION CHANNEL

UNNAMED WATERCOURSE 6A

DIXIE CREEK

UNNAMED WATERCOURSE 11

UNNAMED WATERCOURSE 2

UNNAMED WATERCOURSE 1

WEST VMF

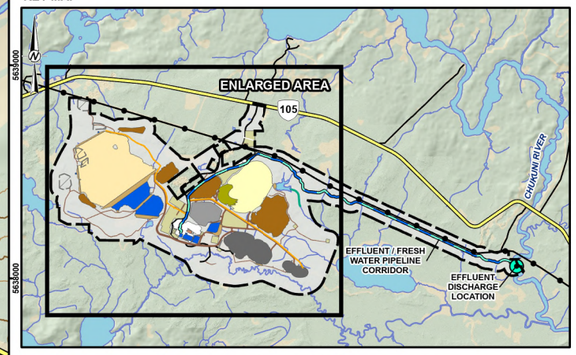
VIGGO PIT

EAST VMF

FLOOD PROTECTION BERM

UNNAMED WATERBODY 5

KEY MAP



SCALE: 1:175,000

LEGEND

- CLOSURE PLAN BOUNDARY
- HIGHWAY (INCLUDING ENBRIDGE PIPELINE)
- LOCAL ROAD
- EXISTING TRANSMISSION LINE

PROPOSED MINE FEATURE

- OPEN PIT
- MINE ROCK STOCKPILE (NPAG)
- MINE ROCK STOCKPILE (PAG)
- LOW GRADE ORE STOCKPILE (LGO)
- OVERBURDEN STOCKPILE (OVB)
- TAILINGS MANAGEMENT FACILITY (TMF)
- DAM
- POND
- COLLECTION DITCH
- MINE FACILITIES / INFRASTRUCTURE
- ROAD
- PORTAL

- WATERCOURSE
- WATERBODY
- MAJOR CONTOURS (10 M INTERVAL)
- MINOR CONTOURS (5 M INTERVAL)

- ADVANCED EXPLORATION SITE (AEX)
- ROCK QUARRY (Q) / SAND AND GRAVEL PIT (B)
- DIVERSION CHANNEL
- E EXHAUST VENT RAISE
- F FRESH AIR VENT RAISE
- TRANSMISSION LINE
- TAILINGS PIPELINE
- PASTE PLANT PIPELINE
- EFFLUENT / FRESH WATER PIPELINE CORRIDOR
- EFFLUENT DISCHARGE LOCATION

0 0.25 0.5 1

1:28,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. VMF: VIGGO MANAGEMENT FACILITY
3. ROM: RUN OF MINE ORE
4. AEX PONDS: A-AEX MINE WATER POND, B-AEX TREATED WATER POND, C-AEX SETTLING POND, D-AEX SEDIMENT POND

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. CONTOURS ACQUIRED FROM 2022 LIDAR SURVEY.
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
SITE PLAN

CONSULTANT
wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	3-3

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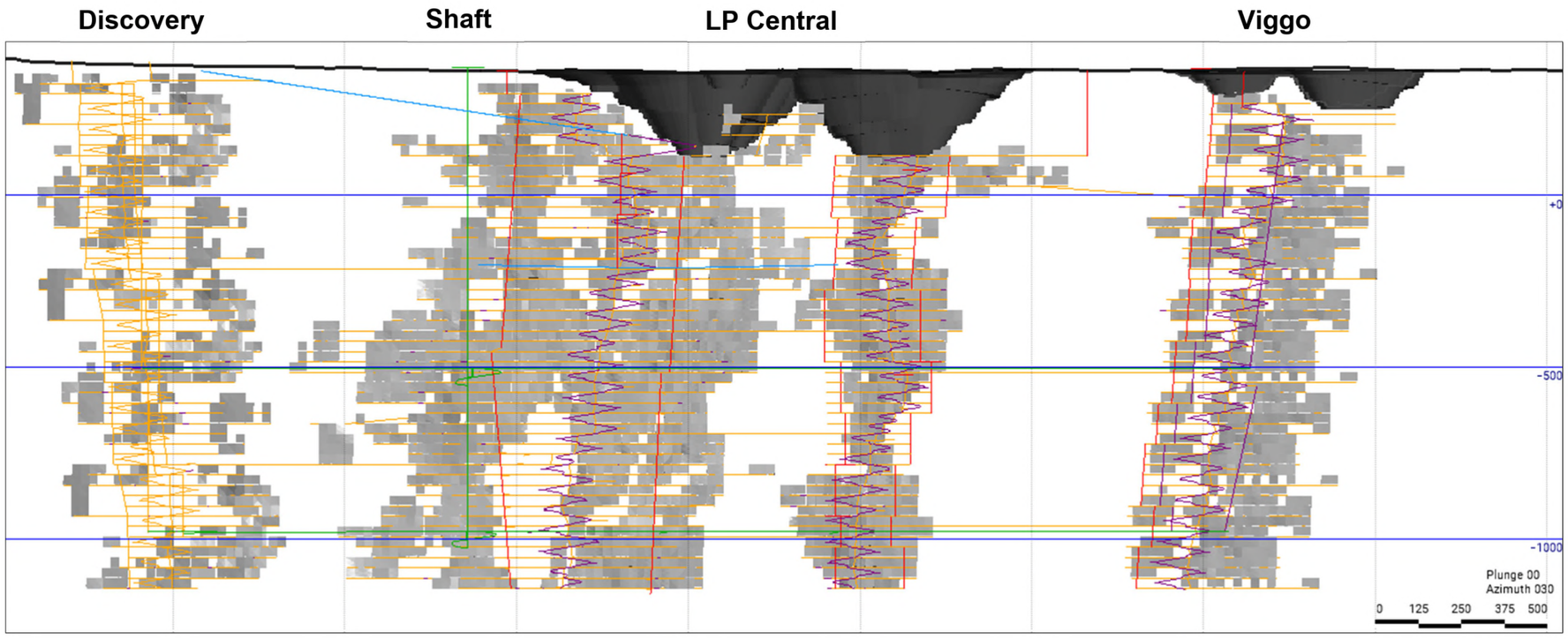


KEY NOTES

LIGHT BLUE – MAIN RAMP
PURPLE – CAPITAL DEVELOPMENT
YELLOW– LATERAL OPERATING DEVELOPMENT
GREY – UNDERGROUND STOPES
RED – VENTILATION RAISES
GREEN – SHAFT AND MAIN HAULAGE LEVELS

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
UNDERGROUND MINE CROSS SECTION
DISCOVERY TO VIGGO

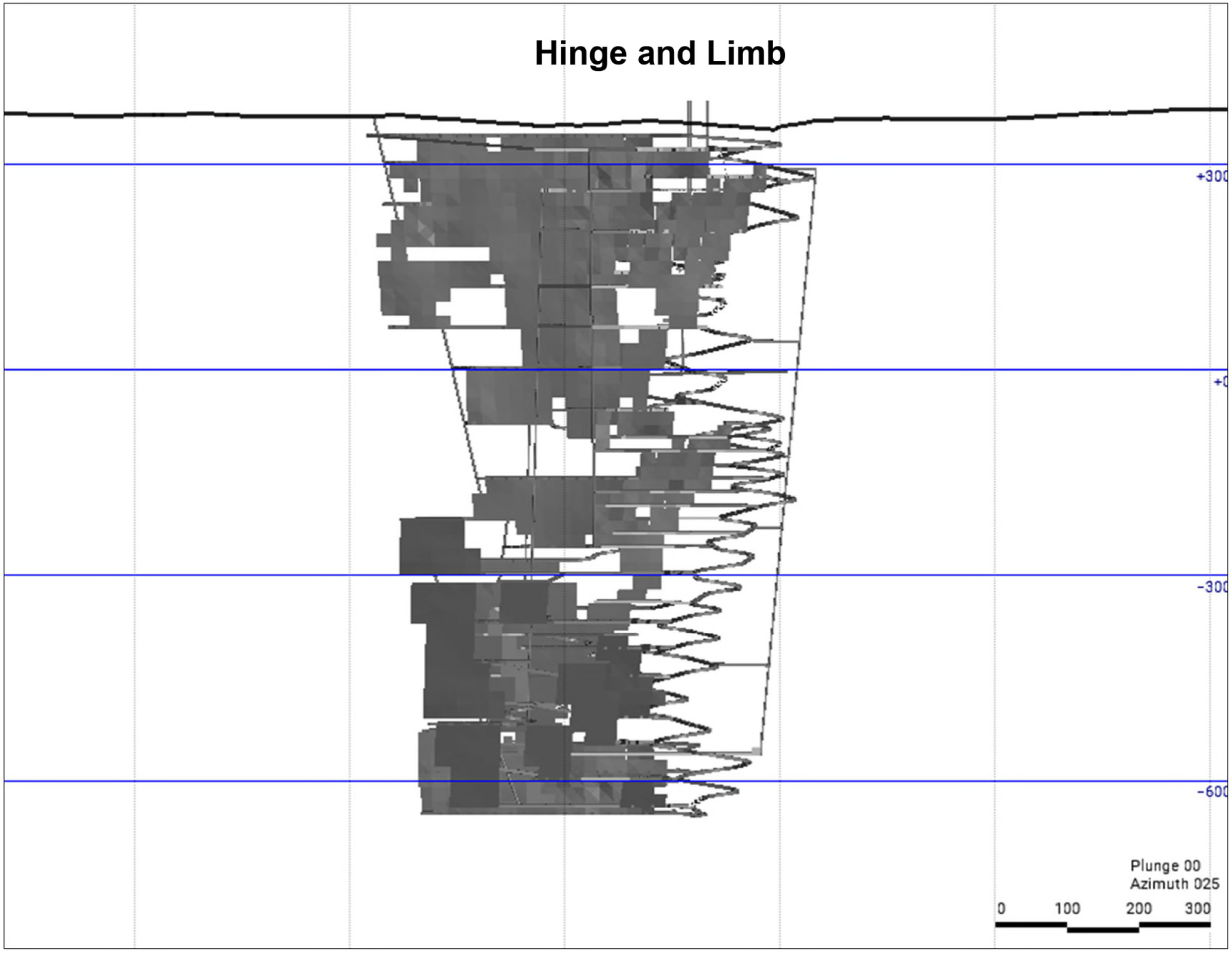
CONSULTANT

wsp

YYYY-MM-DD	2025-12-18
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	3-4

Hinge and Limb



KEY NOTES

GREY – UNDERGROUND STOPES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
UNDERGROUND MINE CROSS SECTION
HINGE AND LIMB

CONSULTANT

wsp

YYYY-MM-DD	2025-12-18
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	3-5

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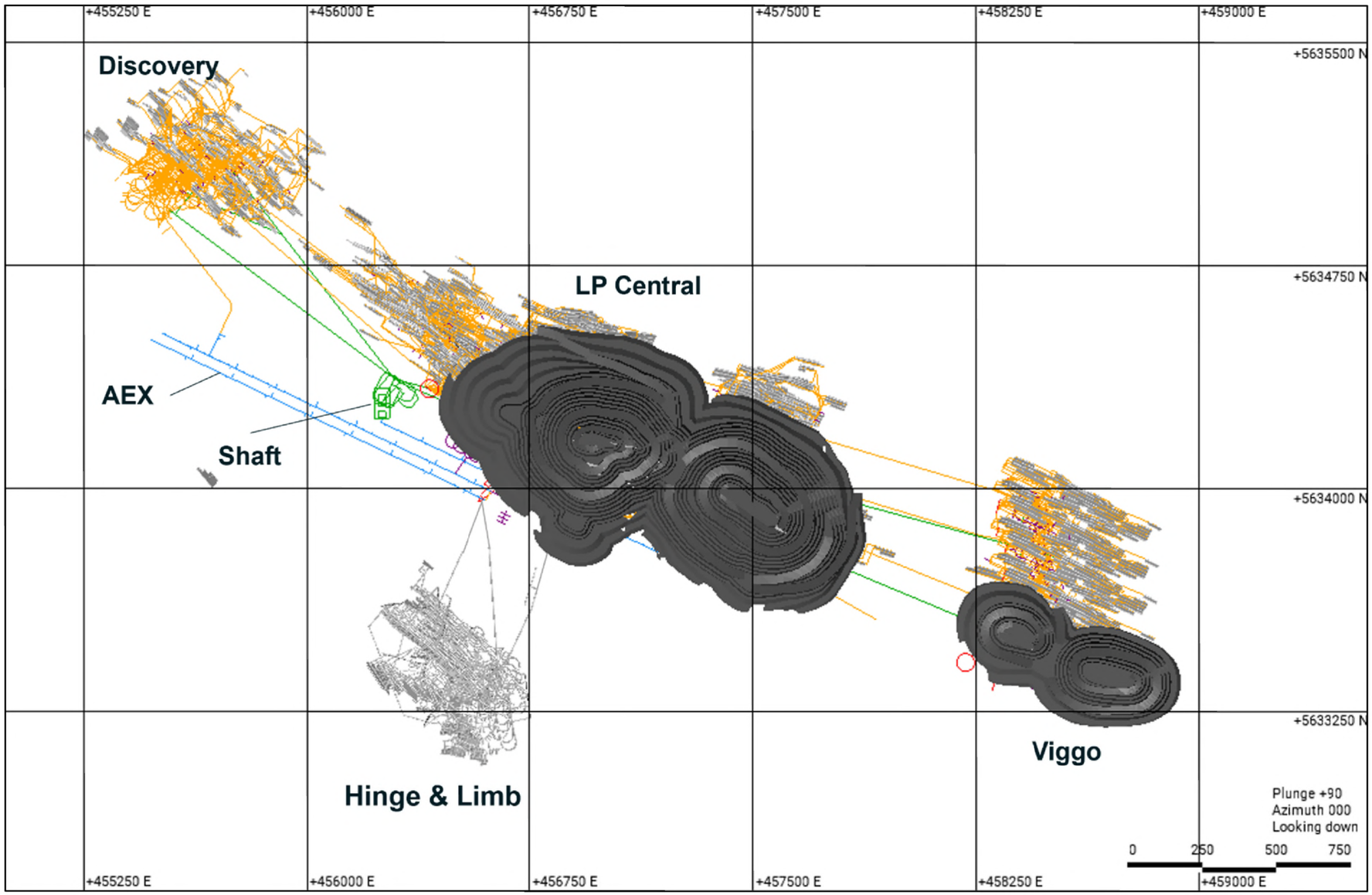


LEGEND

0 125 250 500

1:15,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
UNDERGROUND MINE SURFACE PROJECTION

CONSULTANT

wsp

YYYY-MM-DD	2025-12-18
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	3-6

4 CURRENT MINE SITE CONDITIONS

4.1 LOCAL LAND USES

4.1.1 CURRENT LAND USE

4.1.1.1 AEX PROGRAM FACILITIES

A portion of the Project site is an active AEX Program having a certified Closure Plan that was submitted in November 2024. The AEX Program is an underground exploration program that includes extraction of an ore sample totalling up to 60,000 tonnes (t) as well as an underground drilling program at depth once access is available. The goal of the AEX Program and ongoing exploration drilling from surface, is to collect additional information regarding the Project ore and surrounding rock to support and confirm engineering designs prior to development of the mine. The AEX ore sample will be brought to surface, crushed to size with a mobile crusher and trucked to an existing mineral testing facility located off the Property.

The AEX Program includes establishment of two openings from surface (portals) and a ramp to underground, twinned near surface. The portals and ramps provide an opening of approximately 6 m by 6 m which is sufficient for vehicle transport and required infrastructure, such as for air ventilation. The AEX ramps will provide access for underground exploration to a vertical depth of approximately 600 to 800 m below surface and will have a length of approximately 12,000 m.

The majority of the surface facilities associated with the AEX Program will be located on or adjacent to a rock pad. This main site has an area of approximately 32 hectares (ha). Facilities required to support the AEX Program, and which are, or will be present prior to the development of the proposed mine include and are illustrated in Figure 4-1:

- Two portals (openings) to underground
- Ramp (twinned near surface, single ramp at depth)
- Underground workings
- Two mine rock stockpiles
- Two overburden stockpiles
- Explosives magazine and storage
- Bulk sample crusher
- Ore sample stockpile
- Various trailer-style buildings: administration, first aid, security and change room (mine dry)
- Truck shop and wash bay
- Covered storage and material laydown
- Utilities area, communications facilities, fuel storage and dispensing
- Onsite roads and parking
- Modular camp
- Water management ponds and contact water treatment system
- Treated effluent discharge pipeline to the Chukuni River
- Power supply facilities.

The initial power supply for AEX Program is from diesel-fired generators (nameplate capacity of less than 5 megawatts; MW). This will be followed by onsite generation of power from natural gas via a natural gas pipeline connection to the Enbridge Gas main pipeline located along Highway 105. A 115 kilovolt (kV)

transmission line connected to the regional electric grid supported by an onsite substation, will provide grid power to replace natural gas power generation at the site for the AEX Program.

4.1.1.2 GENERAL LAND USE

Ontario's Living Legacy Land Use Strategy (1999) governs land use on Crown land in the land and resource use study area. Land use policies are taken from a number of different sources and are applied to lands managed by the Ministry of Natural Resources (MNR). The Project is located within a General Use Area (G2514: Red Lake – General Use Area) in the Crown Land Use Policy Atlas (Government of Ontario 2018). Mineral exploration and development are encouraged with some limitations. There are currently no approved District Land Use Guidelines. Land use direction is provided via provincial policies and all new activities in the region are subject to a review and evaluation.

Within G2514, the primary uses include mining, forestry, cottaging, tourism, Crown land recreation, fishing, hunting, and fur harvesting. The major industries in the area include mining, forestry and commercial aggregate operations. The major communities within the region include Red Lake, Balmertown, Cochenour and Ear Falls (WSP 2023a).

There are several aggregate operations owned by others that are located near the Project, as illustrated in Figure 3-32. Lafarge Canada currently operates a commercial sand and gravel pit on Tuzyk's Road on lands they hold that are located within the overall Property boundary. There are also other smaller properties held for aggregate resources along Tuzyk's Road, some of which have had previous extraction. Great Bear Resources has been in discussions with these land holders regarding the proposed development of the Project and use of Tuzyk's Road as the primary Project access to Highway 105, as well as other aspects.

The Property is situated in Red Lake Forest, specifically within Forest Management Unit (FMU) 840 and Trout Lake FMU 120 (Figure 4-2), which are both part of the northwestern Ontario boreal forest region. The forestry trail network that crosses the Property has been developed by forestry companies to support their ongoing harvesting activities in the area. Red Lake FMU contains 249,492 ha of managed productive Crown forest land, governed under Sustainable Forest License (SFL) #542548. Trout Lake FMU 120 encompasses an area of 928,265 ha of productive Crown forest, managed under SFL #542461. The Red Lake Forest Management Company is the managing entity for FMU 840 and has engaged in a decade-long agreement (2020 to 2030) with MNR. FMU 120 is under the stewardship of Dryden Fibre, who has also committed to a ten-year contract (2021 to 2031) with the MNR. Great Bear Resources has been working cooperatively with the SFLs regarding the proposed development of the Project, including with respect to ongoing access for harvesting activities. Local forestry resource and access roads are illustrated in Figure 4-2.

4.1.1.3 TRADITIONAL LAND USE

Indigenous Nations in proximity to the Property are shown in Figure 4-3. Traditional land use overlapping with the Project includes traplines overlying as shown in Figure 4-2. The main Project features are located in trapline area RL068 with a portion of the natural gas and Chukuni River discharge pipeline located in trapline area RL059.

The Property is located within Treaty No. 3 which was signed in 1873 by a group of Salteaux Ojibwe chiefs and representatives of the Crown, placing a large area of northwestern Ontario (primarily the Lake Winnipeg drainage) under the Treaty (Government of Ontario 2024). The nearest Reserve lands are associated with the communities of Wabauskang First Nation (WFN) located cross country approximately 56 km southeast of the Project site, Lac Seul First Nation (LSFN) located approximately 101 km east of the Project site and Asubpeeschoseewagong Netum Anishinabek (ANA) located approximately 77 km southwest. The Property is also located within the Northwestern Ontario Métis Community - Region 1 (NWOMC) which covers northwestern Ontario.

4.2 TOPOGRAPHY AND GEOLOGY

4.2.1 TOPOGRAPHY

Topography across the Property is typical of northern Ontario and can be categorized as rugged. The topography of the Property is dominated by a local higher ridge which runs approximately northwest to southeast, parallel to Highway 105. The elevation range on the Property is roughly 455 to 350 m above sea level (masl). The higher elevations typically correspond to exposed bedrock hills or knobs, and the low elevations typically correspond to watercourse and waterbody locations.

Dixie Creek is situated in the most pronounced low-lying areas within the Property, meandering through a flat low-lying area towards its confluence with the Chukuni River outside the eastern Property boundary. The local topography of the Property is illustrated in Figure 4-5.

4.2.2 OVERBURDEN GEOLOGY

Quaternary (overburden) geology at the Property was conducted by Prest (1982) at a 1:50,000 scale, which informed much of Sharpe and Russel (1996) mapping for the Property. The overburden geology at the Property is composed primarily of the following four units:

- Organic deposits (peat and muck; 1 m to 4 m thick)
- Glaciolacustrine deposits:
  - Shallow water and shoreline deposits (sand, gravel and silt; 1 m to 3 m thick)
  - Deep water deposits (clay, silt and fine sand; varved clay below 380 masl elevation, 1 to 50 m thick).
- Glaciofluvial outwash deposits (esker sands with minor gravel; 1 m to greater than 40 m thick).
- Glacial till deposits (gravelly to bouldery, sand to sandy silt till; 1 m to 6 m thick).

Overburden material at higher elevations on the Property (above approximately 380 masl) displays a general sequence of sand followed by glacial till overlying the bedrock. Overburden material at lower elevations on the Property (below approximately 380 masl) displays a general sequence of glaciolacustrine deepwater deposits (clays) followed by glacial till overlying the bedrock. Organic deposits (peat) are also found at lower elevations. Overburden thickness across the Property ranges from absent to greater than 50 m.

Overburden deposits at the Property are reflective of the glaciated history of the area where inferred ice flow direction was generally from the northeast to the southwest, based on glacial striations present on exposed bedrock outcropping (Sharpe and Russell 1996). The glaciofluvial and glaciolacustrine deposits are associated with the glacial Lake Agassiz, which is reported to have flooded the local area. The level of glacial Lake Agassiz dropped in stages creating a series of shoreline features, some of which are mapped in the northwest portion of the Property (Prest 1982). The quaternary geology of the Property is shown in Figure 4-6.

4.2.3 BEDROCK GEOLOGY

The Property is located within the Red Lake greenstone belt of the Uchi Subprovince of the Archean Superior Province of the Canadian Shield. The rocks in this belt are interpreted to have evolved by eruption and deposition of volcanic sedimentary sequences. Continental collision led to subsequent crust thickening and metamorphism. Both greenstone belts in the Red Lake District are dominated by the Balmer and Confederation Lake assemblages:

- Balmer assemblage (2,989 to 2,964 million years): tholeiitic and komatiitic basalt, with minor felsic volcanic rocks, iron formation and fine-grained clastic meta-sediments, which hosts the majority of the known Red Lake lode gold deposits.
- Confederation assemblage (2,750 to 2,735 million years): represented with three sequences, McNeely calc-alkaline sequence (central Red Lake) consisting of intermediate to mafic volcanic rocks, Heyson tholeiitic sequence (southeastern Red Lake) composed of felsic volcanics and interlayered with mafic flows, dacitic tuff and plagioclase-phyric basaltic andesites, and Graves sequence (northern Red Lake) consisting of basal polymictic conglomerate, intermediate pyroclastic rocks, syn-volcanic diorite and tonalite.

Three main fault and shear zones have been interpreted on the Property: the LP shear, the Auro Fault, and the Yauro Fault. The LP fault is expected to be intersected by the proposed underground workings within the intermediate and deep bedrock.

4.3 SURFACE WATER

4.3.1 SURFACE WATER HYDROLOGY

The Project is located within the greater English River watershed west of the Chukuni River and upstream of Pakwash Lake. Flow in the English River below Pakwash Lake joins with the Lac Seul and Lake of the Woods watersheds to become the Winnipeg River. The Winnipeg River discharges northwest to Lake Winnipeg which discharges to the Nelson River, ultimately reporting to Hudson Bay. There are a number of local dams that control regional flow. The Manitou Falls Generating Station is located downstream of Pakwash Lake along the upper portion of the English River, with a total watershed area of 48,880 km^2. The Snowshoe Rapids Dam is located on the Chukuni River between Two Island Lake and Highway 105 and is used to control water levels of Red Lake, Gullrock Lake, Keg Lake, Ranger Lake and Two Island Lake.

Local watersheds and baseline hydrometric stations are shown in Figure 4-7 and the regional watershed boundaries are illustrated in Figure 4-8. Information detailed in the Hydrology Baseline Study (WSP 2025a) is summarized in the following sections. A copy of this report is appended to the Impact Statement and will be provided with the regulatory Closure Plan for the Province.

4.3.1.1 LOCAL WATERSHEDS

Average monthly discharge for the onsite stations (Figure 4-7) displayed a wide range of flows from station to station, with the greatest discharge during spring months April to June corresponding with spring freshet. The maximum average discharge was at 6.13 cubic metres per second (m^3/s) at Dixie Creek at Tuzyk's Road during June 2024, and the minimum was <0.001 m^3/s at Dixie Lake Outlet. Low flows observed at the Dixie Lake outlet are due to beaver activity both downstream and at this location. The minimum monthly discharge along the tributaries contributing to Dixie Creek ranged from 0.002 m^3/s at Unnamed Watercourse 1 to 0.004 m^3/s at Unnamed Watercourse 3.

For the available period of record, the change in water elevation across all stations ranged from 0.4 m to 1.7 m. Peak water levels were generally observed during the spring months, corresponding to the spring freshet, while low water levels correspond to the summer low flow periods. Water levels at the monitoring stations along Dixie Creek and Genessee Lake are also influenced by beaver activity.

Water levels for Pakwash Lake were compared with water levels for Dixie Creek at Tote Road and the Chukuni River. The range of water levels at all three stations followed similar patterns, with high water levels in fall 2022 through to spring 2024. This indicates that the water levels on the Chukuni River are affected by backwater from Pakwash Lake and that they influence the water levels at Dixie Creek at Tote Road.

4.3.1.2 REGIONAL WATERSHEDS

The following conditions were established for the regional Water Survey of Canada (WSC) hydrologic monitoring stations:

- Chukuni River near Ear Falls WCS hydrometric monitoring station: freshet generally starts in April and runoff peaks in June, with lowest runoff during February and March. Mean annual discharge was 30 m^3/s and mean annual runoff was 213 mm.
- Long-legged River below Long-legged Lake WSC hydrometric monitoring station: freshet generally starts in April and runoff peaks in June, with lowest runoff during February and March. Mean annual discharge was 3.5 m^3/s and mean annual runoff was 202 mm.
- Golden Creek near Red Lake WCS hydrometric monitoring station: freshet generally starts in April and runoff peaks in May with a second peak in October, with the lowest runoff during January to March. Mean annual discharge 0.5 m^3/s and mean annual runoff was 279 mm.

Low flows for were calculated for the three above WSC hydrometric monitoring stations. The Chukuni River near Ear Falls WSC hydrometric monitoring station low flows range from 7.57 m^3/s to 1.86 m^3/s. For the Long-Legged River below Long-Legged Lake WSC station, the low flows ranged from 0.84 m^3/s to 0.32 m^3/s. Golden Creek near Red Lake WSC station had the lowest flows with a range of 0.012 m^3/s to 0.002 m^3/s. As the Chukuni River near Ear Falls WSC station is impacted by the operation of the Snowshoe Rapids Dam, the Long-Legged River low flow estimates were prorated to the Chukuni River station to provide additional understanding of the potential natural flow regime if the Chukuni River Station was unregulated. These values ranged from 6.7 m^3/s to 2.6 m^3/s. The overall low flow values taken from six regional WSC flow stations within 180 km of the Property ranged from 13.8 m^3/s to 6.23 m^3/s.

4.3.2 SURFACE WATER QUALITY

Water quality sampling locations are shown in Figure 4-9. Below, is a summary of the results gathered from these stations and summarized in the Water Quality Baseline Report (WSP 2025b). A copy of this report is appended to the Impact Statement and will be provided with the regulatory Closure Plan for the Province.

4.3.2.1 CHUKUNI RIVER

Water quality samples were collected along the Chukuni River upstream and downstream of the proposed discharge location and all other Project influences. Results indicate that surface water quality in the Chukuni River is typical of the region, with generally neutral pH, and low concentrations of nutrients and major anions. Sulphate concentrations ranged from 2.0 milligrams per litre (mg/L) to 12.0 mg/L and were similar at all three monitoring stations. Total and dissolved metal concentrations were generally low and were mostly below the identified water quality guidelines for the protection of aquatic life (WQG PAL); however, approximately 25% of phosphorous observations were greater that the WQG PAL at downstream sampling locations. Further, arsenic concentrations were consistently greater than the WQG PAL al all stations. Occasional measurements of pH, total and dissolved aluminum and copper were above guidelines as well. These elevated concentrations may reflect natural conditions dictated by geology and rock weathering processes and / or influences from upstream development activities including the Snowshoe Rapids Dam. The baseline water quality statistics for the Chukuni River samples are summarized in Table 4-1.

4.3.2.2 DIXIE CREEK

Samples were collected along Dixie Creek at multiple locations upstream of the proposed Project infrastructure, at the southern portion of the proposed Project infrastructure and downstream of the proposed Project influences. Results indicate that the surface water quality in Dixie Creek is typical of the region and likely influenced by surrounding shallow lakes and wetlands, with generally neutral pH and low concentrations of most nutrients and total dissolved solids. Sulphate concentrations were low and ranged from < 2.0 mg/L to 4.0 mg/L, while dissolved organic carbon (DOC) concentrations were moderately high and ranged from 13.7 mg/L to 18.9 mg/L. Total and dissolved metal concentrations were generally very low and below the WQG PAL; however, aluminum concentrations were consistently above the WQG PAL

at upstream and mid-stream locations. Further, most total phosphorous observations were greater than WQG PAL and are classified as meso-eutrophic to eutrophic based on Canadian Council of Ministers of the Environment (CCME) framework. Meso-eutrophic to eutrophic describes a waterbody transitioning from moderate to high nutrient levels, characterized by increased algae / plant growth, reduced water clarity (more murkiness), and potential summer oxygen depletion, often due to nutrient pollution (like phosphorus / nitrogen) accelerating natural aging (eutrophication), impacting fish communities and water quality. Occasional measurements of cobalt, iron and arsenic were above guidelines at individual sampling locations that are proximate to the identified mineral zones in the area. Slightly acidic pH levels were also observed occasionally at three stations. The baseline water quality statistics for the Dixie Creek samples are summarized in Table 4-2.

4.3.2.3 UNNAMED WATERCOURSES

Samples were collected from three groups of unnamed watercourses: Dixie Creek tributaries, north flowing tributaries, and Unnamed Waterbody 6 tributaries. The baseline water quality sample statistics are provided in Table 4-3 (unnamed watercourses flowing to Dixie Creek) and Table 4-4 (unnamed north-flowing watercourses).

For Dixie Creek tributaries, baseline surface water quality results were found to vary seasonally, typical of similar watercourses in the region. The Dixie Creek tributaries have generally neutral pH with high hardness and DOC concentrations. Concentrations of nutrients and anions were higher than Dixie Creek, with sulphate concentrations ranging from < 2.0 mg/L to 18.0 mg/L. A number of total and dissolved metal concentrations were greater than WQG PAL, including seasonally elevated aluminum concentrations and arsenic concentrations at two monitoring stations. Further, approximately 35% of iron concentrations were above WQG PAL and were seasonally elevated, Total phosphorous concentrations were above WQG PAL at two monitoring stations. Occasional measurements above guidelines were also observed for cobalt and copper.

North-flowing tributaries were frequently observed to have no flow during sampling. They were observed to have neutral to slightly acidic pH with high hardness and DOC. They also had elevated chloride levels relative to other tributaries, showing the influence of Highway 105. Total and dissolved metal concentrations were generally low and consistently below WQG PAL, with some exceptions. Aluminum concentrations above guidelines were measure in approximately 18% of samples and were seasonally elevated, Arsenic concentrations were greater than WQG PAL in three samples. Iron concentrations were seasonally elevated and greater than WQG PAL in approximately 64% of samples.

Tributaries to Unnamed Waterbody 6 were similar to the Dixie Creek tributaries in their general chemistry, with neutral to slightly acidic pH with high hardness and DOC. Tributaries to Unnamed Waterbody 6 had elevated concentrations of nitrate, sulphide, and chloride. Total and dissolved metal concentration were low and consistently below WQG PAL with some exceptions. Aluminum concentrations were consistently elevated, with concentrations above WQG PAL in approximately 52% of samples. Approximately 38% of samples were above WQG PAL for arsenic, approximately 45% were above guidelines for cobalt, and approximately 43% of samples were above guidelines for iron. The majority of total phosphorous observations were greater than WQG PAL. Occasional concentrations above guidelines were observed for mercury, selenium and cadmium.

4.3.2.4 LAKES AND UNNAMED WATERBODIES

Samples were collected from four waterbodies on the Property: Unnamed Waterbody 6, Genessee Lake, Unnamed Waterbody 1 and Dixie Lake. Statistical summaries and provided in Table 4-5 (Unnamed Water Body 6 and Genessee Lake), Table 4-6 (other local waterbodies including Dixie Lake and Unnamed Waterbody 1).

Unnamed Waterbody 6 had generally neutral pH with high hardness and moderate DOC. Sulphate concentrations were low and ranged from < 1.0 mg/L to 4.0 mg/L while phosphorous levels were high, and the waterbody is classified as eutrophic based on CCME framework. Total and dissolved metal concentrations were very low and generally below WQG PAL. One sample had levels of nitrite, cadmium, and selenium concentrations that were above guidelines.

Genessee Lake had generally neutral pH with moderate hardness and DOC. Nitrogen species and major anion concentrations were low, while phosphorous concentrations were high, and the lake is classified as eutrophic based on CCME framework. Total and dissolved metal concentrations were very low and generally below WQG PAL, with occasional measurements above guidelines for cadmium and selenium.

Unnamed Waterbody 1 had a generally neutral to slightly acidic pH with moderate hardness and high DOC. Sulphate levels in the waterbody are variable, ranging from < 1.0 mg/L to 10.0 mg/L. Phosphorous levels are slightly elevated and the waterbody is classified as meso-eutrophic based on CCME framework. Total and dissolved metal concentrations were low and generally below WQG PAL, with some exceptions. Concentrations were above guidelines in 45% of aluminum samples, 55% of arsenic samples, and 36% of iron samples. Two samples also showed concentrations above guidelines for cobalt.

Dixie Lake had generally neutral pH with low concentrations of nitrite, nitrate, and ammonia as well as low concentrations of major anions such as sulphate and chloride. Phosphorous concentrations were greater guidelines. Total and dissolved metal concentrations were very low, and all measurements were under WQG PAL.

Gullrock Lake and Pakwash lake were monitored during baseline studies as part of a father field / regional monitoring. The summary water quality statistics for the Gullrock Lake and Pakwash Lake and provided in Table 4-7 and Table 4-8 respectively.

Gullrock Lake had generally circumneutral pH with low concentrations of nitrate, nitrite and ammonia. Sulphate concentrations were low and ranged from 5.6 mg/L to 7.0 mg/L. The baseline results found that the total metals and dissolved metal concentrations were low within Gullrock Lake and below the WGL PAL with the exception of total arsenic, where concentrations were greater than WQG PAL for one sample date.

Pakwash Lake had generally neutral pH with low concentrations of nitrite, nitrate, and ammonia, and low concentrations of total dissolved solids. Sulphate concentrations ranged from 2.0 mg/L to 6.0 mg/L. Total and dissolved metals were generally low and below WQG PAL, with some exceptions. Arsenic concentrations were consistently higher than guidelines at most monitoring stations, and approximately 50% of total phosphorous observations were higher than guidelines. The phosphorous level classifies the lake as meso-eutrophic based on CCME framework. Occasional measurements above guidelines were observed for aluminum.

4.3.2.5 LOW LEVEL MERCURY

Total and dissolved mercury concentrations are very low in the baseline surface water quality monitoring stations (Figure 4-9) and were often below detection limits. Supplemental ultra-low level analyses indicated that total mercury concentrations range from 0.67 nanograms per litre (ng/L) to 11.3 ng/L. Methylmercury concentrations range from 0.029 ng/L to 0.65 ng/L.

4.4 GROUNDWATER

Baseline hydrogeological conditions at the Project are described in terms of the geological setting, physical characterization and assessment of groundwater quantity. The Hydrogeology Baseline Report (WSP 2025c) information is used to support water balance calculations and water management strategies. It can also be used as a future reference in identifying environmental changes and for the assessments of potential effects on groundwater regimes. The monitoring wells used to determine the existing conditions are presented in Figure 4-10. A copy of this report is appended to the Impact Statement and will be provided with the regulatory Closure Plan for the Province.

4.4.1 HYDROSTRATIGRAPHY

The hydrogeologic system at the Project consists of bedrock that is overlain by Quaternary deposits of varying thickness. Groundwater flow at depth in bedrock is almost entirely through open fractures, which

are expected to decrease in frequency with depth, resulting in decreasing permeability with depth; except where there may be localized increases in fractures around geologic structures such as faults.

The four main groundwater units are:

- Sand deposits
- Glaciolacustrine clay and silt
- Glacial till, primarily consisting of sand and gravel with some silt and clay
- Bedrock.

At lower elevations on the Property (i.e., below 380 masl), the bedrock is in contact with glacial till overlayed with glaciolacustrine deposits, which are anticipated to limit the interaction between the bedrock flow system and surface water features such as Dixie Creek. Areas of higher elevations on the Property presented with glaciofluvial sediments or exposed till and bedrock. The continuous sand layer is underlain by glacial till and is expected to act as a conduit to groundwater flow.

4.4.2 GROUNDWATER ELEVATIONS

Groundwater elevations correlated with ground surface elevations, with the highest water levels generally occurring at the high topographic areas at the north portion of the Project. Steep groundwater gradients along the area of bedrock ridge likely reflect the lower bedrock hydraulic conductivity of the ridge area. Groundwater flow across the Project is directed primarily south and west, following the general topography towards Dixie Creek / lower portion of Unnamed Watercourse 3, eastward groundwater flow under Unnamed Waterbody 6 and an area comprising the lower portion of Unnamed Watercourse 1 and upper portions of Unnamed Watercourses 2 and 4.

Vertical hydraulic gradients on the Project are typically mild. Downward vertical hydraulic gradients are observed generally in areas of the Project and surrounding area above 380 masl, representing the inferred groundwater recharge zones. Vertical upward hydraulic gradients are located in three locations on the Project and surrounding area that are close to the surface water features and in lower elevations to the southeast of the topographic high ground area. The interpreted groundwater contour elevations are illustrated in Figure 4-11.

The magnitude of water levels changes varies across locations monitored during baseline hydrogeology studies. The greatest variability is seen in glaciolacustrine areas, and this is an indication of reduced hydraulic connection with this unit than the other materials found during baseline studies. There is a lack of large seasonal variation in the inferred groundwater recharge areas, which is an indication of better hydraulic connection in these areas.

There are currently over 2,500 exploration boreholes were developed to support the Project, which have the potential to act as a conduit for the movement of groundwater between water producing features. A grouting program is being undertaken to seal off the exploration boreholes.

Interactions between groundwater and surface water at the Project consists of both groundwater discharge to the surface at several surface water locations, and groundwater recharge areas in the north part of the Property coinciding with topographic high ground areas with glacial sand deposits. Interactions between groundwater and surface water can also be affected by the presence of surficial clays at higher elevations as well as interactions through seeps and overland flow at some locations. Some areas with exploration drillholes near Dixie Creek might leak water, explaining the identification of possible groundwater springs.

4.4.3 HYDRAULIC CONDUCTIVITY

The geometric mean hydraulic conductivity of the sands is estimated at 1.3×10^{-5} metres per second (m/s) based on 38 measurements, with a range of 4.1×10^{-7} m/s to 4.1×10^{-4} m/s. Despite some stratification in the sands, differences between vertical and horizontal hydraulic conductivities are not expected to impact groundwater flow to a notable extent. Hence, the sands are considered isotropic in terms of hydraulic conductivity.

For glaciolacustrine deposits, the geometric mean hydraulic conductivity is 6.0×10^{-8} m/s, based on 14 field measurements, with a range of 1.4×10^{-10} m/s to 3.2×10^{-6} m/s. Laboratory permeability tests (Flexiwall Permeameter) on 4 samples of glaciolacustrine materials indicated low permeabilities, ranging from 1.5×10^{-8} m/s to 2.2×10^{-9} m/s. These tests appear to be more indicative of vertical hydraulic conductivity.

Hydraulic conductivities of glacial tills range from 4.1×10^{-8} m/s to 9.1×10^{-4} m/s, with a geometric mean of 8.7×10^{-6} m/s based on 26 single well response test measurements.

Bedrock hydraulic conductivities generally decrease with depth. There appears to be a positive correlation between proximity of the test internal to an exploration drill hole and the estimated hydraulic conductivity. When screening the dataset for test intervals that intercepted fault or shear zones, it was identified that the Auro fault, which runs northwest to southeast across the area of the Project, is likely to be more permeable that the surrounding bedrock in an approximately 15 m wide interval. The other faults that intersect within the area of the Project do not show increased hydraulic conductivity. The review of the hydraulic conductivity for shallow bedrock showed an association between lower hydraulic conductivity and certain areas of bedrock high. This could relate to the composition of the bedrock highs, which includes more resistant bedrock compared to the bedrock lows. There was no association found between the hydraulic conductivity of different rock types.

4.4.4 GROUNDWATER QUALITY

Groundwater quality across monitored wells (Figure 4-10) were generally neutral to slightly alkaline with high hardness, low chloride concentrations and moderate to high conductivity. Concentrations of nitrogen species such as nitrite, nitrate, and ammonia were very low and below WQG PAL. Concentrations of dissolved metals and metalloids were low and below WQG PAL, with some exceptions. Approximately 51% of phosphorous concentrations, 30% of cobalt concentrations, and 15% of cobalt concentrations were greater than WQG PAL. Occasional concentrations of tungsten, uranium, iron and nickel were also above guidelines. A statistical summary of the groundwater quality results are provided in Table 4-9. Monitoring locations that most frequently produced concentrations greater than guidelines were associated overburden monitoring wells, screened into the glaciolacustrine lithological unit. The elevated concentrations of phosphorous and some metal concentrations are expected based on known groundwater quality in the region.

4.5 TERRESTRIAL PLANT AND ANIMAL LIFE

4.5.1 PLANT LIFE

Baseline vegetation communities and wetlands were investigated to identify and assess the existing vegetative assemblages and habitat, including plant Species at Risk (SAR). The terrestrial environment id described based on the Terrestrial Baseline Environment Report (Northern Bioscience 2025). A copy of this report is appended to the Impact Statement and will be provided with the regulatory Closure Plan for the Province.

4.5.1.1 VEGETATION COMMUNITIES

The Project is dominated by upland conifer forest, upland deciduous forest and conifer swamp. Widespread wildfire and development have resulted in younger Jack Pine forest throughout the western and southern areas of the Project, while the oldest forests are typically in lowland areas such as treed swamps, bogs and fens. Dominant tree species on the Property include Jack Pine, Black Spruce, Trembling Aspen and White Birch, with lesser amounts of Balsam Fir and White Spruce.

Meadow marshes are the most abundant open wetland, often having formed on the exposed sediments in inactive beaver ponds. Shore fens are also abundant in the vicinity of Unnamed Waterbody 6, Unnamed Waterbody 1 and Dixie Creek. The wetlands at the Project have not been formally evaluated

for provincial significance. Barren areas include vascular plant species such as Common Juniper, Bearberry and Three-toothed Cinquefoil, with some occurrence of Pin Cherry, Jack Pine and Balsam Fir. North facing cliffs often support mosses and herbaceous shrubs and ferns.

A total of 331 species of vascular plants have been documented on the Property, with 42 of these species being non-native. In addition, 77 species of fungi were observed during baseline studies.

One federally or provincially listed SAR, the Black Ash, has a range that potentially overlaps with the Project. Two species of provincially rare plants have been observed during baseline studies: floating Marsh Marigold and Hooker's Orchid. No provincially rare plant communities were observed.

4.5.1.2 WETLANDS

The Forest Resource Inventory for Red Lake Forest does not delineate open wetlands on small waterbodies due to their lack of relevance to forest management and were generally classified as open water. Open water marshes over organic sediments were found in the margins of some waterbodies in the baseline study area, often dominated by pondweeds.

Meadow marshes appear to be the most abundant open wetland class in the baseline study area, often dominated by species such as Bluejoint Grass and robust sedges. Meadow marshes were often interspersed with thicket swamps, which were dominated by Speckled Alder, Red Osier Dogwood and / or willow species.

Marshes were generally found in small pockets interspersed with other wetland communities, with Bulrush-dominated marshes found in the shore of Unnamed Waterbody 6. Some emergent marshes are made up of Wild Rice, which is discussed further in Section 4.5.1.4. Shore fens were abundant along the shores of Unnamed Waterbodies 1 and 6 as well as Dixie Creek. These communities consist of a floating mat of species such as peat mosses, Wire Wedge, Few-seeded Sedge and Three-way Sedge.

The wetlands within the baseline study area were evaluated by a certified wetland evaluator based to their size, diversity, hydrological function and features such as Wild Rice. Based on this evaluation, the wetland on Unnamed Waterbody 1 was found to be provincially significant, while the wetland on Unnamed Waterbody 6 was not found to be provincially significant.

4.5.1.3 NON-FORESTED COMMUNITIES

Excluding the open wetlands described above in Section 4.5.1.2, the other non-forested habitats in the area encompass rock barrens, talus slopes, cliff and rock faces and human-made environments like hydro transmission lines and gravel pits. According to the provincial ecological land classification system, these open communities generally possess less than 25% tree cover. A large portion of this area consists of active aggregate pits located along Tuzyk's Road.

4.5.1.4 WILD RICE

Wild Rice was found at Unnamed Waterbody 1 and Unnamed Waterbody 6. Wild Rice levels on Unnamed Waterbody 1 were consistent between sample years and had a cover of over 90% of Unnamed Waterbody 1 in all years. Wild Rice was distributed throughout the lake with a denser 3 m band around the shore of the lake.

Wild Rice abundance on Unnamed Waterbody 6 was more variable over time and represented a smaller area of the whole lake in all surveyed years compared to Unnamed Waterbody 1. In 2022, there was very little Wild Rice development, with most being located in a roughly 5 m band of growth along roughly 400 m of the shore. Higher levels of Wild Rice were observed in 2023, with most growth occurring on the west and southeast areas of the lake. Wild Rice density on Unnamed Waterbody 6 was around 50% denser than on Unnamed Waterbody 1 in 2023.

Wild Rice was also observed at Dixie Creek upstream from Dixie Lake and in the lower portion above the junction with the Chukuni River. Competition was not identified as a notable factor in Wild Rice abundance, and no invasive plant species were observed on either Unnamed Waterbody 1 or 6.

4.5.2 ANIMAL LIFE

Wildlife baseline studies including for migratory birds were conducted to identify the different animal species in the area of the Project, their habitat and to identify SAR.

4.5.2.1 MAMMALS

A total of 36 mammal species were observed from 2021 to 2023. The most commonly observed species were Snowshoe Hare, Grey Wolf, Moose, Red Squirrel, Canada Lynx and Black Bear. Various other furbearing species are likely to use the Property based on habitat, range, and track sightings.

Two federal or provincial mammal SAR were detected during environmental baseline studies, and there is potential for several others based on species range and documentation in surrounding areas. Wolverine (Threatened) have been detected at several locations during the baseline studies. Due to the large individual ranges and lack of overlap between the ranges of reproductive females, it is expected that a relatively small number of wolverines are likely to use area. The low-density boreal forest habitat present at the Project is considered to be suitable for Wolverine. Little Brown Myotis (Endangered), Northern Myotis and Tri-colored Bat have also been detected on the Property, while Red Bat, Hoary Bat and Silver-haired Bat were detected on the Property and are in the process of being listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

4.5.2.2 BIRDS

A total of 153 bird species were observed on the Property from 2021 to 2023, several of which are migratory and do not breed in the Red Lake area. Additional species could be expected on the Project due to known distributions. The most commonly observed birds include Nashville Warbler, White-throated Sparrow, Red-eyed Vireo, Ovenbird, Ruby-crowned Kinglet, Chipping Sparrow, Magnolia Warbler, Hermit Thrush, Tennessee Warbler, and Yellow-rumped Warbler. In total, seven species of owls, ten species of raptors, six species of shorebirds, seven species of colonial nesting birds and 49 wetland-associated species have been detected. Several species of game birds, including three species of Ruffed Grouse, were also detected on the Property. Unnamed Waterbody 6 and Unnamed Waterbody 1 are stopover areas for migrating waterfowl and waterbirds, particularly in the fall due to the presence of Wild Rice.

A total of 13 avian provincial or federal SAR have been detected during the baseline studies, including American White Pelican, Bald Eagle, Bank Swallow, Barn Swallow, Canada Warbler, Common Nighthawk, Eastern Whip-poor-will, Eastern Wood-pewee, Evening Grosbeak, Olive-sided Flycatcher, Rusty Blackbird, Short-eared Owl and Yellow Rail. Two active colonies of Bank Swallow (Threatened) are present in aggregate pits along Tuzyk's road. Additionally, Eastern Whip-poor-will (Threatened) uses the northwest corner of the Property as well as area north of Genessee Lake.

4.5.2.3 REPTILES AND AMPHIBIANS

A total of six amphibian species were observed during the environmental baseline studies completed during 2021 to 2023, including Spring Peeper, Wood Frog, Gray Treefrog, American Toad, Eastern Garter Snake and Painted Turtle. A few other species are potentially occurring based on their broad ranges and presence of habitat on the Property. All observed snakes were lone individuals, and no aggregations of snakes were observed, although suitable habitat may exist. There were no potentially significant vernal pool amphibian breeding habitat or amphibian movement corridors observed on the Property. No evidence of overwintering turtles was observed from 2021 to 2023, but it is likely that overwintering habitat exists on Unnamed Waterbody 6.

Snapping Turtle (Special Concern) were not identified; however, their range overlaps with the Project and potentially suitable habitat are present along Dixie Creek, Unnamed Waterbody 6 and other large watercourse and waterbodies.

4.5.2.4 INSECTS

A total of 23 odonate species and 25 butterfly species were documented during the environmental baseline studies conducted from 2021 to 2023. Additional species are likely present given broad ranges and habitat types present at the Project and surrounding area. Dragonfly species Cobra Clubtail was

observed on Dixie Creek south of the Project and is considered provincially rare and present in fewer than 20 locations in Ontario. Additionally, western white butterflies are considered provincially rare and were observed along several roads at or near the Project.

The only insect SAR detected during baseline studies was Yellow-banded Bumblebee, which was confirmed near Unnamed Waterbody 1. Yellow-banded Bumblebee is listed at Special Concern, although the species is common in northwestern Ontario.

4.6 AQUATIC LIFE

Baseline fisheries resource field programs and data collection were initiated in 2020 and the baseline aquatic information were collected from the monitoring locations shown in Figure 4-12. The Fisheries Resources Baseline Report (WSP 2025d) is summarized in the following subsections. A copy of this report is appended to the Impact Statement and will be provided with the regulatory Closure Plan for the Province.

4.6.1 DIXIE CREEK

Four sampling locations were evaluated along Dixie Creek for fish habitat, community, length, age and tissue as well as water and sediment quality and benthic invertebrate community. All four sampling locations were classified as riverine habitat with a moderate to broad floodplain and soft, fine-grained sediment with smaller amounts of boulder / cobble. Upland areas are mainly mixed coniferous and deciduous dominated by Black Spruce, poplar species, and Tamarack, while vegetation near to the riparian zones includes alder and herbaceous species. Two potential fish spawning habitats for Lake Whitefish and Walleye were identified downstream of the bridge, although fish were not observed to be spawning in spring 2024.

DNA from up to 28 fish species was identified across the sample stations. Sampled fish species across the stations included Northern Pike, Spottail Shiner, Yellow Perch, Burbot, White Sucker, Brook Stickleback, Iowa Darter, Mooneye, Rock Bass and Walleye. Fish tissue samples from all four sampling locations measured mercury concentrations below the Ontario consumption guidelines for the general public, with one sample from the DC-04 station measuring above the Ontario consumption guidelines for women of child-bearing age and children. Methylmercury concentrations in all samples from the Dixie Creek 01 (DC-01) and DC-02 stations were below the guidelines, while all samples from the DC-03 and DC-04 stations were above the guidelines. Selenium concentrations in all samples from all four stations were below the guidelines.

All dissolved oxygen (DO) measurements were within identified guidelines except for two measurements at the Dixie Creek 02 (DC-02) station and two measurements at the Dixie Creek 03 (DC-03) station. All pH measurements were within identified guidelines with the exception of one at the Dixie Creek 04 (DC-04) station.

Sediment quality measurements for total organic carbon (TOC) were above guideline at all four stations. All four stations had measurements above the guidelines for chromium and nickel, and DC-02, DC-03 and DC-04 also had measurements above the guidelines for copper. In addition, DC-03 had measurements above guideline for manganese, and DC-01 had measurements above the guidelines for arsenic and cobalt.

Total invertebrate numbers at DC-01 were around ten times higher than the other three sampling locations, with DC-01 having consistently high richness and diversity in the benthic invertebrate community.

4.6.2 CHUKUNI RIVER

Three sampling locations were evaluated along the Chukuni River for fish habitat, community, length, age and tissue as well as water and sediment quality, lower trophic and primary productivity and benthic invertebrate community. All three sampling locations were classified as large river habitat characterized

by reaches with moderate flow and occasional fast flowing with soft fine-grained sediments with some boulder / bedrock and cobble / sand. The vegetation near to the riparian zone includes alder, willow and herbaceous species.

DNA from up to 29 fish species were identified across the sample stations. Sampled fish species across the stations included Burbot, Emerald Shiner, Johnny Darter, Northern Pike, Rock Bass, Spottail Shiner, Walleye, Yellow Perch, Blacknose Shiner, Lake Whitefish, Mooneye, Silver Redhorse, Smallmouth Bass, White Sucker, Shorthead Redhorse and Rock Bass. The Chukuni River sampling stations were all considered to be coolwater fish habitat according to the thermal guild classification.

DO measurements for all three stations were within identified guidelines. pH measurements were within identified guidelines the Chukuni River FDP station (CR-FDP) and the Chukuni River DS station (CR-DS), while pH was below the guidelines at the Chukuni River REF station (CR-REF) during fall 2022 and 2023. TOC was above the guidelines at all three stations. On some occasions, arsenic concentrations were above guideline at all three stations while copper and nickel concentrations were above guideline at CR-FDP and CR-REF. In addition, chromium and cobalt were also found to occasionally be above guideline at CR-REF.

Fish tissue samples from all three sampling locations measured mercury concentrations below the Ontario consumption guidelines developed for the general population; however one Lake Whitefish, one Northern Pike, and one Walleye sample from CR-FDP and one Northern Pike and three Walleye samples from CR-DS were above the Ontario consumption guidelines for women of child-bearing age and children as well as the Health Canada guidelines. Many of the methylmercury concentrations at the three stations were above the guidelines for the protection of wildlife consumers. Selenium concentrations in all samples from all three stations were below the guidelines for whole body samples.

Sediment quality samples of TOC were higher than guidelines in most samples across the stations. Background concentrations of arsenic, chromium, copper and nickel were above guidelines across all stations.

To assess lower trophic and primary productivity, samples of periphyton from natural substrate were collected and analyzed for stable isotopes ($\delta^{13}C$ and $\delta^{15}N$). The CR-REF station showed the highest $\delta^{13}C$ concentration while CR-DS showed the lowest $\delta^{13}C$, which can be associated with increased methylmercury concentrations. Benthic invertebrate community density, richness and evenness were higher at CR-REF and CR-FDP than CR-DS.

4.6.3 GENESSEE LAKE

Genessee Lake is a large, deep lake (maximum 11 m deep) with deep water lentic habitat. Substrate composition near the shore is mainly comprised of exposed bedrock and boulder, with areas of soft, fine-grained sediments. Vegetation near to the riparian zone includes woody shrubs and herbaceous species. The lake is made up of a series of three large basins and is oriented northwest (inlet) to southeast (outlet).

DNA from 24 fish species was identified in Genessee Lake, 14 of which were sampled in 2022 and 2023. The sampled fish species include Blacknose Shiner, Brook Stickleback, Cisco, Emerald Shiner, Golden Shiner, Iowa Darter, Johnny Darter, Mottled Sculpin, Northern Pike, Northern Redbelly Dace, Rock Bass, Spottail Shiner, Walleye and Yellow Perch. Summer water temperature along with presence of fish species indicate that the thermal guild classification for the lake is a coolwater fish habitat. Fish tissue samples from Genessee Lake found mercury concentrations to be below the Ontario guideline developed for the general population, while three samples were above the guideline for women of child-bearing age and children as well as Health Canada guidelines. in all samples collected, methylmercury concentrations were above guidelines and selenium concentrations were below guidelines. Lower trophic and primary productivity sampling showed that ten orders of zooplankton were found in the lake.

Water quality measurements for DO and pH were within identified guidelines, with the exception of DO from the 2022 and 2023 fall sampling programs. Sediment quality was measured at three stations in Genessee Lake, and TOC was found to be above the guidelines at most stations. Concentrations greater than guidelines were noted for arsenic, chromium, copper, iron, manganese and nickel.

Benthic invertebrate community metrics remained consistent between 2022 and 2023, but abundance and richness decreased in 2024. This change could be attributed to natural population fluctuations or lower overall water levels.

4.6.4 PAKWASH LAKE

Monitoring was conducted at Pakwash Lake by the Ministry of Natural Resources (MNR). A total of 20 fish species were identified in the lake, with Walleye and Sauger making up the largest proportion. Mercury concentrations in fish tissue samples were below the Ontario guidelines for the general population, while most samples were greater than the guideline set for women of child-bearing age and children. Sediment quality measurements showed concentrations above guidelines for TOC, arsenic, nickel, chromium, copper and manganese. The benthic invertebrate community abundance and total invertebrate density (TID) was approximately three times as high in deep locations than in shallow locations, although all other metrics were similar in both locations. Total abundance in 2024 ranged from 80 to 124 individuals.

4.6.5 GULLROCK LAKE

Monitoring was conducted at Gullrock Lake by the MNR. The lake has a deep-water lentic habitat with multiple basins, islands and embayments. The lake has exposed bedrock shorelines with boulders and mixed coniferous and deciduous forest. A total of 15 species were identified in the lake, with Walleye and Cisco making up the largest proportion of the species sampled. Most mercury concentrations in fish tissue samples were below the Ontario guidelines for the general population, while several samples were above the guidelines for women of child-bearing age and children.

4.6.6 UNNAMED WATERBODIES

4.6.6.1 UNNAMED WATERBODY 1

Unnamed Waterbody 1 is a shallow lake (maximum 0.5 m deep) with a lentic habitat characteristic of the small, shallow waterbodies on the Property that are likely to support a spawning, rearing and foraging habitat for small-bodied and potentially large-bodied fish species. Substrate composition is primarily soft, fine-grained sediment with some boulder / bedrock and cobble. Vegetation in the upland zones is composed mainly of mixed coniferous and deciduous dominated by Black Spruce and Tamarack; vegetation near to the riparian zone included wood shrub and herbaceous species. Wild Rice covers the entire surface of the lake.

Central Mudminnow and Golden Shiner were the two fish species sampled at Unnamed Waterbody 1; however, it is possible that the lake also contains Northern Pike. Water quality measurements for the lake generally met guidelines, with the exception of two pH and one DO measurement in spring 2023. Sediment quality was measured at three stations in the lake, with TOC concentrations above the guidelines that characterize severe levels at all locations. Arsenic and cadmium were also found to be above guideline in some measurements. Mercury concentrations were above the guidelines at two stations in 2022, with no measurements above the guidelines in 2023. The benthic invertebrate community was similar to other shallow lakes and ponds; however, it contained the greatest taxa richness value.

4.6.6.2 UNNAMED WATERBODY 2

Unnamed Waterbody 2 is a small, deep-water inland lake, measuring a maximum of 7 m deep. This lake is likely to support a variety of small-bodied and large-bodied species of varying life stages. Substrate composition is primarily soft, fine-grained sediment with a greater abundance of boulder / bedrock and cobble. Vegetation in the upland zones is mainly mixed coniferous and deciduous dominated by Black Spruce and White Spruce, while vegetation near to the riparian zone includes woody shrub and herbaceous species. A 2024 bathymetry survey concluded that the waterbody consisted of a gently sloping shoreline down to a deep central basin.

DNA from six fish species was found in the lake, four of which were sampled: Central Mudminnow, Golden Shiner and Northern Pike. Water temperature measurements along with fish species indicate the thermal guild classification for the lake is a warm to cool water fish habitat. Mercury concentrations in fish tissue samples were below the Ontario consumption guidelines for the general population but were above the guideline for women of child-bearing age and children as well as the Health Canada guidelines. Methylmercury concentrations were found to be above guideline, while selenium concentrations were below the guidelines for all samples.

Water quality measurements for DO were generally within guidelines with the exception of one measurement in 2023 and nearly all pH measurements were below the guidelines. Sediment quality measurement for TOC were all above the guidelines that characterize severe levels, and some concentrations above the guidelines were measured for arsenic, cadmium, copper and mercury.

Benthic invertebrate diversity was the lowest at Unnamed Waterbody 2 compared to all other sampled locations. Overall abundance decreased greatly between sampling years.

4.6.6.3 UNNAMED WATERBODY 3

Unnamed Waterbody 3 is a medium sized lake, likely supporting a variety of small-bodied and large-bodied species of varying life stages. Substrate composition is primarily soft, fine-grained sediment with a greater abundance of boulder / bedrock and cobble. Vegetation in the upland zones is mainly mixed coniferous and deciduous dominated by Black Spruce and White Spruce, while vegetation near to the riparian zone includes woody shrub and herbaceous species.

Ten fish species were sampled from the lake, including Blacknose Shiner, Brook Stickleback, Fathead Minnow, Finescale Dace, Iowa Dater, Lake Chub, Northern Pearl Dace, Northern Redbelly Dace, White Sucker and Yellow Perch. Water temperature measurements and fish species indicate the thermal guild classification for the lake is a warm to cool water fish habitat. Methylmercury concentrations in fish tissue samples were above guidelines, while selenium concentrations were below guidelines.

All water quality measurements were within guidelines. All sediment quality measurements for TOC were above the guidelines that characterize severe levels. In addition, concentrations above guidelines were recorded for arsenic, copper and manganese. The benthic invertebrate community in the lake was relatively high in taxa richness and diversity.

4.6.6.4 UNNAMED WATERBODY 4

Unnamed Waterbody 4 is classified as a small pond with a maximum depth of 2 m. Fish habitat was not assessed at this lake due to inaccessibility. Four fish species were sampled from the lake, including Brook Stickleback, Central Mudminnow, Fathead Minnow and Finescale Dace.

4.6.6.5 UNNAMED WATERBODY 5

Unnamed Waterbody 5 is a small pond with lentic habitat characteristic of the small, shallow waterbodies on the Property that are likely to support a spawning, rearing and foraging habitat for small-bodied and potentially large-bodied fish species. The pond has a wide riparian floodplain with shrubs, grasses, sedges and mixed coniferous forest including Black Spruce, Tamarack and White Spruce. The substrate composition consists of submerged *Sphagnum* moss and fine-grained sediments.

No fish species were sampled from the pond, but temperature measurements indicate the thermal guild classification for the pond represents a cool water fish habitat. Water quality measurements indicated that DO and pH were within identified guidelines. All sediment quality measurements for TOC were above the guidelines. The benthic invertebrate community in the pond was similar to other shallow lakes and ponds on the Property.

4.6.6.6 UNNAMED WATERBODY 6

Unnamed Waterbody 6 is a shallow lake with a maximum depth of 1.78 m and a lentic habitat characteristic of the small, shallow waterbodies on the Property. It has a wide riparian habitat comprised of grasses, sedges and shrubs along the northwest margin and outlet to Dixie Creek. The upland

vegetation is mostly coniferous species such as Black Spruce. Sediment consists of silt with some clay and fine sand.

DNA from seven fish species was found in the lake, and five species were sampled: Blackchin Shiner, Blacknose Shiner, Fathead Minnow, Northern Pike and Yellow Perch. Mercury concentrations in the fish tissue sampled were less than the Ontario consumption guidelines for all groups. Methylmercury concentrations were above guideline in all samples, and selenium concentrations were below guidelines in all samples. Water quality measurements for DO and pH were generally within identified guidelines, with the exception of one pH value in the spring and one DO value in the fall. Sediment quality measurements for TOC were all above the guidelines and metal parameters found to have concentrations above guidelines included arsenic, cadmium, chromium, copper, mercury and nickel. The benthic invertebrate community in the lake was similar to other shallow lakes and ponds on the Property.

4.6.7 UNNAMED WATERCOURSES

4.6.7.1 UNNAMED WATERCOURSE 1

Unnamed Watercourse 1 is a riverine habitat with a steep gradient and beaver activity. The stream is surrounded by deciduous and coniferous forest with alder, grasses and sedges along the banks. Sand, silt and occasional gravel form the substrate. A total of 20 fish were sampled from the stream, including Central Mudminnow, Golden Shiner, Northern Pike, Northern Pearl Dance and White Sucker. Mercury concentrations in fish tissue samples were below all Ontario consumption guidelines and Health Canada Guidelines. Methylmercury concentrations were all greater than guideline while selenium concentrations were all below the guidelines. DO and pH values predominantly met the guidelines except for one DO and four pH measurements.

Unnamed Watercourse 1A flows into Unnamed Watercourse 1 and has a broad floodplain with floating herbaceous mats. The upper reaches emerge from groundwater springs. The substrate consists mostly of organic debris. No fish were sampled from this watercourse; however, temperature measurements indicate that it could be classified as a cold water fish habitat. None of the pH measurements met the guidelines, while all except one DO measurement were generally within identified guidelines.

Unnamed Watercourse 1B has a swampy network of shallow, slow flowing watercourses and beaver dams within a broad floodplain, with most of the flow occurring underground. Substrate mostly consists of leaf litter. A total of 63 fish were caught from the watercourse, including Brook Stickleback, Central Mudminnow and Finescale Dace. Temperature measurements and species present indicate that it is a warm to cold water fish habitat. Most DO and pH measurements did not meet the guidelines.

Unnamed Watercourse 1B-03 has a swampy network of shallow, slow flowing watercourses and beaver dams within a broad floodplain with most of its flow occurring underground. Substrate mostly consists of leaf litter. A total of 10 fish were sampled from the watercourse, including Brook Stickleback and Central Mudminnow. Temperature measurements and species present indicate that it is a cool to cold water fish habitat. pH measurements did not meet the guidelines.

4.6.7.2 UNNAMED WATERCOURSE 2

Unnamed Watercourse 2 is a narrow, shallow stream located in a riparian area dominated by alder and a dense mixed upland forest. The stream is near dry with a series of beaver created pools and impoundments. Silt, detritus and occasional large boulders form the substrate. A total of 51 fish were sampled in the watercourse, including Brook Stickleback, Central Mudminnow, and Slimy Sculpin. Mercury concentrations in fish tissue samples were below all Ontario consumption guidelines and Health Canada guidelines. Methylmercury concentrations were all greater than guidelines. Selenium concentrations were all below guidelines. DO and pH measurements were generally within identified guidelines except for DO on three occasions.

4.6.7.3 UNNAMED WATERCOURSE 3

Unnamed Watercourse 3 is a wide stream with moderate depth and dense deciduous and coniferous forest. The water is dark in colour and the substrate is predominantly clay with eroded sections of bank. A

total of 1,705 fish were sampled from the stream, including Brook Stickleback, Central Mudminnow, Finescale Dace, Northern Redbelly Dace, Slimy Sculpin and White Sucker. Methylmercury concentrations in fish tissue samples included several measurements that were above the guideline. All selenium concentrations were below the guidelines. All DO and pH measurements met the guidelines except for one DO measurement. Sediment quality measurements for TOC were above guidelines at all stations and measurements above the guidelines were also observed for arsenic and manganese. The benthic invertebrate community in the stream had low diversity and evenness compared to other Dixie Creek tributaries.

Unnamed Watercourse 3A is a tributary of Unnamed Watercourse 3 and is a narrow, shallow stream with dense deciduous and coniferous forest. The water is dark in colour and the substrate is predominantly leaf litter and silt. A total of 149 fish were sampled from the stream, including Brook Stickleback, Central Mudminnow and Northern Pike. All DO measurements were within identified guidelines, while pH in spring was not. Sediment quality measurements for TOC were all greater than guidelines, and metal concentrations greater than guidelines were also observed for chromium, copper, iron, manganese and nickel. The benthic invertebrate community in the stream had high diversity and evenness compared to other Dixie Creek tributaries.

Unnamed Watercourse 3B is a tributary to Unnamed Watercourse 3 and is a narrow, shallow stream within dense deciduous and coniferous forest. The water is dark in colour and the substrate is predominantly clay with eroded sections of bank. A total of 97 fish were sampled from the stream, including Brook Stickleback and Central Mudminnow. All methylmercury concentrations from fish tissue samples were greater than the guideline. All selenium concentrations were below guidelines. All DO measurements were within identified guidelines, while all the pH measurements were not. All sediment quality measurements for TOC were greater than guidelines. The benthic invertebrate community was similar to other Dixie Creek tributaries and to habitats in other tributaries.

4.6.7.4 UNNAMED WATERCOURSE 4

Unnamed Watercourse 4 is a narrow, shallow stream within a dense deciduous and coniferous forest. The stream has a large gradient with alternating pools and impoundments. The water is dark in colour, and the substrate is predominantly muck and silt. A total of 129 fish were sampled from the stream, including Brook Stickleback, Central Mudminnow, Fathead Minnow, Northern Pike, Northern Redbelly Dace, Rock Bass, White Sucker and Yellow Perch. All methylmercury concentrations observed in fish tissue samples were greater than the guideline, and all selenium concentrations observed were below guidelines. Most sediment quality measurements for TOC were above guidelines, and metal concentrations above guidelines were also noted for arsenic, chromium, copper and iron. This stream had the highest average taxa richness in the benthic invertebrate community compared to all other locations.

4.6.7.5 UNNAMED WATERCOURSE 6

Unnamed Watercourse 6A is a narrow, shallow stream surrounded by coniferous and deciduous forest. The water is dark in colour and the substrate is predominantly cobble, muck and silt. A total of 28 fish were sampled from the stream, including Brook Stickleback and Central Mudminnow. Methylmercury concentrations from fish tissue samples were greater than guideline, while selenium concentrations were below guidelines. All DO measurements and one pH value measured below the guidelines. The benthic invertebrate community had similar metrics to other nearby watercourses.

Unnamed Watercourse 6A-01 is a small, groundwater fed water course for Unnamed Waterbody 6. It had no flow present when surveyed.

Unnamed Watercourse 6A-02 is a narrow, shallow stream surrounded by coniferous and deciduous trees. No fish were sampled from the stream during surveying. All pH measurements were within identified guidelines, and all DO measurements were not.

Unnamed Watercourse 6B is a narrow, shallow stream with undercut banks and silt and muck substrate. It is surrounded by dense coniferous and deciduous trees. A total of 206 fish were sampled from the stream, including Brook Stickleback and Central Mudminnow. All methylmercury concentrations from fish tissue samples were greater than the guideline, while all selenium concentrations were below the

guidelines. All DO measurements were within identified guidelines, while several pH measurements were not. The stream had similar benthic invertebrate community metrics as other unnamed watercourses.

Unnamed Watercourse 6B-01 is a forested, shallow stream with low flow and a small floodplain. The substrate is predominantly silt and muck with occasional boulders. A total of 185 fish were sampled from the stream, including Brook Stickleback and Central Mudminnow. All DO and pH measurements were generally within identified guidelines, except for two pH values. All sediment quality measurements for TOC were greater than guidelines, and metal concentrations greater than guidelines were noted for chromium, copper, iron, manganese and nickel. The benthic invertebrate community has a greater average TID than most other locations.

Unnamed Watercourse 6B-02 is a narrow, shallow stream heavily impounded with beaver dams. It has an alder dominated riparian area, dense mixed upland forest, and the substrate is predominantly silt and detritus. A total of 256 fish were sampled from the stream, including Brook Stickleback and Central Mudminnow. All methylmercury concentrations in fish tissue samples were greater than guideline, while all selenium concentrations were below guidelines.

Unnamed Watercourse 6C is a stream with large beaver pools and overhanging alders, leading to a beaver impounded wetland. The water is dark in colour and the substrate is silt and muck.

A total of 807 fish were sampled from the stream, including Brook Stickleback, Central Mudminnow, Finescale Dace and Northern Redbelly Dace. All methylmercury concentrations in fish tissue samples were greater than guideline, while all selenium concentrations were less than the guidelines. Sediment quality measurements showed metal concentrations above the guidelines for arsenic, chromium, copper, iron, manganese and nickel. The benthic invertebrate community in the stream was similar to other nearby watercourses.

4.6.7.6 UNNAMED WATERCOURSE 7

Unnamed Watercourse 7 is a wide riverine section of creek with a broad floodplain and frequent, strong meander bends. The substrate is predominantly soft, fine-grained sediments with occasional boulder. A total of eight fish were sampled from the creek, including Northern Pike and Yellow Perch. The Northern Pike tissue sampled generally had mercury concentrations below the Ontario consumption and Health Canada guidelines, with the exception of one sample that was above the guidelines developed for women of child-bearing age and children. All methylmercury samples were greater than guideline, and selenium concentrations remained below the guidelines. The Yellow Perch tissue samples had mercury concentrations below the Ontario consumption and Health Canada guidelines and methylmercury concentrations that were above guideline. Selenium concentrations were below guidelines. All DO and pH measurements were within identified guidelines. Sediment quality measurements for TOC were above the guidelines at all locations, and metal concentrations above guidelines were noted for chromium, copper, iron, manganese and nickel. The benthic invertebrate community has similar metrics to other unnamed watercourses.

Unnamed Watercourse 7A-03 is a shallow, narrow stream with a series of pools and impoundments and a mixed coniferous and deciduous forest. The water is dark in colour, and the substrate it predominantly silt and gravel. No fish were sampled at this location. All the pH measurements and three DO measurements were below guidelines. Sediment quality measurements for TOC were above the guidelines at all stations. The benthic invertebrate community had higher diversity and evenness compared to other unnamed watercourses.

Unnamed Watercourse 7A-07 is a shallow, narrow stream within a mixed coniferous and deciduous forest. The water is dark in colour, and the substrate is predominantly silt. A total of 157 fish were sampled from the stream, including Brook Stickleback, Central Mudminnow and Golden Shiner. Methylmercury concentrations in fish tissue samples were greater than guideline, while selenium concentrations remained below guidelines. DO and pH measurements were generally less than the guidelines. Sediment quality measurements for TOC were above the guidelines at all locations, and metal parameters with concentrations above guidelines were also noted for arsenic, copper, iron, manganese and nickel. The benthic invertebrate community had low Ephemeroptera, Plecoptera, and Trichoptera benthic invertebrate taxa groups compared to other unnamed watercourses.

Unnamed Watercourse 7A-08 is a shallow stream with a large drainage pool and impoundment in an alder dominated riparian and mixed coniferous and deciduous forest. The water is dark in colour, and the substrate is predominantly silt. A total of 163 fish were sampled from the stream, including Brook Stickleback, Central Mudminnow, Finescale Dace and Northern Pike. One methylmercury concentration in fish tissue samples was greater than guideline, and selenium concentrations were below guidelines. All pH and DO measurements were generally within identified guidelines, except for two pH measurements. Sediment quality measurements for TOC were greater than guidelines at all locations, and concentrations above the guidelines were also noted for arsenic, iron, manganese and nickel. The benthic invertebrate community had low diversity and evenness compared to other unnamed watercourses.

4.6.7.7 UNNAMED WATERCOURSE 8

Unnamed Watercourse 8 is a tributary of Gullrock Lake and is a shallow stream with high, eroded banks and an alder dominated riparian area with mixed coniferous and deciduous forest. The water is dark in colour, and the substrate is predominantly clay. A total of 752 fish species were sampled from the stream, including Brook Stickleback, Central Mudminnow, Fathead Minnow, Finescale Dace, Northern Pearl Dace, Northern Redbelly Dace and White Sucker. DO and pH and measurements were generally within identified guidelines except for one pH measurement. Sediment quality measurements for TOC were above guidelines at all stations in 2022, but no concentrations above guidelines were identified in 2023. The benthic invertebrate community was similar to other small streams; however, diversity was low in 2022.

Unnamed Watercourse 8B has high gradient drops and a series of beaver impounded pools within a mixed coniferous and deciduous forest with alder dominated riparian area. The water is dark in colour, and the substrate is predominantly silt and gravel. A total of 284 fish were sampled from the stream, including Brook Stickleback, Finescale Dace, Northern Pearl Dace and Northern Redbelly Dace. Methylmercury concentrations in fish tissue samples were all greater than guideline, and selenium concentrations were below guidelines. DO and pH measurements were generally within identified guidelines except for one pH measurement. The benthic invertebrate community had high richness compared to other unnamed watercourses.

4.7 SITE HISTORY AND POTENTIAL HAZARDS

A search of the Abandoned Mines Information System did not identify any mining hazards within the Project footprint. There are no historic mineral development projects within or adjoining the Project. Early exploration activities and timber harvesting in the area have been on-going since the 1990s. Timber harvesting is in the area is in accordance with the Red Lake Forest Management Plan.

There is a long history of documented exploration work on the Property beginning in 1945. Grass roots exploration has included mapping, prospecting, surface diamond drilling and geophysical work. Localized areas have been hydraulically and / or mechanically stripped to expose bedrock. Periodic drilling programs and related work included:

- Boyle, 1944, drilling and x-ray
- Belgold Mines, 1945, prospecting and trenching
- Caravelle Consolidated, 1969 to 1972, airborne and surface surveys, and drilling
- Newmont Mining, 1970, drilling
- Kerr Addison Mines, 1975, surface surveys and drilling
- Golden Terrace, 1985, airborne survey
- Mutual Resources, 1988 and 1989, surface survey, trenches and drilling
- Consolidated Silver Standard Mines, 1988, drilling
- Teck Resources / National Trust, 1989 to 1990, airborne and surface surveys, and drilling
- Noranda, 1990 to 1994, prospecting, surface surveys and drilling
- Cross Lake Minerals 1997 and 1998, trenching and drilling

- Canadian Golden Dragon Resources, 1996 to 1997, surface surveys and drilling
- Alberta Star Mining / Fronteer Development Group, 2003 and 2004, surface surveys and drilling
- Perry English, 2004 and 2005, surface surveys
- Grandview Gold / Fronteer Development Group, 2003 to 2011, surface surveys and drilling
- Larry Kenneth Herbert, 2011 and 2012, airborne survey and trenching
- Laurentian Goldfields, 2010 to 2013, prospecting and airborne survey.

There are no historic buildings or facilities present on the Property from this previous exploration work.

Great Bear Resources completed airborne and surface surveys, trenching and drilling starting in 2017. Core storage is present on the Property from the ongoing drilling programs of Great Bear Resources. Temporary contractor mobile drilling equipment, trailers and other mobile equipment may be periodically present on the Property from the ongoing surface exploration program.

Great Bear Resources is continuing a surface exploration drilling program to understand geological potential and study. As of September 2024, there has been over 800,000 m of diamond drilling on the Property. Existing facilities and equipment present associated with the AEX Program, with the exception of the core sheds, these facilities are mobile and / or temporary.

Table 4-1: Chukuni River Baseline Water Quality

Parameter	WQG PAL	CR-REF				CR-FDP				CR-DS			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (scientific units; s.u.)	6.5 - 8.5	31	7.16	7.47	7.73	27	6.89	7.26	7.72	23	6.59	7.11	7.57
Lab pH (s.u.)	6.5 - 8.5	40	7.38	7.47	7.59	29	7.38	7.44	7.55	28	7.34	7.47	7.6
Lab Conductivity (µS/cm)	-	40	74	80	89.9	29	74	81.6	90.5	28	76.2	83.2	92.5
Total Alkalinity (as $CaCO_3$)	-	26	28.5	28.5	31.9	22	29.3	32.5	33.8	18	30	32.4	35.9
Total Hardness (as $CaCO_3$)	-	40	35	37.6	40.9	29	35.7	37.7	40.3	28	36.9	40	41.8
Total Dissolved Solids	-	40	56.6	64.4	74.4	29	51	57.1	66	28	56.9	62.8	70.7
Total Suspended Solids	-	39	2.65	10.7	10.5	29	3.5	8.94	6.8	27	4.15	5.88	7.05
Total Ammonia (as N)	1.8	9	0.005	0.0183	0.0273	8	0.005	0.0176	0.0219	7	0.0137	0.0213	0.0209
Nitrate (as N)	3	40	0.00483	0.0522	0.0709	29	0.0063	0.0509	0.0777	28	0.00633	0.0358	0.03
Nitrite (as N)	0.06	40	0.0005	0.00905	0.015	28	0.0005	0.00635	0.015	28	0.0005	0.011	0.015
Phosphorus	0.03	40	0.017	0.027	0.03	29	0.022	0.033	0.032	28	0.020	0.028	0.032
Sulphate	218	38	4.92	5.71	6.59	29	4.77	5.47	6.23	27	4.13	4.76	5.97
Chloride	120	40	2.31	2.9	3	29	2.39	2.9	3	28	2.2	2.81	3
Dissolved Organic Carbon	-	39	10.3	11.8	13	29	11	12.2	13	27	11	12.7	14.3
Total Cyanide	-	33	0.0005	0.0022	0.005	28	0.0005	0.00231	0.005	23	0.0005	0.00246	0.005
Cyanide (weak acid dissociable; WAD)	-	25	0.0005	0.00124	0.0005	20	0.0005	0.00124	0.0005	15	0.0005	0.000947	0.0005
Cyanide (Free)	0.005	27	0.0005	0.000974	0.0009	23	0.0005	0.000959	0.000775	18	0.0005	0.00101	0.00108
Aluminum	1.0	40	0.0668	0.195	0.214	29	0.105	0.177	0.197	28	0.122	0.199	0.237
Aluminum (dissolved)	0.075	34	0.0113	0.0307	0.0315	25	0.01	0.029	0.0243	23	0.014	0.0263	0.0326
Antimony	0.02	40	0.00031	0.000377	0.00045	29	0.0003	0.000375	0.00045	28	0.00028	0.000361	0.00045
Arsenic	0.005	40	0.00606	0.00836	0.00913	29	0.00615	0.0082	0.00951	28	0.00572	0.00805	0.00964
Cadmium	0.0001	40	0.0000025	0.00000976	0.000008	29	0.0000025	0.0000224	0.00000825	28	0.0000025	0.0000228	0.00000845
Chromium	0.0089	40	0.000285	0.000707	0.00067	29	0.00032	0.000635	0.00061	28	0.000355	0.000655	0.00074
Cobalt	0.00078	40	0.0000915	0.000157	0.000176	29	0.0001	0.000143	0.00015	28	0.000112	0.00015	0.000173
Copper	0.005	40	0.00143	0.00175	0.00171	29	0.00139	0.00166	0.0017	28	0.00135	0.00348	0.00163
Iron	0.8	40	0.0969	0.236	0.263	29	0.15	0.286	0.259	28	0.171	0.264	0.328
Lead	0.003	40	0.0000518	0.000146	0.000153	29	0.00007	0.000124	0.00012	28	0.0000905	0.00014	0.000143
Molybdenum	0.073	40	0.000185	0.000223	0.00024	29	0.000192	0.00023	0.00024	28	0.000198	0.000259	0.000292
Nickel	0.025	40	0.00121	0.00148	0.00151	29	0.00122	0.00192	0.00147	28	0.0012	0.00135	0.00143
Selenium	0.001	40	0.0000895	0.000123	0.000127	29	0.000092	0.00028	0.00012	28	0.0000895	0.000415	0.000122
Silver	0.0001	40	0.000005	0.0000145	0.000025	28	0.000005	0.0000147	0.000025	28	0.000005	0.000017	0.000025
Strontium	2.5	40	0.0286	0.0298	0.0308	29	0.0284	0.0297	0.0316	28	0.0277	0.0303	0.0314
Thallium	0.0003	35	0.0000025	0.0000048	0.000005	28	0.0000025	0.00000496	0.000005	24	0.000005	0.00000465	0.000005
Tungsten	0.03	40	0.0000375	0.0000485	0.00005	28	0.00004	0.0000429	0.00005	28	0.00003	0.0000646	0.00005
Uranium	0.005	40	0.000087	0.000119	0.000133	29	0.000092	0.000116	0.000129	28	0.0000915	0.000121	0.000143
Vanadium	0.12	40	0.000414	0.000721	0.000813	29	0.00044	0.0007	0.000815	28	0.000628	0.000807	0.00088
Zinc	0.02	40	0.00138	0.00235	0.00225	28	0.0015	0.0027	0.00225	28	0.00138	0.00254	0.002
Zirconium	0.004	39	0.0001	0.000572	0.001	29	0.0001	0.000502	0.001	28	0.00024	0.00062	0.001
Mercury	0.000026	34	0.0000025	0.00000346	0.000005	28	0.0000025	0.00000295	0.000005	25	0.0000025	0.0000055	0.000005
Methylmercury (ng/L)	4	23	0.029	0.0456	0.057	21	0.035	0.072	0.049	16	0.05	0.0551	0.062
Ultra Low Mercury (ng/L)	26	24	0.748	1.22	1.61	22	0.68	1.49	1.35	17	0.76	1.22	1.81

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-2: Dixie Creek Baseline Water Quality

Parameter	WQG PAL	SW-03				SW-04				SW-08				SW-09			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	27	6.92	7.26	7.75	34	6.4	6.78	7.2	33	6.62	6.99	7.41	20	6.89	7.15	7.42
Lab pH (s.u.)	6.5 - 8.5	27	7.75	7.89	8.13	37	7.3	7.46	7.6	35	7.39	7.51	7.63	22	7.36	7.51	7.65
Lab Conductivity (µS/cm)	-	27	190	209	253	37	72.6	102	118	35	74.5	105	107	22	71	98	95.4
Total Alkalinity (as $CaCO_3$)	-	18	124	121	136	24	34.5	51.8	55.3	25	34.1	49.8	50.7	14	36.2	50.1	48.2
Total Hardness (as $CaCO_3$)	-	27	105	111	129	36	38.7	53.2	58	35	38.7	55.2	56.9	22	39.7	52.4	49.7
Total Dissolved Solids	-	27	141	155	178	37	69	90.6	97	35	66.8	92.8	100	22	71.5	90.3	96
Total Suspended Solids	-	27	4.6	41.7	27	37	5.3	8.61	10.7	35	6	13.6	12.1	22	7.35	18.6	18.5
Total Ammonia (as N)	1.8	8	0.0056	0.0254	0.0225	10	0.0185	0.029	0.033	9	0.021	0.0332	0.0413	6	0.0123	0.0228	0.0367
Nitrate (as N)	3	27	0.03	0.134	0.155	37	0.03	0.0672	0.0962	35	0.03	0.0846	0.113	22	0.0175	0.0554	0.0794
Nitrite (as N)	0.06	27	0.00085	0.00633	0.015	37	0.0005	0.0117	0.015	35	0.00065	0.00772	0.015	22	0.0005	0.00731	0.015
Phosphorus	0.03	27	0.026	0.050	0.056	37	0.027	0.036	0.041	35	0.027	0.038	0.042	22	0.033	0.045	0.048
Sulphate	218	27	1.11	2.54	3.2	37	0.77	0.881	1	34	0.864	1.36	1.11	22	0.733	1.25	1
Chloride	120	27	0.75	1.27	1.47	37	0.35	0.711	0.99	35	0.38	1.57	1.75	22	0.33	1.02	1.2
Dissolved Organic Carbon	-	27	4.85	15.8	18.2	37	17.1	20.2	22.8	35	16.2	18.9	21.8	22	18	21.1	23.9
Total Cyanide	-	27	0.0005	0.0033	0.005	33	0.0005	0.00247	0.005	33	0.0005	0.00355	0.005	22	0.0005	0.00232	0.005
Cyanide (WAD)	-	19	0.0005	0.00111	0.00125	22	0.0005	0.00109	0.00095	22	0.0005	0.00117	0.00118	14	0.0005	0.000736	0.0005
Cyanide (Free)	0.005	19	0.0005	0.000966	0.0013	25	0.0005	0.00107	0.0018	24	0.0005	0.00109	0.00161	14	0.0005	0.00065	0.0005
Aluminum	0.8	27	0.145	0.648	0.814	37	0.21	0.327	0.375	35	0.205	0.551	0.479	22	0.222	0.851	0.55
Aluminum (dissolved)	0.075	23	0.007	0.099	0.081	34	0.041	0.075	0.084	31	0.042	0.065	0.080	20	0.055	0.067	0.081
Antimony	0.02	27	0.00005	0.0002	0.00045	37	0.00005	0.00024	0.00045	34	0.00005	0.000221	0.00045	22	0.00005	0.0002	0.00045
Arsenic	0.005	27	0.00141	0.0024	0.00292	37	0.0019	0.0025	0.0027	35	0.00194	0.00246	0.00292	22	0.00208	0.00267	0.00337
Cadmium	0.0001	27	0.0000025	0.0000147	0.0000159	37	0.0000025	0.0000095	0.000009	35	5.25E-06	0.00000982	0.0000108	22	0.00000263	0.0000153	0.0000101
Chromium	0.0089	27	0.000405	0.00139	0.00179	37	0.00062	0.000844	0.00096	35	0.000548	0.00116	0.00109	22	0.000688	0.0018	0.00126
Cobalt	0.00078	27	0.000145	0.000449	0.00056	37	0.00016	0.000249	0.00028	35	0.00016	0.000292	0.000275	22	0.000213	0.000416	0.000315
Copper	0.005	27	0.000635	0.00212	0.00344	37	0.00101	0.00132	0.00139	35	0.00101	0.00147	0.00155	22	0.00113	0.00181	0.00151
Iron	0.8	27	0.29	0.90	1.16	37	0.60	0.79	0.91	35	0.55	0.94	0.95	22	0.62	1.19	0.95
Lead	0.003	27	0.000064	0.00026	0.000306	37	0.000146	0.000224	0.000266	35	0.000152	0.000288	0.000283	22	0.000198	0.000391	0.000313
Molybdenum	0.073	27	0.000659	0.000691	0.000776	37	0.000206	0.00028	0.00028	35	0.000216	0.000344	0.000375	22	0.000207	0.00264	0.000326
Nickel	0.025	27	0.000655	0.00175	0.0024	37	0.0008	0.00098	0.00106	35	0.00084	0.00172	0.00127	22	0.000968	0.00158	0.00129
Selenium	0.001	27	0.000098	0.000141	0.000169	37	0.00009	0.000183	0.000139	35	0.0000948	0.000153	0.000133	22	0.000109	0.000214	0.00014
Silver	0.0001	27	0.000005	0.0000399	0.000025	37	0.000005	0.0000399	0.000025	34	0.000005	0.0000168	0.000025	22	0.000005	0.0000138	0.000025
Strontium	2.5	27	0.049	0.0519	0.0564	37	0.0243	0.0333	0.037	35	0.026	0.0346	0.0356	22	0.0254	0.0334	0.0349
Thallium	0.0003	27	0.000005	0.00143	0.000006	34	0.000005	0.00000576	5.75E-06	33	0.000005	0.000451	0.000009	21	0.000005	0.0000138	0.000011
Tungsten	0.03	27	0.00005	0.000587	0.000125	37	0.00003	0.00033	0.00005	34	0.00005	0.000231	0.000245	22	0.00005	0.000125	0.000105
Uranium	0.005	27	0.00105	0.00116	0.00139	37	0.000194	0.000269	0.000288	35	0.000208	0.000369	0.000378	22	0.000218	0.000325	0.000373
Vanadium	0.12	27	0.00115	0.00231	0.00292	37	0.00107	0.00132	0.00138	35	0.00101	0.00168	0.00149	22	0.00137	0.00249	0.00177
Zinc	0.02	27	0.0015	0.00418	0.0043	37	0.0015	0.00219	0.003	34	0.0015	0.00357	0.0036	22	0.0015	0.00301	0.002
Zirconium	0.004	27	0.000265	0.000856	0.001	36	0.000348	0.000643	0.001	35	0.000405	0.000755	0.001	22	0.000485	0.000972	0.001
Mercury	0.000026	27	0.0000025	0.00000529	0.000005	34	0.0000025	0.00000632	0.000005	34	0.0000025	0.00000374	0.000005	22	0.0000025	0.0000056	0.000005
Methylmercury (ng/L)	4	20	0.066	0.147	0.198	4	0.0478	0.0695	0.0848	23	0.071	0.167	0.176	5	0.06	0.0759	0.086
Ultra Low Mercury (ng/L)	26	21	1.04	4.2	5.61	4	1.71	1.87	1.9	24	1.86	2.86	3.55	6	1.49	2.01	1.93

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-2: Dixie Creek Baseline Water Quality (Continued)

Parameter	WQG PAL	SW-15			
		Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	21	6.64	6.87	7.14
Lab pH (s.u.)	6.5 - 8.5	28	7.25	7.45	7.66
Lab Conductivity (µS/cm)	-	28	83	116	147
Total Alkalinity (as $CaCO_3$)	-	14	39.1	53	63.1
Total Hardness (as $CaCO_3$)	-	28	45.6	63.2	80.3
Total Dissolved Solids	-	28	80	104	130
Total Suspended Solids	-	28	5	7.53	10.3
Total Ammonia (as N)	1.8	4	0.00408	0.0134	0.0215
Nitrate (as N)	3	28	0.0291	0.0748	0.105
Nitrite (as N)	0.06	28	0.00318	0.0187	0.015
Phosphorus	0.03	28	0.017	0.033	0.033
Sulphate	218	26	1	1.05	1
Chloride	120	28	0.5	1.3	2
Dissolved Organic Carbon	-	28	17.9	22	24.8
Total Cyanide	-	20	0.00258	0.00388	0.005
Cyanide (WAD)	-	9	0.0005	0.00137	0.0013
Cyanide (Free)	0.005	13	0.0005	0.00145	0.0025
Aluminum	0.8	28	0.215	0.363	0.454
Aluminum (dissolved)	0.075	22	0.042	0.077	0.098
Antimony	0.02	28	0.000095	0.000338	0.00045
Arsenic	0.005	28	0.00215	0.00261	0.00301
Cadmium	0.0001	28	0.00000371	0.0000073	0.0000085
Chromium	0.0089	28	0.000685	0.000989	0.00129
Cobalt	0.00078	28	0.000168	0.000248	0.000299
Copper	0.005	28	0.000983	0.00123	0.00146
Iron	0.8	28	0.50	0.75	0.98
Lead	0.003	28	0.000139	0.000219	0.000273
Molybdenum	0.073	28	0.000298	0.000515	0.000601
Nickel	0.025	28	0.0009	0.00105	0.0012
Selenium	0.001	28	0.00008	0.000102	0.000131
Silver	0.0001	28	0.000014	0.0000199	0.000025
Strontium	2.5	28	0.0283	0.0373	0.046
Thallium	0.0003	24	0.0000025	0.00000571	0.00000763
Tungsten	0.03	28	0.00003	0.0000454	0.00005
Uranium	0.005	28	0.00017	0.000239	0.000285
Vanadium	0.12	28	0.000968	0.00127	0.0014
Zinc	0.02	28	0.0015	0.00351	0.00313
Zirconium	0.004	27	0.00092	0.000958	0.001
Mercury	0.000026	22	0.00000313	0.00000507	0.000005
Methylmercury (ng/L)	4	5	0.301	0.345	0.309
Ultra Low Mercury (ng/L)	26	5	2.69	3.84	3.35

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-3: Unnamed Watercourses Flowing to Dixie Creek Baseline Water Quality

Parameter	WQG PAL	SW-02				SW-05				SW-06				SW-07			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	10	5.85	6.14	6.68	2	-	5.68	-	3	6.22	6.41	6.57	3	6.28	6.39	6.57
Lab pH (s.u.)	6.5 - 8.5	11	7.14	7.22	7.32	2	-	6.79	-	3	6.87	7.13	7.46	3	7.04	7.28	7.41
Lab Conductivity (µS/cm)	-	11	61.8	71.6	80	2	-	73	-	3	63.8	103	129	3	89.1	111	129
Total Alkalinity (as $CaCO_3$)	-	4	24.1	29.7	34.1	0	-	-	-	1	-	13.1	-	1	-	34.5	-
Total Hardness (as $CaCO_3$)	-	11	40.2	46.5	52.9	2	-	45.1	-	3	42.5	60.6	74.1	3	52.3	63.6	73.9
Total Dissolved Solids	-	11	106	126	156	2	-	135	-	3	126	142	157	3	135	137	139
Total Suspended Solids	-	11	5.1	11.2	16.7	2	-	10	-	3	3.5	22.9	32.9	3	4	4.7	5.55
Total Ammonia (as N)	1.8	2	-	0.0174	-	0	-	-	-	0	-	-	-	0	-	-	-
Nitrate (as N)	3	11	0.03	0.307	0.0511	2	-	0.03	-	3	0.0345	0.0447	0.052	3	0.0224	0.0582	0.08
Nitrite (as N)	0.06	11	0.015	0.0125	0.015	2	-	0.015	-	3	0.00775	0.0102	0.015	3	0.00775	0.0102	0.015
Phosphorus	0.03	11	0.0283	0.0401	0.0385	2	-	0.054	-	3	0.023	0.0417	0.0555	3	0.0178	0.0285	0.037
Sulphate	218	5	1	1.53	1	2	-	1	-	2	1.04	1.08	1.11	3	0.72	0.813	1
Chloride	120	11	2	2.2	2.49	2	-	3	-	3	2.12	2.41	3	3	1.19	1.79	2.5
Dissolved Organic Carbon	-	11	35.3	40.9	49	2	-	45.5	-	3	34	41	47.5	3	29.3	35.5	43.3
Total Cyanide	-	11	0.005	0.00427	0.005	2	-	0.005	-	3	0.0031	0.00373	0.005	3	0.00275	0.0035	0.005
Cyanide (WAD)	-	3	0.001	0.00233	0.00325	0	-	-	-	1	-	0.0014	-	1	-	0.0011	-
Cyanide (Free)	0.005	3	0.0008	0.00137	0.0018	0	-	-	-	1	-	0.0014	-	1	-	0.001	-
Aluminum	0.71	11	0.31	0.684	0.512	2	-	0.359	-	3	0.253	0.446	0.611	3	0.197	0.274	0.332
Aluminum (dissolved)	0.075	9	0.082	0.12	0.168	2	-	0.261	-	3	0.195	0.326	0.45	3	0.081	0.157	0.226
Antimony	0.02	11	0.00045	0.000402	0.00045	2	-	0.00045	-	3	0.000315	0.00036	0.00045	3	0.00025	0.000317	0.00045
Arsenic	0.005	11	0.00383	0.00511	0.0055	2	-	0.00755	-	3	0.0037	0.00396	0.00434	3	0.0022	0.003	0.0034
Cadmium	0.0001	11	0.00000775	0.0000116	0.0000135	2	-	0.0000175	-	3	0.0000105	0.000013	0.0000166	3	0.0000138	0.0000272	0.000038
Chromium	0.0089	11	0.000705	0.00142	0.00123	2	-	0.00137	-	3	0.00102	0.00129	0.00152	3	0.000625	0.000873	0.00107
Cobalt	0.00078	11	0.000239	0.000644	0.000459	2	-	0.00107	-	3	0.000195	0.000387	0.000514	3	0.000185	0.000323	0.000435
Copper	0.005	11	0.00105	0.00171	0.00188	2	-	0.0012	-	3	0.00145	0.00191	0.00251	3	0.0013	0.0015	0.0018
Iron	0.8	11	0.61	1.07	0.948	2	-	2.87	-	3	0.927	1.05	1.23	3	0.343	0.655	0.876
Lead	0.003	11	0.000195	0.000326	0.000308	2	-	0.00016	-	3	0.000065	0.000171	0.000227	3	0.0000425	0.000155	0.00022
Molybdenum	0.073	11	0.0000745	0.00011	0.00011	2	-	0.000415	-	3	0.000302	0.000464	0.00062	3	0.000199	0.000232	0.00027
Nickel	0.025	11	0.00125	0.00178	0.00182	2	-	0.00165	-	3	0.00175	0.00186	0.00205	3	0.00107	0.00171	0.00215
Selenium	0.001	11	0.0001	0.000111	0.000123	2	-	0.000165	-	3	0.000108	0.000132	0.000155	3	0.000065	0.000127	0.00016
Silver	0.0001	11	0.000025	0.0000214	0.000025	2	-	0.000025	-	3	0.000015	0.0000183	0.000025	3	0.000015	0.0000183	0.000025
Strontium	2.5	11	0.0274	0.0313	0.0334	2	-	0.0357	-	3	0.0324	0.0426	0.0491	3	0.0282	0.0353	0.0413
Thallium	0.0003	11	0.00000375	0.00000886	0.000006	2	-	0.00001	-	3	0.000007	0.00000867	0.0000095	3	0.000005	0.000006	0.0000065
Tungsten	0.03	11	0.00001	0.0000386	0.00005	2	-	0.00001	-	3	0.00001	0.0000233	0.00003	3	0.0000375	0.0000483	0.00006
Uranium	0.005	11	0.0000403	0.000064	0.00008	2	-	0.000135	-	3	0.000272	0.000371	0.000435	3	0.00007	0.0000883	0.000105
Vanadium	0.12	11	0.00114	0.002	0.00181	2	-	0.00176	-	3	0.00106	0.00157	0.00207	3	0.000695	0.00087	0.000975
Zinc	0.02	11	0.0015	0.00559	0.0075	2	-	0.0065	-	3	0.00305	0.00537	0.00705	3	0.0103	0.0208	0.0305
Zirconium	0.004	11	0.001	0.000994	0.001	2	-	0.001	-	3	0.001	0.00103	0.00105	3	0.000695	0.000797	0.001
Mercury	0.000026	11	0.000005	0.00000455	0.000005	2	-	0.0000075	-	3	0.0000075	0.00000853	0.0000103	3	0.0000055	0.000007	0.000008
Methylmercury (ng/L)	4	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
Ultra Low Mercury (ng/L)	26	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-3: Unnamed Watercourses Flowing to Dixie Creek Baseline Water Quality (Continued)

Parameter	WQG PAL	SW-08a				SW-10			
		Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	20	6.56	7.01	7.3	13	6.74	6.92	7.21
Lab pH (s.u.)	6.5 - 8.5	24	7.46	7.58	7.73	15	7.23	7.41	7.64
Lab Conductivity (µS/cm)	-	24	82.7	157	220	15	99.8	122	134
Total Alkalinity (as $CaCO_3$)	-	15	41.2	70.7	106	8	56.2	62.1	68.1
Total Hardness (as $CaCO_3$)	-	23	50.1	81.7	111	15	55.9	68.6	73.2
Total Dissolved Solids	-	24	80.3	150	191	15	90.2	115	137
Total Suspended Solids	-	24	6.38	19.2	28.6	15	3.38	9.79	9.5
Total Ammonia (as N)	1.8	8	0.0288	0.0367	0.037	4	0.0164	0.0217	0.0258
Nitrate (as N)	3	24	0.0209	0.079	0.0945	15	0.00893	0.0275	0.03
Nitrite (as N)	0.06	24	0.0005	0.00781	0.015	15	0.0005	0.00987	0.015
Phosphorus	0.03	24	0.0328	0.0524	0.0639	15	0.0216	0.0359	0.0391
Sulphate	218	23	1	5.69	7.63	11	0.67	0.815	1
Chloride	120	24	0.703	4.64	5.41	15	0.295	0.946	1.5
Dissolved Organic Carbon	-	24	19	27.3	33.6	15	21.9	27.6	33.5
Total Cyanide	-	21	0.0005	0.00209	0.005	14	0.001	0.003	0.005
Cyanide (WAD)	-	16	0.0005	0.00116	0.00138	8	0.0005	0.0013	0.00133
Cyanide (Free)	0.005	16	0.0005	0.000963	0.0016	8	0.0005	0.00104	0.00126
Aluminum	0.48	24	0.245	1.27	0.925	15	0.182	0.338	0.297
Aluminum (dissolved)	0.075	21	0.0455	0.197	0.201	13	0.063	0.09	0.109
Antimony	0.02	24	0.00005	0.00023	0.00045	15	0.00005	0.000285	0.00045
Arsenic	0.005	24	0.00304	0.00348	0.0043	15	0.00235	0.00286	0.0035
Cadmium	0.0001	24	0.00000795	0.0000277	0.0000169	15	0.0000025	0.00000898	0.0000089
Chromium	0.0089	24	0.000763	0.00267	0.00257	15	0.000585	0.00176	0.00123
Cobalt	0.00078	24	0.000238	0.000606	0.000568	15	0.000184	0.000289	0.000353
Copper	0.005	24	0.0011	0.00234	0.00224	15	0.000725	0.00105	0.00122
Iron	0.8	24	0.766	1.7	1.49	15	0.524	0.735	0.846
Lead	0.003	24	0.00012	0.000492	0.000464	15	0.00012	0.000188	0.00018
Molybdenum	0.073	24	0.000366	0.0014	0.000864	15	0.000433	0.000668	0.000658
Nickel	0.025	24	0.00129	0.00315	0.00308	15	0.00095	0.00153	0.00148
Selenium	0.001	24	0.000109	0.000271	0.000177	15	0.000103	0.000158	0.000171
Silver	0.0001	24	0.0000095	0.0000197	0.000025	15	0.000005	0.0000167	0.000025
Strontium	2.5	24	0.0301	0.0538	0.068	15	0.0323	0.0416	0.0457
Thallium	0.0003	21	0.000005	0.000753	0.000017	14	0.00000313	0.00000675	0.00000575
Tungsten	0.03	24	0.000135	0.000505	0.000618	15	0.00001	0.000053	0.00005
Uranium	0.005	24	0.000265	0.00116	0.000835	15	0.000127	0.000174	0.000192
Vanadium	0.12	24	0.00112	0.00312	0.00255	15	0.000763	0.00114	0.0012
Zinc	0.02	24	0.0015	0.00695	0.00813	15	0.0015	0.00299	0.004
Zirconium	0.004	24	0.000473	0.00131	0.001	15	0.000565	0.000805	0.001
Mercury	0.000026	21	0.0000025	0.00000532	0.000005	14	0.00000313	0.00000474	0.000005
Methylmercury (ng/L)	4	16	0.178	0.335	0.537	1	-	0.302	-
Ultra Low Mercury (ng/L)	26	17	2.94	5.83	7.15	1	-	3.31	-

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified Water Quality Guidelines for the Protection of Aquatic Life (WQG PAL).

Table 4-4: Unnamed North-flowing Watercourses Baseline Water Quality

Parameter	WQG PAL	SW-GL02				SW-17				SW-18				SW-TR			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	19	6.34	6.66	7.02	10	5.16	5.69	6.04	10	5.16	5.69	6.04	27	4.32	4.69	5.09
Lab pH (s.u.)	6.5 - 8.5	20	7	7.25	7.47	11	5.99	6.25	6.39	11	5.99	6.25	6.39	28	4.53	4.73	4.86
Lab Conductivity (µS/cm)	-	20	94	159	194	11	25.1	52.1	42.6	11	25.1	52.1	42.6	28	26.9	35.5	38.4
Total Alkalinity (as $CaCO_3$)	-	14	26.5	38.4	54.6	8	5.15	6.61	6.9	8	5.15	6.61	6.9	22	0.5	4.2	0.875
Total Hardness (as $CaCO_3$)	-	20	37.4	50.6	60.9	11	11.4	16.3	14	11	11.4	16.3	14	28	8.88	14.6	16.2
Total Dissolved Solids	-	20	100	127	141	11	56.7	78.1	88.5	11	56.7	78.1	88.5	28	75.5	106	135
Total Suspended Solids	-	20	1.08	4.48	5	11	1.85	6.43	7.45	11	1.85	6.43	7.45	28	1.85	81.7	66.2
Total Ammonia (as N)	1.8	2	0.0065	0.008	0.0095	1	0.005	0.005	0.005	1	0.005	0.005	0.005	10	0.0221	0.105	0.0768
Nitrate (as N)	3	20	0.0309	0.1	0.141	11	0.0025	0.0506	0.03	11	0.0025	0.0506	0.03	28	0.0025	0.0362	0.03
Nitrite (as N)	0.06	20	0.0005	0.00747	0.015	11	0.0005	0.00585	0.015	11	0.0005	0.00585	0.015	28	0.0005	0.00568	0.015
Phosphorus	0.03	20	0.009	0.025	0.034	11	0.042	0.056	0.068	11	0.042	0.056	0.068	27	0.018	0.085	0.096
Sulphate	218	18	1	1.87	2.3	11	0.15	0.986	1.28	11	0.15	0.986	1.28	27	0.15	0.642	1
Chloride	120	20	0.503	24.3	39	11	0.315	7.36	3.71	11	0.315	7.36	3.71	28	0.118	1.97	3
Dissolved Organic Carbon	-	20	6.88	19.6	29	11	28.7	31.2	36.6	11	28.7	31.2	36.6	28	44	57.9	67.3
Total Cyanide	-	19	0.0005	0.00278	0.005	10	0.000625	0.00209	0.00408	10	0.000625	0.00209	0.00408	28	0.0005	0.0029	0.005
Cyanide (WAD)	-	12	0.0005	0.00117	0.0014	7	0.0005	0.0008	0.00115	7	0.0005	0.0008	0.00115	20	0.0005	0.00129	0.0012
Cyanide (Free)	0.005	15	0.0005	0.00134	0.0022	8	0.0005	0.000913	0.00108	8	0.0005	0.000913	0.00108	23	0.0005	0.00132	0.00175
Aluminum	0.15	20	0.0329	0.137	0.205	11	0.376	0.493	0.633	11	0.376	0.493	0.633	28	0.52	1.29	1.12
Aluminum (dissolved)	0.075	18	0.0331	0.118	0.156	9	0.337	0.495	0.66	9	0.337	0.495	0.66	23	0.513	0.785	1.04
Antimony	0.02	20	0.00005	0.000245	0.00045	11	0.000115	0.000252	0.00045	11	0.000115	0.000252	0.00045	28	0.000185	0.000306	0.00045
Arsenic	0.005	20	0.00142	0.0025	0.00313	11	0.00338	0.00431	0.0056	11	0.00338	0.00431	0.0056	28	0.00622	0.00883	0.00926
Cadmium	0.0001	20	0.0000025	0.00000595	0.000007	11	0.00000755	0.0000111	0.0000125	11	0.00000755	0.0000111	0.0000125	28	0.0000161	0.0000329	0.0000368
Chromium	0.0089	20	0.000245	0.000665	0.000893	11	0.00137	0.00152	0.00164	11	0.00137	0.00152	0.00164	28	0.000838	0.00203	0.00184
Cobalt	0.00078	20	0.000193	0.000324	0.00047	11	0.00026	0.000521	0.000601	11	0.00026	0.000521	0.000601	28	0.000388	0.000653	0.000662
Copper	0.005	20	0.0003	0.000756	0.000955	11	0.00051	0.00079	0.00095	11	0.00051	0.00079	0.00095	28	0.000618	0.00215	0.00182
Iron	0.69	20	0.936	1.28	1.56	11	1.36	2.66	4.08	11	1.36	2.66	4.08	28	0.929	1.79	2.03
Lead	0.003	20	0.000025	0.0000677	0.000085	11	0.000078	0.000123	0.00015	11	0.000078	0.000123	0.00015	28	0.000403	0.00118	0.00104
Molybdenum	0.073	20	0.000222	0.000377	0.000483	11	0.0000595	0.000114	0.000108	11	0.0000595	0.000114	0.000108	28	0.0000638	0.000182	0.000183
Nickel	0.025	20	0.000288	0.000682	0.000813	11	0.00091	0.00108	0.0011	11	0.00091	0.00108	0.0011	28	0.000815	0.00169	0.0016
Selenium	0.001	20	0.0000503	0.0000778	0.0000963	11	0.00007	0.000102	0.000136	11	0.00007	0.000102	0.000136	28	0.000133	0.000238	0.000251
Silver	0.0001	20	0.000005	0.000014	0.000025	11	0.000005	0.0000123	0.000025	11	0.000005	0.0000123	0.000025	28	0.000005	0.0000134	0.000025
Strontium	2.5	20	0.0333	0.0428	0.0524	11	0.0152	0.0203	0.0192	11	0.0152	0.0203	0.0192	28	0.0126	0.0196	0.0211
Thallium	0.0003	20	0.0000025	0.0000044	0.000005	10	0.000005	0.00000585	0.000005	10	0.000005	0.00000585	0.000005	28	0.000005	0.0000149	0.0000145
Tungsten	0.03	20	0.0000375	0.000063	0.00005	11	0.00002	0.0000373	0.00005	11	0.00002	0.0000373	0.00005	28	0.0000475	0.0000461	0.00005
Uranium	0.005	20	0.000138	0.00017	0.000171	11	0.000047	0.0000751	0.000091	11	0.000047	0.0000751	0.000091	28	0.0000768	0.000213	0.00018
Vanadium	0.12	20	0.00025	0.000729	0.001	11	0.0019	0.00257	0.0031	11	0.0019	0.00257	0.0031	28	0.000745	0.00178	0.00165
Zinc	0.02	20	0.00138	0.00267	0.002	11	0.00225	0.00338	0.0046	11	0.00225	0.00338	0.0046	28	0.00498	0.00965	0.0107
Zirconium	0.004	19	0.000253	0.000608	0.001	10	0.00036	0.000595	0.00088	10	0.00036	0.000595	0.00088	28	0.00034	0.00063	0.001
Mercury	0.000026	20	0.0000025	0.00000502	0.000005	10	0.0000025	0.00000412	0.000005	10	0.0000025	0.00000412	0.000005	28	0.0000025	0.0000107	0.0000075
Methylmercury (ng/L)	4	4	0.144	0.16	0.174	4	0.3	0.329	0.356	4	0.3	0.329	0.356	20	0.197	0.879	1.24
Ultra Low Mercury (ng/L)	26	4	2.01	2.65	2.72	4	3.67	3.89	4.13	4	3.67	3.89	4.13	21	5.04	6.57	7.37

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified Water Quality Guidelines for the Protection of Aquatic Life (WQG PAL).

Table 4-5: Waterbody 6 and Genessee Lake Tributaries Baseline Water Quality

Parameter	WQG PAL	SW-11				SW-12				SW-12b				SW-13			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	23	6.24	6.52	6.79	4	4.46	4.67	5.49	8	6.35	6.65	6.96	4	4.83	4.97	6.06
Lab pH (s.u.)	6.5 - 8.5	24	7.07	7.29	7.55	5	6.56	6.62	6.63	8	6.67	6.94	7.23	5	7.04	7.23	7.42
Lab Conductivity (µS/cm)	-	24	106	167	206	5	36	37.2	42	8	83	103	118	5	161	167	176
Total Alkalinity (as $CaCO_3$)	-	16	48	74	101	0	-	-	-	8	32.1	42.8	48.1	0	-	-	-
Total Hardness (as $CaCO_3$)	-	24	56.6	91.9	125	5	18.1	21	22.1	8	49.1	53.1	59.1	5	48.6	51	52.6
Total Dissolved Solids	-	24	165	185	211	5	60	77.4	103	8	83.4	119	142	5	134	134	143
Total Suspended Solids	-	24	4.95	39.2	21.7	5	9	12.2	11	8	2	14.8	18.7	5	1	16.6	3
Total Ammonia (as N)	1.8	7	0.0486	0.162	0.266	0	-	-	-	5	0.0214	0.751	1.85	0	-	-	-
Nitrate (as N)	3	24	0.0116	0.0806	0.03	5	0.03	1.7	0.08	8	0.0025	0.00648	0.00928	5	0.03	0.05	0.03
Nitrite (as N)	0.06	24	0.0005	0.00671	0.015	5	0.015	0.015	0.015	8	0.0005	0.00278	0.00278	5	0.015	0.015	0.015
Phosphorus	0.03	24	0.049	0.083	0.086	5	0.021	0.042	0.051	8	0.019	0.153	0.164	5	0.017	0.033	0.026
Sulphate	218	21	1	2.55	3.76	3	1	1	1	8	0.3	0.965	0.943	3	1	1	1
Chloride	120	24	2.76	6.74	8.79	5	0.5	1	1	8	0.285	2.15	3.39	5	33	34.8	36
Dissolved Organic Carbon	-	24	37.8	41.7	48.8	5	22	26.6	33	8	33.1	39.8	48.1	5	26	28.2	28
Total Cyanide	-	24	0.00145	0.00296	0.005	4	0.005	0.005	0.005	5	0.0015	0.00146	0.0017	4	0.005	0.005	0.005
Cyanide (WAD)	-	16	0.00139	0.00191	0.00181	0	-	-	-	8	0.00118	0.00124	0.0015	0	-	-	-
Cyanide (Free)	0.005	17	0.0014	0.00166	0.0018	0	-	-	-	8	0.000875	0.00113	0.00143	0	-	-	-
Aluminum	0.43	24	0.288	0.714	0.934	5	0.531	0.613	0.683	8	0.0917	0.177	0.259	5	0.14	0.167	0.21
Aluminum (dissolved)	0.075	19	0.162	0.273	0.392	4	0.343	0.421	0.448	8	0.0585	0.0911	0.122	4	0.0738	0.0978	0.118
Antimony	0.02	24	0.000148	0.000275	0.00045	5	0.00045	0.00045	0.00045	8	0.0000875	0.000103	0.000123	5	0.00045	0.00045	0.00045
Arsenic	0.005	24	0.00405	0.0076	0.00762	5	0.0045	0.00578	0.0061	8	0.00302	0.0035	0.00401	5	0.0042	0.00502	0.0046
Cadmium	0.0001	24	0.0000235	0.0000357	0.0000417	5	0.000021	0.000094	0.000027	8	6.33E-06	0.000011	0.0000126	5	0.000004	0.0000699	0.000018
Chromium	0.0089	24	0.00111	0.00176	0.00212	5	0.00123	0.00153	0.00165	8	0.000445	0.000696	0.00103	5	0.00053	0.000984	0.00114
Cobalt	0.00078	24	0.000906	0.00181	0.00223	5	0.00114	0.00182	0.00156	8	0.0000875	0.000339	0.000553	5	0.000269	0.000497	0.00057
Copper	0.005	24	0.00148	0.00235	0.00324	5	0.001	0.00106	0.0011	8	0.00064	0.00139	0.00194	5	0.0006	0.00068	0.0008
Iron	0.77	24	1.32	2.22	2.41	5	0.879	1.19	1.33	8	0.282	0.633	0.85	5	0.533	0.747	0.784
Lead	0.003	24	0.000181	0.000354	0.000365	5	0.00027	0.000366	0.00049	8	0.000087	0.000141	0.000165	5	0.000045	0.000064	0.0001
Molybdenum	0.073	24	0.000266	0.000466	0.000511	5	0.0002	0.000268	0.00034	8	0.000173	0.000201	0.000214	5	0.00021	0.000274	0.00037
Nickel	0.025	24	0.00289	0.00351	0.00382	5	0.0006	0.00082	0.0011	8	0.000965	0.00126	0.00173	5	0.0004	0.00072	0.0009
Selenium	0.001	24	0.00018	0.00025	0.00028	5	0.00015	0.00106	0.00018	8	0.00013	0.00014	0.00015	5	0.00010	0.00099	0.00015
Silver	0.0001	24	0.000005	0.0000147	0.000025	5	0.000025	0.000032	0.000025	8	0.000005	0.000006	0.000005	5	0.000025	0.000032	0.000025
Strontium	2.5	24	0.0398	0.0576	0.075	5	0.0202	0.0237	0.0256	8	0.0292	0.0348	0.0398	5	0.0372	0.0395	0.0418
Thallium	0.0003	24	0.000005	0.00000923	0.0000108	4	0.0000118	0.000014	0.0000153	8	0.000005	0.000005	0.000005	4	0.000006	0.00000825	0.0000103
Tungsten	0.03	24	0.00005	0.000134	0.000165	5	0.00002	0.000026	0.00003	8	0.00005	0.00005	0.00005	5	0.00001	0.00001	0.00001
Uranium	0.005	24	0.000152	0.000202	0.000217	5	0.000331	0.000381	0.000413	8	0.0000578	0.0000833	0.000113	5	0.000056	0.0000642	0.000075
Vanadium	0.12	24	0.00173	0.00268	0.00302	5	0.00139	0.00154	0.00177	8	0.00062	0.00086	0.00123	5	0.00064	0.000726	0.0008
Zinc	0.02	24	0.0015	0.0191	0.00718	5	0.003	0.0046	0.004	8	0.0015	0.0032	0.00433	5	0.002	0.0024	0.003
Zirconium	0.004	24	0.001	0.00124	0.00139	5	0.001	0.001	0.001	8	0.000255	0.000318	0.00042	5	0.001	0.001	0.001
Mercury	0.000026	24	0.000005	0.00000616	0.00000664	4	0.000005	0.0000125	0.000015	8	0.0000025	0.00000513	7.88E-06	4	0.000005	0.000005	0.000005
Methylmercury (ng/L)	4	7	0.77	1.01	1.29	0	-	-	-	1	-	0.21	-	0	-	-	-
Ultra Low Mercury (ng/L)	26	7	4.9	6.57	7.56	0	-	-	-	1	-	2.75	-	0	-	-	-

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-5: Waterbody 6 and Genessee Lake Tributaries Baseline Water Quality (Continued)

Parameter	WQG PAL	SW-16				GL-Trib			
		Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	3	6.22	6.4	6.51	6	7.04	7.26	7.43
Lab pH (s.u.)	6.5 - 8.5	4	6.72	6.81	7.04	6	7.42	7.46	7.51
Lab Conductivity (µS/cm)	-	4	189	247	340	6	67.9	73.6	79.1
Total Alkalinity (as $CaCO_3$)	-	2	28.5	29	29.5	6	31.5	34.4	37.3
Total Hardness (as $CaCO_3$)	-	4	43	48	62.3	6	37.4	39	40.4
Total Dissolved Solids	-	4	201	207	272	6	64.8	70.3	73.7
Total Suspended Solids	-	4	1.75	4	4.75	6	5.78	8.93	11.9
Total Ammonia (as N)	1.8	0	-	-	-	3	0.0064	0.00993	0.0124
Nitrate (as N)	3	4	0.03	0.118	0.178	6	0.0025	0.0103	0.0186
Nitrite (as N)	0.06	4	0.015	0.0363	0.0363	6	0.0005	0.00075	0.0005
Phosphorus	0.03	4	0.022	0.025	0.026	6	0.031	0.038	0.044
Sulphate	218	2	-	1	-	6	0.513	0.623	0.688
Chloride	120	4	52.5	72.8	89.3	6	0.205	0.228	0.24
Dissolved Organic Carbon	-	4	26.3	29.8	36.5	6	18.7	20.2	22.1
Total Cyanide	-	3	0.005	0.005	0.005	6	0.0005	0.00107	0.00163
Cyanide (WAD)	-	1	-	0.005	-	6	0.0005	0.000667	0.0005
Cyanide (Free)	0.005	2	-	0.0025	-	6	0.0005	0.000633	0.0005
Aluminum	0.43	4	0.149	0.163	0.167	6	0.0744	0.13	0.147
Aluminum (dissolved)	0.075	1	0.152	0.152	0.152	6	0.0376	0.0527	0.064
Antimony	0.02	4	0.00045	0.00045	0.00045	6	0.00005	0.00005	0.00005
Arsenic	0.005	4	0.004	0.00483	0.00588	6	0.00182	0.0025	0.00314
Cadmium	0.0001	4	0.0000055	0.0000065	0.000008	6	0.0000055	0.00000598	0.00000688
Chromium	0.0089	4	0.00074	0.00112	0.00137	6	0.000275	0.00042	0.00047
Cobalt	0.00078	4	0.000394	0.000448	0.000475	6	0.000115	0.000137	0.00014
Copper	0.005	4	0.000575	0.00075	0.000875	6	0.000723	0.000852	0.000958
Iron	0.77	4	0.621	0.627	0.727	6	0.31	0.401	0.466
Lead	0.003	4	0.000101	0.000124	0.000158	6	0.0000865	0.00011	0.000114
Molybdenum	0.073	4	0.000168	0.000178	0.00021	6	0.000154	0.000193	0.000206
Nickel	0.025	4	0.000675	0.0008	0.000875	6	0.00058	0.00066	0.000715
Selenium	0.001	4	0.00005	0.00011	0.00018	6	0.00009	0.00011	0.00012
Silver	0.0001	4	0.000025	0.000025	0.000025	6	0.000005	0.000005	0.000005
Strontium	2.5	4	0.0364	0.0391	0.0486	6	0.0234	0.0245	0.0255
Thallium	0.0003	3	0.00000525	0.0000065	0.0000085	6	0.000005	0.000005	0.000005
Tungsten	0.03	4	0.00001	0.0000325	0.0000425	6	0.00005	0.00005	0.00005
Uranium	0.005	4	0.0000633	0.000073	0.0000843	6	0.000143	0.000169	0.000179
Vanadium	0.12	4	0.00026	0.000425	0.00047	6	0.000718	0.000858	0.001
Zinc	0.02	4	0.00325	0.029	0.030	6	0.0015	0.0015	0.0015
Zirconium	0.004	4	0.001	0.001	0.001	6	0.000125	0.000222	0.000308
Mercury	0.000026	3	0.000005	0.000005	0.000005	6	0.0000025	0.0000025	0.0000025
Methylmercury (ng/L)	4	2	-	0.704	-	1	-	0.105	-
Ultra Low Mercury (ng/L)	26	2	-	5.58	-	1	-	1.45	-

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-6: Other Local Waterbodies Baseline Water Quality

Parameter	WQG PAL	Dixie Lake (DL-Ref)				Dixie Lake (DC-US)				Genessee Lake (SW-GL)				Genessee Lake (SW-GL Bottom)			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	7	7.3	7.34	7.68	13	6.93	7.16	7.51	27	7.21	7.46	7.79	16	6.53	6.85	7.14
Lab pH (s.u.)	6.5 - 8.5	7	7.37	7.4	7.58	22	7.17	7.34	7.54	28	7.5	7.52	7.63	16	7.16	7.36	7.56
Lab Conductivity (µS/cm)	-	7	66.6	75.9	81.7	22	60.3	75.8	85.8	28	63.6	67.9	69.9	16	68.4	73.6	79
Total Alkalinity (as $CaCO_3$)	-	7	30.5	35.1	38.5	10	31.3	38.4	51.5	23	31.7	34	34.9	16	32.7	34.9	37.3
Total Hardness (as $CaCO_3$)	-	7	36.5	39.3	40.6	21	34.5	41.7	46.3	28	31.9	33.6	36.1	16	33.6	35.5	37.7
Total Dissolved Solids	-	7	66.6	74.4	78.2	22	66.8	77.7	88.3	28	46	51.7	58.2	16	45.1	54	61.8
Total Suspended Solids	-	7	3.5	5.54	7.3	21	2	5.22	7	28	1.08	2.08	3.04	16	1.63	17	6.6
Total Ammonia (as N)	1.8	3	0.0065	0.017	0.023	4	0.0125	0.03	0.05	9	0.0125	0.0162	0.0193	7	0.0119	0.0258	0.0375
Nitrate (as N)	3	7	0.0059	0.0247	0.024	22	0.03	0.0982	0.118	28	0.0025	0.0159	0.03	16	0.0025	0.0605	0.0445
Nitrite (as N)	0.06	7	0.0005	0.000657	0.0005	22	0.00413	0.0135	0.015	28	0.0005	0.00591	0.015	16	0.0005	0.00214	0.0005
Phosphorus	0.02	7	0.032	0.040	0.046	21	0.021	0.033	0.038	27	0.012	0.020	0.020	16	0.020	0.045	0.036
Sulphate	218	7	0.568	0.69	0.74	21	0.86	1.11	1	28	0.6	0.948	1	16	0.535	0.572	0.653
Chloride	120	7	0.18	0.281	0.365	22	0.5	0.743	0.52	28	0.19	0.431	0.5	16	0.198	0.349	0.22
Dissolved Organic Carbon	-	7	19.9	21.7	24	21	16	17	20.7	28	10	11	11.4	16	10.2	10.8	11.5
Total Cyanide	-	6	0.0005	0.000583	0.0005	13	0.0012	0.00371	0.005	28	0.0005	0.00169	0.00245	16	0.0005	0.000581	0.0005
Cyanide (WAD)	-	7	0.0005	0.000571	0.0005	9	0.0005	0.00206	0.005	22	0.0005	0.00075	0.0005	16	0.0005	0.000594	0.0005
Cyanide (Free)	0.005	7	0.0005	0.000571	0.0005	11	0.0005	0.00141	0.0025	23	0.0005	0.000735	0.0005	16	0.0005	0.00055	0.0005
Aluminum	0.69	7	0.118	0.166	0.209	22	0.111	0.161	0.207	28	0.00878	0.0139	0.016	16	0.00973	0.0178	0.0174
Aluminum (dissolved)	0.075	7	0.044	0.0705	0.0892	15	0.0383	0.0514	0.0615	25	0.0027	0.00656	0.0068	16	0.00243	0.00528	0.00655
Antimony	0.02	7	0.00005	0.0000571	0.00005	22	0.00015	0.000341	0.00045	28	0.00005	0.000175	0.00045	16	0.00005	0.0000619	0.00005
Arsenic	0.005	7	0.00175	0.00275	0.00358	22	0.00171	0.00258	0.00283	28	0.0017	0.002	0.00209	16	0.00223	0.00493	0.00349
Cadmium	0.0001	7	0.0000025	0.00000368	0.00000473	22	0.000004	0.0000278	0.000009	28	0.0000025	0.0000178	0.0000025	16	0.0000025	0.00000234	0.0000025
Chromium	0.0089	7	0.000355	0.000461	0.00057	22	0.000383	0.000652	0.000725	28	0.000133	0.000272	0.00025	16	0.000108	0.000182	0.00025
Cobalt	0.00078	7	0.000135	0.000211	0.00019	22	0.000122	0.000174	0.00019	28	0.00005	0.0000605	0.00005	16	0.00005	0.0000763	0.000065
Copper	0.005	7	0.000825	0.00088	0.00092	22	0.00082	0.00111	0.0012	28	0.00025	0.000316	0.0003	16	0.00025	0.00025	0.00025
Iron	0.8	7	0.482	0.584	0.566	22	0.393	0.489	0.593	28	0.0863	0.151	0.183	16	0.227	0.933	0.797
Lead	0.003	7	0.000104	0.000132	0.000159	22	0.000122	0.000179	0.00022	28	0.000025	0.0000341	0.000045	16	0.000025	0.0000379	0.000025
Molybdenum	0.073	7	0.000194	0.000206	0.00023	22	0.000203	0.000313	0.000278	28	0.0000985	0.000125	0.000126	16	0.000106	0.000114	0.00012
Nickel	0.025	7	0.000633	0.000689	0.00076	21	0.00066	0.000917	0.0008	28	0.00025	0.000254	0.00025	16	0.00025	0.00025	0.00025
Selenium	0.001	7	0.000118	0.000134	0.000138	22	0.0000825	0.000328	0.00015	28	0.0000536	0.000249	0.0000833	16	0.0000548	0.000076	0.0000925
Silver	0.0001	7	0.000005	0.000005	0.000005	22	0.00001	0.0000216	0.000025	28	0.000005	0.0000116	0.00001	16	0.000005	0.00000469	0.000005
Strontium	2.5	7	0.0235	0.0255	0.0263	22	0.0234	0.0276	0.0319	28	0.0208	0.0223	0.0243	16	0.0215	0.0231	0.0242
Thallium	0.0003	7	0.000005	0.000005	0.000005	17	0.0000025	0.00000462	0.000005	28	0.000005	0.00000457	0.000005	16	0.000005	0.00000469	0.000005
Tungsten	0.03	7	0.00005	0.00005	0.00005	22	0.00001	0.0000241	4.75E-05	28	0.00005	0.0000454	0.00005	16	0.00005	0.00005	0.00005
Uranium	0.005	7	0.000195	0.000228	0.000245	22	0.000161	0.000203	0.000246	28	0.000036	0.0000391	0.0000403	16	0.0000358	0.0000431	0.0000453
Vanadium	0.12	7	0.00088	0.000976	0.00111	22	0.000695	0.000855	0.000995	28	0.00025	0.000234	0.00025	16	0.00025	0.000279	0.00025
Zinc	0.02	7	0.0015	0.00173	0.0015	22	0.001	0.00223	0.00275	28	0.0015	0.00218	0.0015	16	0.0015	0.0015	0.0015
Zirconium	0.004	7	0.000265	0.000281	0.00034	22	0.000468	0.000787	0.001	28	0.0001	0.000336	0.00055	16	0.0001	0.0001	0.0001
Mercury	0.000026	7	0.0000025	0.0000025	0.0000025	16	0.0000025	0.000039	0.000005	28	0.0000025	0.00000313	3.13E-06	16	0.0000025	0.00000234	0.0000025
Methylmercury (ng/L)	4	7	0.063	0.0881	0.111	1	-	0.043	-	19	0.0175	0.0264	0.029	3	0.0305	0.239	0.345
Ultra Low Mercury (ng/L)	26	7	1.76	2.42	2.55	1	-	1.36	-	19	0.465	0.678	0.84	3	0.585	0.97	1.17

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-6: Other Local Waterbodies Baseline Water Quality (Continued)

Parameter	WQG PAL	Unnamed Waterbody 1 (SW-01)				Unnamed Waterbody 6 (SW-14)				Unnamed Waterbody 6 (SW-14 Bottom)			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	31	5.63	6.11	6.54	15	6.8	7.14	7.6	7	6.97	7.3	7.78
Lab pH (s.u.)	6.5 - 8.5	35	6.44	6.56	6.7	22	7.18	7.39	7.6	7	7.51	7.53	7.66
Lab Conductivity (µS/cm)	-	35	35.8	48.6	49.4	22	85.5	102	115	7	88.4	98.9	101
Total Alkalinity (as $CaCO_3$)	-	25	10.2	16.4	17	10	35.5	57.1	60.2	7	34.4	39.8	41.7
Total Hardness (as $CaCO_3$)	-	35	21.4	29.8	30.7	21	39.2	50.5	57	7	40.9	78.1	56.9
Total Dissolved Solids	-	35	77	101	107	22	78.4	92.8	109	7	79.5	88.3	92.6
Total Suspended Solids	-	35	2.08	10.1	8.5	22	2.23	5.31	4.95	7	1.65	4.93	5.55
Total Ammonia (as N)	1.8	9	0.0133	0.026	0.024	3	0.0157	0.0205	0.0282	3	0.00375	0.0085	0.0115
Nitrate (as N)	3	35	0.0025	0.0312	0.03	22	0.0132	0.0344	0.03	7	0.0025	0.0068	0.00805
Nitrite (as N)	0.06	35	0.0005	0.00694	0.015	22	0.0005	0.0124	0.015	7	0.0005	0.0005	0.0005
Phosphorus	0.02	35	0.019	0.038	0.037	22	0.014	0.028	0.032	7	0.021	0.033	0.031
Sulphate	218	30	0.325	0.954	1	22	0.625	0.845	1	7	0.45	0.503	0.575
Chloride	120	35	0.12	1.3	2	22	4	5.88	7	7	3.92	4.43	5
Dissolved Organic Carbon	-	35	35.7	44.5	50.9	22	18	20.8	24.7	7	20.8	21.8	23.2
Total Cyanide	-	31	0.0013	0.00289	0.005	17	0.0005	0.00319	0.005	7	0.0005	0.000643	0.0005
Cyanide (WAD)	-	22	0.00106	0.00164	0.00183	10	0.0005	0.00185	0.00388	7	0.0005	0.000657	0.0005
Cyanide (Free)	0.005	24	0.00101	0.00144	0.00181	11	0.0005	0.00129	0.0025	7	0.0005	0.000714	0.0008
Aluminum	0.69	35	0.282	0.459	0.432	22	0.0364	0.064	0.0722	7	0.0334	0.0457	0.0531
Aluminum (dissolved)	0.075	32	0.232	0.314	0.396	15	0.0187	0.0263	0.0352	7	0.0196	0.0242	0.0248
Antimony	0.02	35	0.000163	0.000292	0.00045	22	0.00007	0.000326	0.00045	7	0.00005	0.0000586	0.00005
Arsenic	0.005	35	0.00448	0.00683	0.0058	22	0.0019	0.00293	0.00352	7	0.00203	0.00371	0.00313
Cadmium	0.0001	35	6.68E-06	0.0000123	0.0000145	22	0.0000015	0.0000232	5.05E-06	7	0.0000025	0.00000304	0.0000025
Chromium	0.0089	35	0.000658	0.00111	0.00103	22	0.00025	0.00044	0.00053	7	0.00025	0.000263	0.00025
Cobalt	0.00078	35	0.000173	0.000499	0.000508	22	0.000044	0.0000765	0.0000678	7	0.00005	0.0000871	0.00005
Copper	0.005	35	0.000605	0.00096	0.000955	22	0.000425	0.000547	0.000665	7	0.00025	0.000704	0.00056
Iron	0.8	35	0.559	1.62	1.17	22	0.118	0.314	0.312	7	0.0865	0.113	0.137
Lead	0.003	35	0.000143	0.000293	0.000272	22	0.000045	0.0000893	0.000109	7	0.0000565	0.000106	0.000106
Molybdenum	0.073	35	0.000076	0.000114	0.000134	22	0.000156	0.000223	0.00022	7	0.00016	0.000649	0.000209
Nickel	0.025	35	0.00078	0.00108	0.00105	22	0.00025	0.000469	0.000585	7	0.00025	0.000371	0.00052
Selenium	0.001	35	0.000116	0.00018	0.000175	22	0.00009	0.000337	0.000137	7	0.000072	0.0000929	0.00011
Silver	0.0001	35	0.000005	0.0000136	0.000025	22	0.000005	0.0000207	0.000025	7	0.000005	0.000005	0.000005
Strontium	2.5	35	0.018	0.0232	0.023	22	0.0254	0.0332	0.037	7	0.0269	0.075	0.0385
Thallium	0.0003	33	0.000005	0.0000068	0.000006	19	0.0000025	0.00000429	0.000005	7	0.000005	0.00000871	0.000005
Tungsten	0.03	35	0.00003	0.000054	0.00005	22	0.00001	0.00003	0.00005	7	0.00005	0.00005	0.00005
Uranium	0.005	35	0.0000625	0.0000881	0.0000933	22	0.0000453	0.0000632	0.0000798	7	0.000045	0.000563	0.000059
Vanadium	0.12	35	0.00069	0.00111	0.0011	22	0.00025	0.000388	0.000445	7	0.00025	0.00025	0.00025
Zinc	0.02	35	0.0015	0.00492	0.0055	22	0.00113	0.00361	0.003	7	0.0015	0.0023	0.0015
Zirconium	0.004	35	0.00037	0.000657	0.001	22	0.0001	0.000714	0.001	7	0.0001	0.0001	0.0001
Mercury	0.000026	32	0.0000025	0.00000516	0.00000518	17	0.0000025	0.00000485	0.000005	7	0.0000025	0.0000025	0.0000025
Methylmercury (ng/L)	4	5	0.274	0.284	0.299	10	0.0295	0.0491	0.0653	1	-	0.027	-
Ultra Low Mercury (ng/L)	26	6	4.56	5.67	6.24	10	1.92	2.52	2.68	1	-	2.09	-

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-7: Gullrock Lake Baseline Water Quality

Parameter	WQG PAL	GRL-01				GRL-01 (Bottom)				GRL-02				GRL-02 (Bottom)				GRL-03				GRL-03 (Bottom)			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	1	-	7.75	-	1	-	6.69	-	1	-	6.89	-	1	-	6.78	-	1	-	7.31	-	1	-	5.98	-
Lab pH (s.u.)	6.5 - 8.5	1	-	7.53	-	1	-	7.53	-	1	-	7.52	-	1	-	7.53	-	1	-	7.53	-	1	-	7.56	-
Lab Conductivity (µS/cm)	-	1	-	86.8	-	1	-	86	-	1	-	96.4	-	1	-	97	-	1	-	85.9	-	1	-	87.8	-
Total Alkalinity (as $CaCO_3$)	-	1	-	27.9	-	1	-	27.8	-	1	-	29.2	-	1	-	29	-	1	-	27.2	-	1	-	28.5	-
Total Hardness (as $CaCO_3$)	-	1	-	37.2	-	1	-	37.1	-	1	-	38	-	1	-	38.2	-	1	-	35.7	-	1	-	37	-
Total Dissolved Solids	-	1	-	66.8	-	1	-	68.1	-	1	-	73.5	-	1	-	64.5	-	1	-	71.5	-	1	-	68.1	-
Total Suspended Solids	-	1	-	3.5	-	1	-	3.3	-	1	-	2.3	-	1	-	2.9	-	1	-	2.1	-	1	-	1.5	-
Total Ammonia (as N)	1.8	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
Nitrate (as N)	3	1	-	0.0025	-	1	-	0.0025	-	1	-	0.0053	-	1	-	0.0025	-	1	-	0.0289	-	1	-	0.0293	-
Nitrite (as N)	0.06	1	-	0.0005	-	1	-	0.0011	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0019	-	1	-	0.0011	-
Phosphorus	0.02	1	-	0.027	-	1	-	0.029	-	1	-	0.028	-	1	-	0.028	-	1	-	0.033	-	1	-	0.032	-
Sulphate	218	1	-	6.52	-	1	-	6.49	-	1	-	5.68	-	1	-	5.64	-	1	-	6.92	-	1	-	7	-
Chloride	120	1	-	2.93	-	1	-	2.93	-	1	-	5.96	-	1	-	6.01	-	1	-	2.98	-	1	-	3	-
Dissolved Organic Carbon	-	1	-	11.4	-	1	-	11.2	-	1	-	12.4	-	1	-	12.3	-	1	-	11.6	-	1	-	11.3	-
Total Cyanide	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-
Cyanide (WAD)	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-
Cyanide (Free)	0.005	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-	1	-	0.0005	-
Aluminum	0.68	1	-	0.0701	-	1	-	0.0599	-	1	-	0.0502	-	1	-	0.0542	-	1	-	0.0481	-	1	-	0.0566	-
Aluminum (dissolved)	0.075	1	-	0.0055	-	1	-	0.0086	-	1	-	0.006	-	1	-	0.007	-	1	-	0.004	-	1	-	0.0082	-
Antimony	0.02	1	-	0.0003	-	1	-	0.00031	-	1	-	0.00029	-	1	-	0.00028	-	1	-	0.00028	-	1	-	0.00028	-
Arsenic	0.005	1	-	0.0105	-	1	-	0.0104	-	1	-	0.008	-	1	-	0.00801	-	1	-	0.011	-	1	-	0.0112	-
Cadmium	0.0001	1	-	0.000003	-	1	-	0.000003	-	1	-	0.000003	-	1	-	0.000003	-	1	-	0.000003	-	1	-	0.000003	-
Chromium	0.0089	1	-	0.0002	-	1	-	0.00022	-	1	-	0.00019	-	1	-	0.00017	-	1	-	0.00016	-	1	-	0.00023	-
Cobalt	0.00078	1	-	0.00005	-	1	-	0.00005	-	1	-	0.00005	-	1	-	0.00005	-	1	-	0.00005	-	1	-	0.00005	-
Copper	0.005	1	-	0.00138	-	1	-	0.00138	-	1	-	0.00108	-	1	-	0.00109	-	1	-	0.00128	-	1	-	0.00126	-
Iron	0.8	1	-	0.103	-	1	-	0.091	-	1	-	0.111	-	1	-	0.119	-	1	-	0.078	-	1	-	0.091	-
Lead	0.003	1	-	0.000059	-	1	-	0.000064	-	1	-	0.000025	-	1	-	0.000025	-	1	-	0.000025	-	1	-	0.00005	-
Molybdenum	0.073	1	-	0.000188	-	1	-	0.000182	-	1	-	0.000192	-	1	-	0.000189	-	1	-	0.000186	-	1	-	0.0002	-
Nickel	0.025	1	-	0.00131	-	1	-	0.00136	-	1	-	0.00102	-	1	-	0.00104	-	1	-	0.00123	-	1	-	0.00124	-
Selenium	0.001	1	-	0.000082	-	1	-	0.000057	-	1	-	0.000025	-	1	-	0.000141	-	1	-	0.000138	-	1	-	0.000107	-
Silver	0.0001	1	-	0.000005	-	1	-	0.000005	-	1	-	0.000005	-	1	-	0.000005	-	1	-	0.000005	-	1	-	0.000005	-
Strontium	2.5	1	-	0.0294	-	1	-	0.0317	-	1	-	0.031	-	1	-	0.0292	-	1	-	0.0295	-	1	-	0.0297	-
Thallium	0.0003	1	-	0.000005	-	1	-	0.000005	-	1	-	0.000005	-	1	-	0.000005	-	1	-	0.000005	-	1	-	0.000005	-
Tungsten	0.03	1	-	0.00005	-	1	-	0.00005	-	1	-	0.00005	-	1	-	0.00005	-	1	-	0.00005	-	1	-	0.00005	-
Uranium	0.005	1	-	0.000074	-	1	-	0.000073	-	1	-	0.000086	-	1	-	0.000085	-	1	-	0.00006	-	1	-	0.000056	-
Vanadium	0.12	1	-	0.00057	-	1	-	0.00054	-	1	-	0.00025	-	1	-	0.00025	-	1	-	0.00025	-	1	-	0.00025	-
Zinc	0.02	1	-	0.0015	-	1	-	0.0015	-	1	-	0.0015	-	1	-	0.0015	-	1	-	0.0015	-	1	-	0.0015	-
Zirconium	0.004	1	-	0.0001	-	1	-	0.0001	-	1	-	0.0001	-	1	-	0.0001	-	1	-	0.0001	-	1	-	0.0001	-
Mercury	0.000026	1	-	0.0000025	-	1	-	0.0000025	-	1	-	0.0000025	-	1	-	0.0000025	-	1	-	0.0000025	-	1	-	0.0000025	-
Methylmercury (ng/L)	4	1	-	0.02	-	1	-	0.016	-	1	-	0.031	-	1	-	0.03	-	1	-	0.026	-	1	-	0.03	-
Ultra Low Mercury (ng/L)	26	1	-	0.59	-	1	-	0.59	-	1	-	0.58	-	1	-	0.56	-	1	-	0.6	-	1	-	0.57	-

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-8: Pakwash Lake Baseline Water Quality

Parameter	WQG PAL	PL-01				PL-01 (Bottom)				PL-02				PL-02 (Bottom)			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	8	7.08	7.31	7.62	3	6.41	6.54	6.62	8	7.35	7.49	7.65	3	6.76	6.85	6.93
Lab pH (s.u.)	6.5 - 8.5	8	7.43	7.47	7.58	3	7.55	7.57	7.6	8	7.59	7.63	7.69	3	7.64	7.66	7.69
Lab Conductivity (µS/cm)	-	8	87.7	90.5	94.7	3	88.1	92	94.6	8	85.5	89.5	91.1	3	89.5	91.4	94.1
Total Alkalinity (as $CaCO_3$)	-	8	31	33.7	36.6	3	33.2	34.8	36.2	8	38.3	39.6	40.6	3	39.4	41.1	43.4
Total Hardness (as $CaCO_3$)	-	8	39.7	41.8	44.2	3	40.6	42.8	44.6	8	42.8	44.1	45.8	3	46.4	47.8	49.4
Total Dissolved Solids	-	8	65.3	71.2	78.1	3	74.8	79.4	85.1	8	63.8	72.9	84	3	73.9	77.9	83.5
Total Suspended Solids	-	8	4.33	5.34	5.9	3	6.4	15.7	20.4	8	3.65	5.84	6.83	3	8.05	31.7	44.4
Total Ammonia (as N)	1.8	3	0.0075	0.014	0.0185	0	-	-	-	3	0.0097	0.0128	0.0165	0	-	-	-
Nitrate (as N)	3	8	0.0025	0.0257	0.0296	3	0.0107	0.0173	0.0207	8	0.0025	0.0222	0.0375	3	0.0162	0.0196	0.0252
Nitrite (as N)	0.06	8	0.0005	0.000638	0.0005	3	0.0005	0.0014	0.00185	8	0.0005	0.000588	0.0005	3	0.0005	0.000733	0.00085
Phosphorus	0.02	8	0.021	0.023	0.025	3	0.024	0.030	0.033	8	0.022	0.026	0.030	3	0.023	0.029	0.033
Sulphate	218	8	4.25	4.97	5.8	3	4.66	5.04	5.53	8	1.8	2.36	2.44	3	1.96	2.39	2.64
Chloride	120	8	2.45	2.55	2.76	3	2.28	2.46	2.78	8	0.475	0.896	0.91	3	0.46	0.743	0.895
Dissolved Organic Carbon	-	8	13.7	14.4	15.4	3	14.5	14.7	15.1	8	12.2	14.2	15.8	3	15	15.5	16
Total Cyanide	-	8	0.0005	0.000575	0.0005	3	0.0005	0.000733	0.00085	8	0.0005	0.0007	0.0007	3	0.0005	0.000733	0.00085
Cyanide (WAD)	-	8	0.0005	0.0006	0.0005	3	0.0005	0.000767	0.0009	8	0.0005	0.000613	0.0005	3	0.0005	0.000767	0.0009
Cyanide (Free)	0.005	8	0.0005	0.000613	0.0005	3	0.0005	0.000767	0.0009	8	0.0005	0.000638	0.0005	3	0.0005	0.0008	0.00095
Aluminum	1.0	8	0.133	0.187	0.204	3	0.166	0.188	0.219	8	0.161	0.262	0.347	3	0.242	0.394	0.49
Aluminum (dissolved)	0.075	8	0.0211	0.0287	0.0322	3	0.0196	0.0225	0.0242	8	0.0266	0.0408	0.0514	3	0.0297	0.0406	0.0478
Antimony	0.02	8	0.00024	0.000263	0.000275	3	0.00021	0.000233	0.00026	8	0.00005	0.0000913	0.000113	3	0.00005	0.0000767	0.00009
Arsenic	0.005	8	0.00657	0.00792	0.00896	3	0.00702	0.0076	0.00806	8	0.00131	0.00248	0.00291	3	0.00145	0.00236	0.00286
Cadmium	0.0001	8	0.0000025	4.25E-06	0.0000054 8	3	0.000004 1	0.0000057 7	0.000007 4	8	0.000002 5	0.00000439	0.000006 5	3	0.0000054 5	0.0000091 7	0.000012 5
Chromium	0.0089	8	0.000345	0.00053	0.000673	3	0.00041	0.000447	0.000505	8	0.000398	0.000574	0.000608	3	0.00061	0.000933	0.00111
Cobalt	0.00078	8	0.00012	0.000148	0.000153	3	0.000145	0.000157	0.000175	8	0.00005	0.000115	0.000143	3	0.000095	0.000227	0.000315
Copper	0.005	8	0.00139	0.0015	0.00158	3	0.00142	0.00144	0.00149	8	0.00123	0.00132	0.00138	3	0.0013	0.00153	0.00172
Iron	0.8	8	0.196	0.266	0.285	3	0.269	0.286	0.316	8	0.21	0.285	0.306	3	0.319	0.538	0.675
Lead	0.003	8	0.0000884	0.000117	0.00013	3	0.000107	0.000124	0.000133	8	0.000077	0.00012	0.000145	3	0.000115	0.000245	0.000326
Molybdenum	0.073	8	0.000191	0.000224	0.000262	3	0.000198	0.000224	0.000239	8	0.000203	0.000222	0.000237	3	0.00018	0.000197	0.000226
Nickel	0.025	8	0.00131	0.00141	0.00145	3	0.00134	0.00136	0.00139	8	0.000658	0.000799	0.00099	3	0.000705	0.00111	0.00132
Selenium	0.001	8	0.000081	0.0000929	0.000112	3	0.000055 5	0.000075	0.0001	8	0.000067 8	0.000112	0.000096 3	3	0.0000515	0.000101	0.000139
Silver	0.0001	8	0.000005	0.000005	0.000005	3	0.000005	0.000005	0.000005	8	0.000005	0.000005	0.000005	3	0.000005	0.000005	0.000005
Strontium	2.5	8	0.0288	0.0298	0.031	3	0.0295	0.0302	0.0318	8	0.0239	0.0257	0.0265	3	0.0259	0.0264	0.0272
Thallium	0.0003	8	0.000005	0.000005	0.000005	3	0.000005	0.000005	0.000005	8	0.000005	0.000005	0.000005	3	0.000005	0.0000073 3	0.000008 5
Tungsten	0.03	8	0.00005	0.00005	0.00005	3	0.00005	0.00005	0.00005	8	0.00005	0.00005	0.00005	3	0.00005	0.00005	0.00005
Uranium	0.005	8	0.000109	0.000123	0.000137	3	0.00011	0.000124	0.000133	8	0.000091 5	0.000108	0.000117	3	0.000118	0.000133	0.000148
Vanadium	0.12	8	0.00068	0.000808	0.000815	3	0.000805	0.00085	0.000905	8	0.00075	0.000863	0.00102	3	0.000905	0.00124	0.00146
Zinc	0.02	8	0.0015	0.00161	0.0015	3	0.0015	0.0015	0.0015	8	0.0015	0.0015	0.0015	3	0.0015	0.00223	0.0026
Zirconium	0.004	8	0.0001	0.000203	0.00023	3	0.000255	0.000277	0.00031	8	0.000183	0.000226	0.000283	3	0.000305	0.000343	0.00038
Mercury	0.000026	8	0.0000025	0.0000025	0.0000025	3	0.000002 5	0.0000025	0.000002 5	8	0.000002 5	0.0000025	0.000002 5	3	0.0000025	0.0000025	0.000002 5
Methylmercury (ng/L)	4	8	0.0475	0.0527	0.0539	3	0.046	0.0793	0.0965	8	0.033	0.0438	0.0538	3	0.0615	0.0627	0.0645
Ultra Low Mercury (ng/L)	26	8	0.828	1.23	1.5	3	1.04	1.25	1.38	8	0.873	1.57	1.84	3	2.4	3.25	3.73

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-8: Pakwash Lake Baseline Water Quality (Continued)

Parameter	WQG PAL	PL-03 (Surface)				PL-03 (Bottom)				PL-04 (Surface)				PL-04 (Bottom)			
		Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	8	7.16	7.49	7.66	3	6.52	6.68	6.82	7	7.45	7.62	7.78	2	-	6.95	-
Lab pH (s.u.)	6.5 - 8.5	8	7.58	7.6	7.64	3	7.57	7.62	7.66	7	7.58	7.62	7.66	2	-	7.62	-
Lab Conductivity (µS/cm)	-	8	84.2	87	88.9	3	87.3	90	91.8	7	85.3	86.6	87.9	2	-	87	-
Total Alkalinity (as $CaCO_3$)	-	8	34.1	35.8	37	3	34.7	36.4	37.8	7	35.2	35.8	36.6	2	-	34.6	-
Total Hardness (as $CaCO_3$)	-	8	39.8	40.5	41.4	3	42	42.3	42.6	7	39.8	40.4	41	2	-	39.8	-
Total Dissolved Solids	-	8	62.2	67.7	76.1	3	78.6	80.1	82.6	7	59.9	66.7	73.1	2	-	72	-
Total Suspended Solids	-	8	1.55	2.64	3.43	3	2.95	3.2	3.55	7	1.35	1.84	2.4	2	-	1.7	-
Total Ammonia (as N)	1.8	3	0.005	0.00743	0.00865	0	-	-	-	3	0.01	0.0144	0.0191	0	-	-	-
Nitrate (as N)	3	8	0.00625	0.0323	0.0528	3	0.0588	0.0785	0.0948	7	0.0135	0.0335	0.0507	2	-	0.0607	-
Nitrite (as N)	0.06	8	0.0005	0.000613	0.0005	3	0.00105	0.002	0.00275	7	0.0005	0.001	0.0013	2	-	0.0019	-
Phosphorus	0.02	8	0.017	0.023	0.028	3	0.029	0.036	0.040	7	0.017	0.022	0.025	2	-	0.029	-
Sulphate	218	8	3.02	3.55	3.85	3	3.73	3.83	3.95	7	3	3.32	3.61	2	-	3.91	-
Chloride	120	8	1.46	1.63	1.71	3	1.67	1.7	1.75	7	1.44	1.55	1.7	2	-	1.73	-
Dissolved Organic Carbon	-	8	12.7	13.4	14.4	3	13.9	14	14.1	7	11.8	13.4	14.8	2	-	13.8	-
Total Cyanide	-	8	0.0005	0.000613	0.0005	3	0.0005	0.000767	0.0009	7	0.0005	0.000657	0.0005	2	-	0.0008	-
Cyanide (WAD)	-	8	0.0005	0.00065	0.0005	3	0.0005	0.000833	0.001	7	0.0005	0.000657	0.0005	2	-	0.0009	-
Cyanide (Free)	0.005	8	0.0005	0.000625	0.0005	3	0.0005	0.0008	0.00095	7	0.0005	0.000671	0.0005	2	-	0.0009	-
Aluminum	1.0	8	0.0572	0.102	0.134	3	0.129	0.166	0.187	7	0.048	0.0685	0.0857	2	-	0.124	-
Aluminum (dissolved)	0.075	8	0.0141	0.0201	0.0262	3	0.016	0.024	0.0292	7	0.0156	0.0192	0.025	2	-	0.0241	-
Antimony	0.02	8	0.000168	0.000189	0.000193	3	0.000175	0.000187	0.0002	7	0.00017	0.000177	0.000185	2	-	0.00017	-
Arsenic	0.005	8	0.00394	0.00523	0.00645	3	0.0066	0.00682	0.00713	7	0.00384	0.00483	0.00589	2	-	0.00582	-
Cadmium	0.0001	8	0.0000025	0.00000314	0.0000025	3	0.0000025	0.00000477	0.0000059	7	0.0000025	0.0000025	2.5E-06	2	-	0.0000025	-
Chromium	0.0089	8	0.00025	0.000296	0.000293	3	0.00034	0.00038	0.0004	7	0.00025	0.000351	0.00027	2	-	0.000295	-
Cobalt	0.00078	8	0.00005	0.0000613	0.00005	3	0.00005	0.00008	0.000095	7	0.00005	0.00005	0.00005	2	-	0.00005	-
Copper	0.005	8	0.00126	0.00131	0.00138	3	0.00141	0.00142	0.00144	7	0.00118	0.00126	0.00133	2	-	0.00138	-
Iron	0.8	8	0.0708	0.126	0.165	3	0.158	0.205	0.232	7	0.0555	0.0887	0.124	2	-	0.139	-
Lead	0.003	8	0.000025	0.0000488	0.0000645	3	0.000067	0.000087	0.000102	7	0.000025	0.0000329	0.000038	2	-	0.0000435	-
Molybdenum	0.073	8	0.000194	0.000217	0.000231	3	0.000225	0.000234	0.000241	7	0.000198	0.000215	0.00023	2	-	0.000214	-
Nickel	0.025	8	0.00088	0.00096	0.00103	3	0.00104	0.00114	0.00122	7	0.00088	0.00101	0.000995	2	-	0.00107	-
Selenium	0.001	8	0.00009	0.0000936	0.000112	3	0.000114	0.000132	0.000141	7	0.0000715	0.0000821	0.000102	2	-	0.000105	-
Silver	0.0001	8	0.000005	0.000005	0.000005	3	0.000005	0.000005	0.000005	7	0.000005	0.000005	0.000005	2	-	0.000005	-
Strontium	2.5	8	0.026	0.0268	0.0267	3	0.0269	0.0271	0.0274	7	0.0259	0.0261	0.0264	2	-	0.027	-
Thallium	0.0003	8	0.000005	0.000005	0.000005	3	0.000005	0.000005	0.000005	7	0.000005	0.000005	0.000005	2	-	0.000005	-
Tungsten	0.03	8	0.00005	0.00005	0.00005	3	0.00005	0.00005	0.00005	7	0.00005	0.00005	0.00005	2	-	0.00005	-
Uranium	0.005	8	0.0000928	0.0000959	0.000101	3	0.000098	0.000101	0.000105	7	0.000088	0.0000934	0.000096	2	-	0.000105	-
Vanadium	0.12	8	0.000445	0.000564	0.000713	3	0.000775	0.000783	0.0008	7	0.00025	0.000444	0.000695	2	-	0.00066	-
Zinc	0.02	8	0.0015	0.0015	0.0015	3	0.0015	0.0015	0.0015	7	0.0015	0.00176	0.0015	2	-	0.0015	-
Zirconium	0.004	8	0.0001	0.000143	0.00021	3	0.000225	0.000237	0.000245	7	0.0001	0.0001	0.0001	2	-	0.000215	-
Mercury	0.000026	8	0.0000025	0.0000025	0.0000025	3	0.0000025	0.0000025	0.0000025	7	0.0000025	0.0000025	2.5E-06	2	-	0.0000025	-
Methylmercury (ng/L)	4	8	0.0255	0.0313	0.0373	3	0.031	0.0367	0.0405	7	0.022	0.0264	0.031	2	-	0.032	-
Ultra Low Mercury (ng/L)	26	8	0.84	1.11	1.24	3	0.995	1.24	1.39	7	0.78	1.03	1.22	2	-	1.02	-

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-8 Pakwash Lake Baseline Water Quality (Continued)

Parameter	WQG PAL	PL-05 (Surface)				PL-05 (Bottom)			
		Count	25th	Average	75th	Count	25th	Average	75th
Field pH (s.u.)	6.5 - 8.5	7	7.32	7.6	7.85	2	-	6.74	-
Lab pH (s.u.)	6.5 - 8.5	7	7.59	7.65	7.7	2	-	7.67	-
Lab Conductivity (µS/cm)	-	7	85.6	88	88	2	-	90.3	-
Total Alkalinity (as $CaCO_3$)	-	7	35.4	36.6	37.5	2	-	36.5	-
Total Hardness (as $CaCO_3$)	-	7	39.4	40.9	42	2	-	41.2	-
Total Dissolved Solids	-	7	59	65.3	71.8	2	-	76.8	-
Total Suspended Solids	-	7	1.8	2.58	3.18	2	-	4.75	-
Total Ammonia (as N)	1.8	3	0.00375	0.00717	0.0095	0	-	-	-
Nitrate (as N)	3	7	0.0025	0.023	0.0385	2	-	0.065	-
Nitrite (as N)	0.06	7	0.0005	0.0005	0.0005	2	-	0.0005	-
Phosphorus	0.02	7	0.018	0.022	0.025	2	-	0.031	-
Sulphate	218	7	3.09	3.37	3.64	2	-	3.91	-
Chloride	120	7	1.44	1.57	1.72	2	-	1.75	-
Dissolved Organic Carbon	-	7	11.9	12.9	13.2	2	-	13.5	-
Total Cyanide	-	7	0.0005	0.0005	0.0005	2	-	0.0005	-
Cyanide (WAD)	-	7	0.0005	0.0006	0.0005	2	-	0.00095	-
Cyanide (Free)	0.005	7	0.0005	0.0008	0.001	2	-	0.00105	-
Aluminum	1.0	7	0.0624	0.0963	0.129	2	-	0.2	-
Aluminum (dissolved)	0.075	7	0.017	0.019	0.0207	2	-	0.0329	-
Antimony	0.02	7	0.00017	0.000182	0.000188	2	-	0.00017	-
Arsenic	0.005	7	0.00396	0.00508	0.00597	2	-	0.00639	-
Cadmium	0.0001	7	0.0000025	0.0000025	0.0000025	2	-	3.75E-06	-
Chromium	0.0089	7	0.00025	0.000277	0.000305	2	-	0.00046	-
Cobalt	0.00078	7	0.00005	0.00005	0.00005	2	-	0.0001	-
Copper	0.005	7	0.00124	0.00132	0.00135	2	-	0.00157	-
Iron	0.8	7	0.07	0.107	0.149	2	-	0.224	-
Lead	0.003	7	0.000025	0.0000484	0.000066	2	-	0.000105	-
Molybdenum	0.073	7	0.000201	0.000219	0.000231	2	-	0.000228	-
Nickel	0.025	7	0.000885	0.000952	0.000993	2	-	0.00132	-
Selenium	0.001	7	0.0000545	0.0000762	0.0000965	2	-	0.000025	-
Silver	0.0001	7	0.000005	0.000005	0.000005	2	-	0.000005	-
Strontium	2.5	7	0.0264	0.0266	0.0274	2	-	0.0268	-
Thallium	0.0003	7	0.000005	0.000005	0.000005	2	-	0.000005	-
Tungsten	0.03	7	0.00005	0.00005	0.00005	2	-	0.00005	-
Uranium	0.005	7	0.000091	0.0000951	0.0000975	2	-	0.000107	-
Vanadium	0.12	7	0.00025	0.000485	0.00064	2	-	0.000865	-
Zinc	0.02	7	0.0015	0.0015	0.0015	2	-	0.0015	-
Zirconium	0.004	7	0.0001	0.000139	0.00016	2	-	0.000275	-
Mercury	0.000026	7	0.0000025	0.0000025	0.0000025	2	-	0.0000025	-
Methylmercury (ng/L)	4	7	0.021	0.0246	0.0265	2	-	0.036	-
Ultra Low Mercury (ng/L)	26	7	0.64	0.871	1.06	2	-	1.53	-

Notes:
All concentrations are in mg/L (unless otherwise noted)
Grey highlighted values are higher than the identified WQG PAL.

Table 4-9: Baseline Groundwater Quality, All Monitoring Wells

Parameter	WQG PAL[(1)]	Count	25th Percentile	Median	75th Percentile	95th Percentile
pH	6.5 – 8.5	241	7.43	7.90	8.11	8.43
Conductivity	-	241	219	274	394	723
Hardness	-	244	73.2	126	183	362
Total Dissolved Solids	-	241	126	176	272	443
Ammonia as N	1.8	117	0.011	0.028	0.05	0.305
Nitrate (as N)	3	241	0.0025	0.02	0.0537	0.182
Nitrite (as N)	0.06	241	0.0005	0.0005	0.0011	0.015
Phosphorus	0.03	226	0.0121	0.0318	0.0855	1.67
Chloride	120	241	0.23	0.35	0.77	4.55
Sulphate	218	241	2.27	4.93	10.7	22.0
Cyanide (total)	0.005	117	0.0005	0.0005	0.0005	0.005
Aluminum	0.075	241	0.0025	0.005	0.0152	0.0875
Antimony	0.02	244	0.00005	0.00005	0.00014	0.00045
Arsenic	0.005	244	0.000328	0.0006	0.00127	0.00502
Cadmium	0.0001	244	0.0000025	0.00000515	0.0000128	0.0000325
Chromium	0.0089	239	0.00005	0.00018	0.00025	0.000611
Cobalt	0.00078	244	0.00005	0.00027	0.00124	0.0124
Copper	0.005	244	0.0001	0.000505	0.00208	0.0128
Iron	1	244	0.0168	0.112	0.572	2.78
Lead	0.003	244	0.000025	0.000025	0.000025	0.000173
Mercury	0.0002	240	0.0000025	0.0000025	0.0000025	0.000005
Molybdenum	0.073	244	0.00118	0.00262	0.00663	0.0229
Nickel	0.025	244	0.00025	0.00114	0.00265	0.0174
Selenium	0.002	244	0.000025	0.000077	0.00015	0.000609
Silver	0.00025	244	0.000005	0.000005	0.000005	0.000025
Thallium	0.0003	244	0.000005	0.000005	0.000005	0.00002
Tungsten	0.03	243	0.00023	0.00197	0.0083	0.291
Uranium	0.005	243	0.00025	0.00074	0.00231	0.012
Vanadium	0.12	243	0.00025	0.00025	0.00072	0.0029
Zinc	0.023	243	0.0005	0.0012	0.00220	0.011
Zirconium	0.004	238	0.00015	0.00015	0.00015	0.0012
Methylmercury (ng/L)	4	48	0.00344	0.012	0.0388	0.273
Low-Level Mercury (ng/L)	200	48	0.303	1.65	3.85	16.5

Notes:
All units are mg/L (unless otherwise noted).
All concentrations are dissolved (unless otherwise indicated).
Grey highlighted values are greater than identified WQG PAL.
[1] Benchmarks are WQG PAL. WQG PAL are not applicable to groundwater quality and are used here as a conservative benchmark to support baseline reporting only.

455000 455250 455500 455750 456000

6634000 6633750 6633500 6633250

NATURAL GAS PIPELINE

EFFLUENT PIPELINE CORRIDOR

UNNAMED WATERCOURSE 3C

OVERBURDEN STOCKPILE

ORE STOCKPILE

PAG MINE ROCK STOCKPILE

NPAG MINE ROCK STOCKPILE (PHASE 1)

OVERBURDEN STOCKPILE

SEDIMENT POND

SUMP

SUMP (PHASE 1)

NPAG MINE ROCK STOCKPILE (PHASE 2)

PORTALS

PORTAL SUMP

SETTLING POND

SLUDGE DRAINAGE AREA

STORAGE / SNOW STOCKPILE

TREATED WATER POND

MINE WATER POND

M.H. #1

M.H. #2

EMERGENCY OVERFLOW

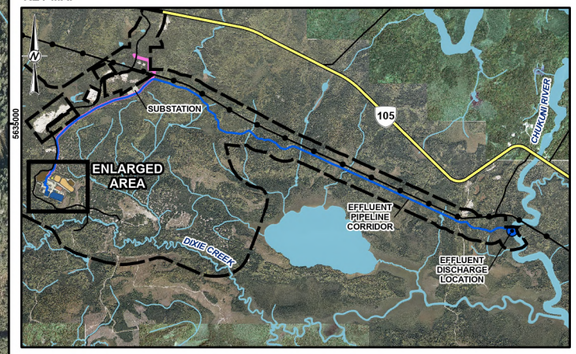
PERIMETER DITCH SUMP

TUZYK'S ROAD

ADVANCED EXPLORATION SITE FEATURES

1: SEWAGE TANKS / RBC
2: COMPRESSOR
3: CRUSHER
4: CAMP
5: EFFLUENT TREATMENT PLANT
6: FIRE / FRESH AND TREATMENT WATER TANKS
7: COLOURED DIESEL
8: GAS
9: NATURAL GAS GENERATION STATION
10: VENTILATION FANS AND HEATERS
11: KITCHEN / RECREATION
12: NATURAL GAS SUPPLY STATION
13: SECURITY
14: STORAGE
15: MAINTENANCE SHOP
16: WASH BAY
17: WASTE STORAGE AREA
18: FRESH WATER WELL
19: SITE POWER DISTRIBUTION STATION
20: EXPLOSIVES STORAGE
21: DETONATION STORAGE

KEY MAP



SCALE: 1:125,000

LEGEND

- CLOSURE PLAN BOUNDARY
- HIGHWAY
- LOCAL ROAD
- RESOURCE / RECREATION ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

PROPOSED MINE FEATURE

- PORTAL
- ORE STOCKPILE
- MINE ROCK STOCKPILE
- BERM
- OVERBURDEN STOCKPILE
- STORAGE / SNOW STOCKPILE
- POND / SUMP
- SLUDGE DRAINAGE AREA
- ACCESS ROAD
- BUILDING
- PARKING
- FOOTPRINT
- CONTACT DITCH
- NON-CONTACT DITCH
- PIPELINE
- NATURAL GAS PIPELINE
- EFFLUENT PIPELINE CORRIDOR
- EFFLUENT DISCHARGE LOCATION
- FENCE
- MONITORING WELL
- GRADING CONTOUR (0.25 M INTERVAL)

0 50 100 200

1:4,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. AERIAL IMAGERY PROVIDED BY GREAT BEAR RESOURCES (SCENE DATE: SEPTEMBER 2022).
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. ADVANCED EXPLORATION SITE PLAN PROVIDED BY GREAT BEAR RESOURCES, FEBRUARY 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
AEX PROGRAM SITE PLAN

CONSULTANT
wsp

YYYY-MM-DD	2026-01-07
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

0 25mm

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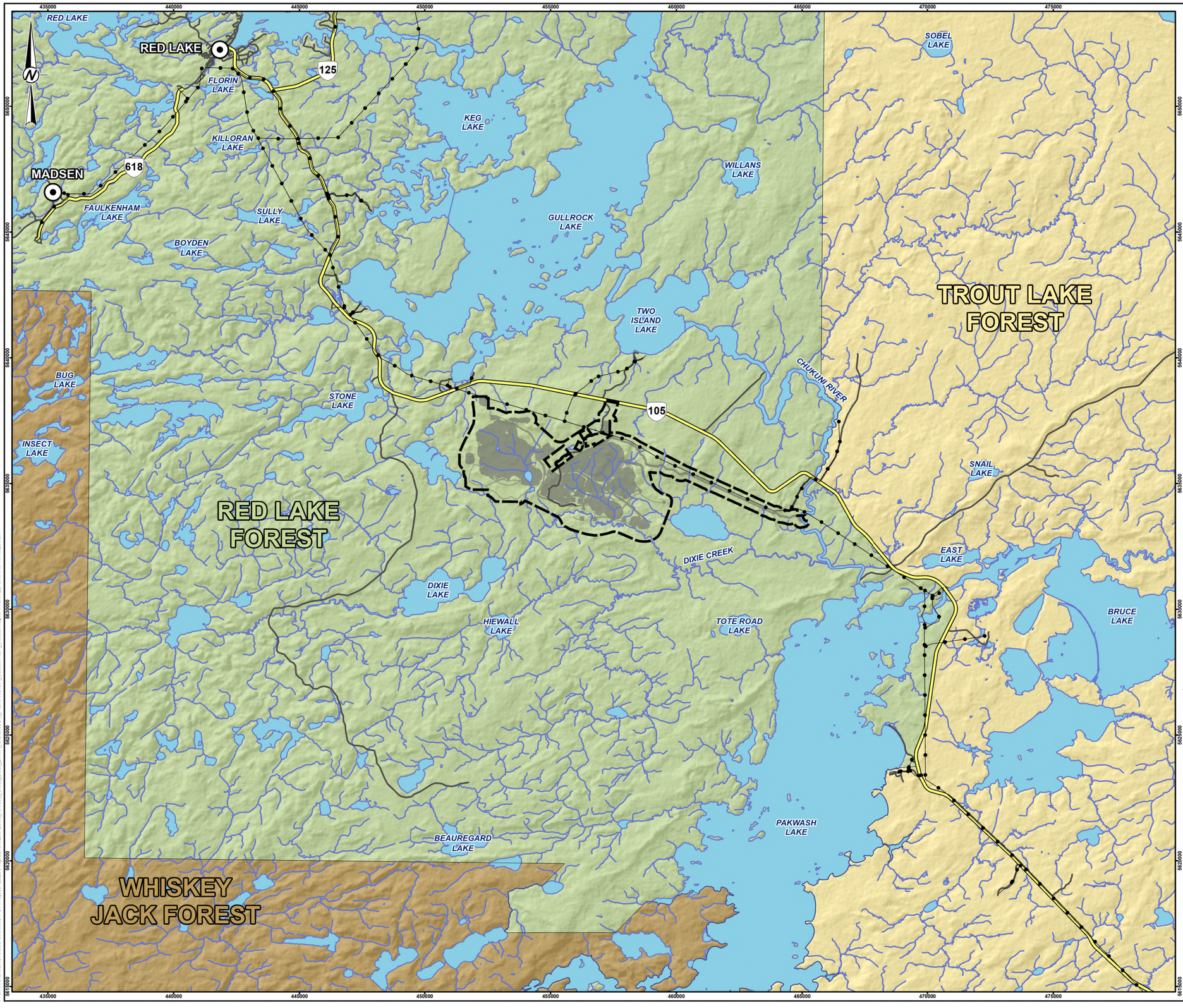


LEGEND

- CLOSURE PLAN BOUNDARY
- GREAT BEAR PROJECT FOOTPRINT
- TOWN
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

FOREST MANAGEMENT UNIT
(LABELLED WITH NAME)

- RED LAKE FOREST
- TROUT LAKE FOREST
- WHISKEY JACK FOREST

0 2.5 5 10

1:150,000 KILOMETRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
3. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

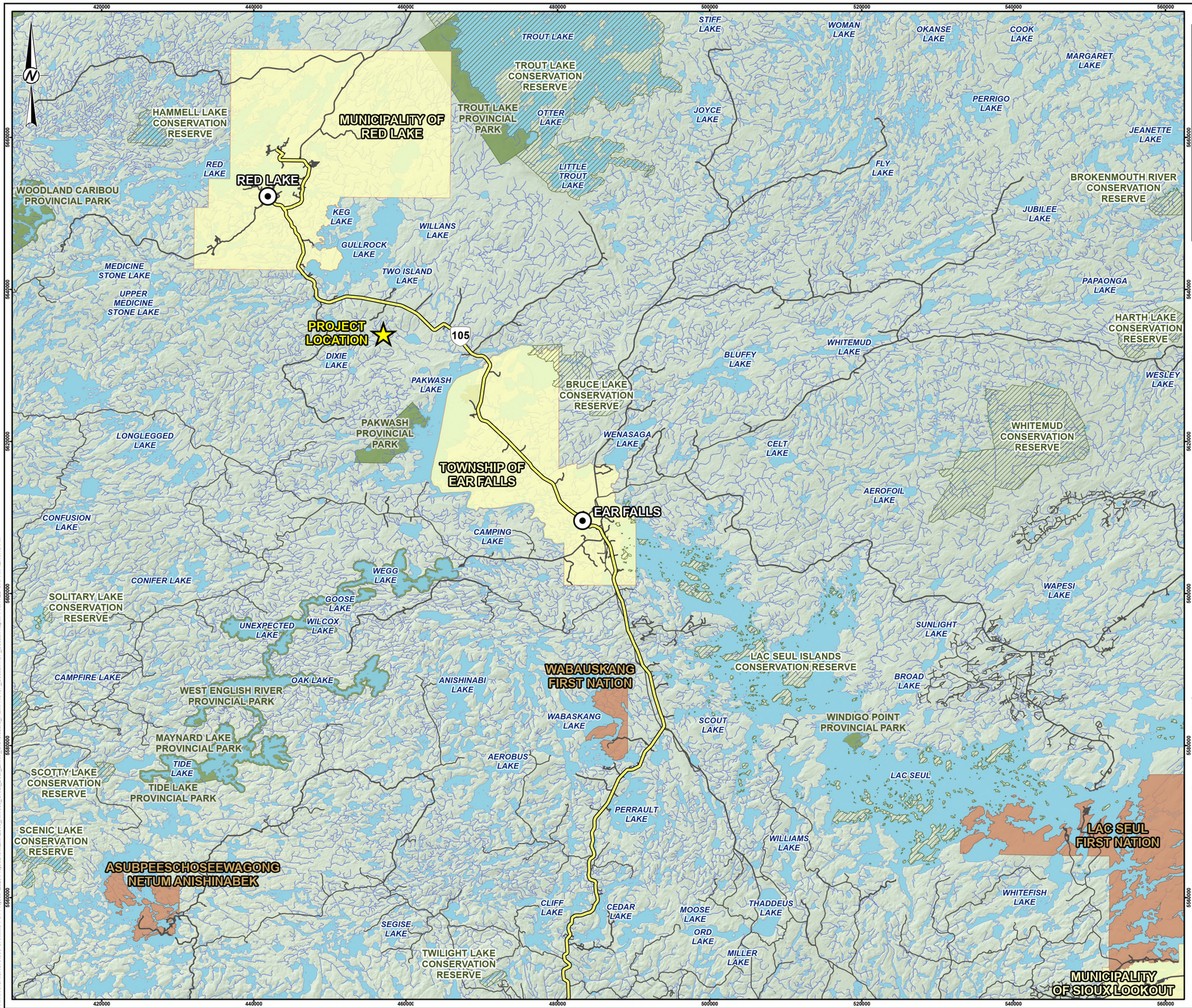
TITLE
LOCAL FOREST MANAGEMENT UNITS

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-2



MÉTIS NATION OF ONTARIO REGION 1 KEY MAP

SCALE: 1:500,000

LEGEND

- PROJECT LOCATION
- TOWN
- LOWER TIER MUNICIPAL BOUNDARY
- FIRST NATION RESERVE
- MÉTIS NATION OF ONTARIO REGION 1 (SHOWN IN KEY MAP)
- CONSERVATION RESERVE
- PROVINCIAL PARK
- HIGHWAY
- LOCAL ROAD
- RESOURCE / RECREATION ROAD
- WATERCOURSE
- WATERBODY

0 5 10 20
1:500,000 KILOMETRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
REGIONAL COMMUNITIES AND INDIGENOUS NATIONS

CONSULTANT
wsp

YYYY-MM-DD	2026-01-07
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-3

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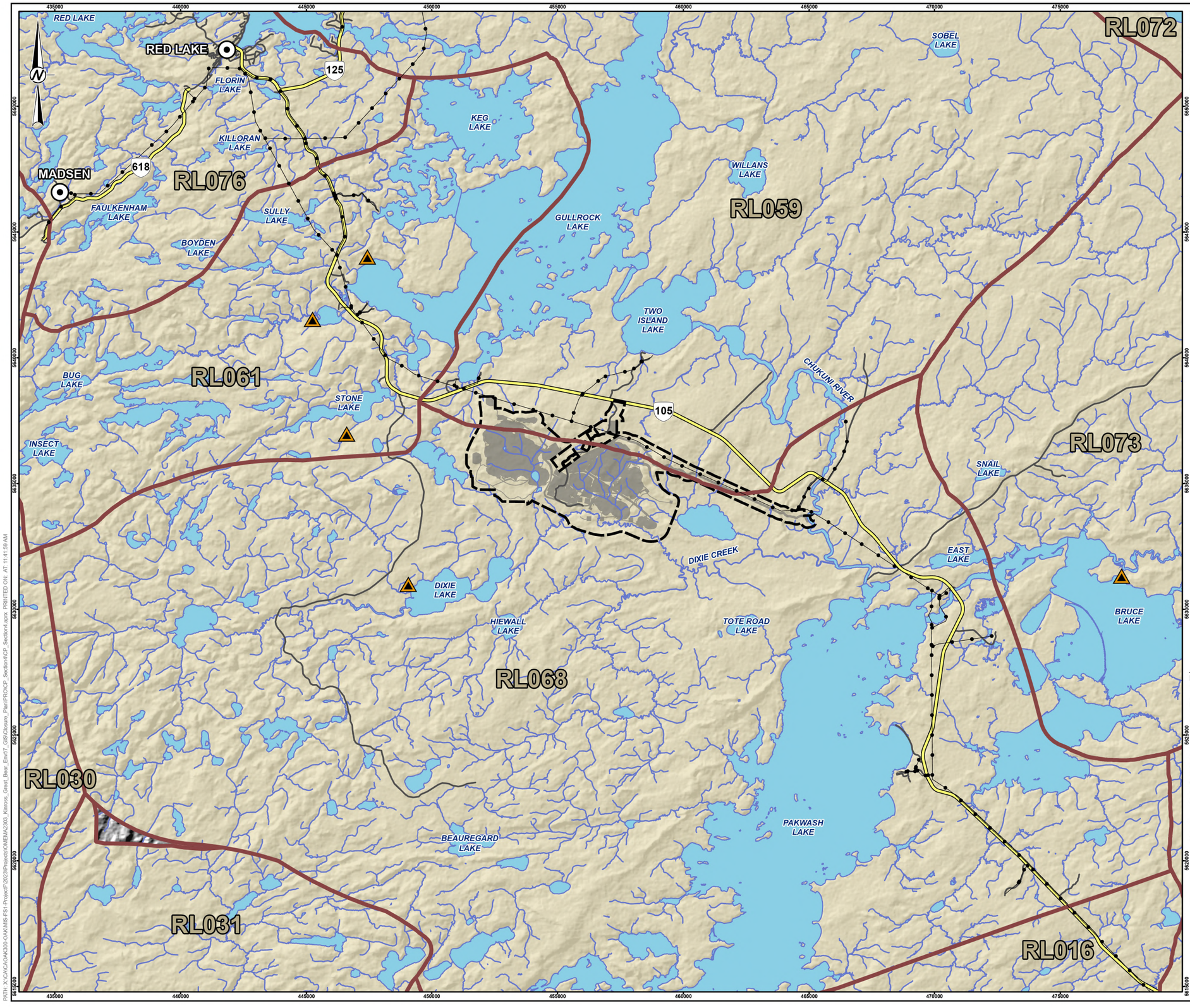

LEGEND

- CLOSURE PLAN BOUNDARY
- GREAT BEAR PROJECT FOOTPRINT
- TOWN
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY
- TRAPPER CABIN
- TRAPLINE AREAS (LABELLED WITH ID)

0 2.5 5 10

1:150,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
3. TRAPLINE AREAS PROVIDED BY GREAT BEAR RESOURCES.
4. TRAPPER CABINS DIGITIZED FROM FOREST MANAGEMENT PLANS.
5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
TRAPLINES

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25mm

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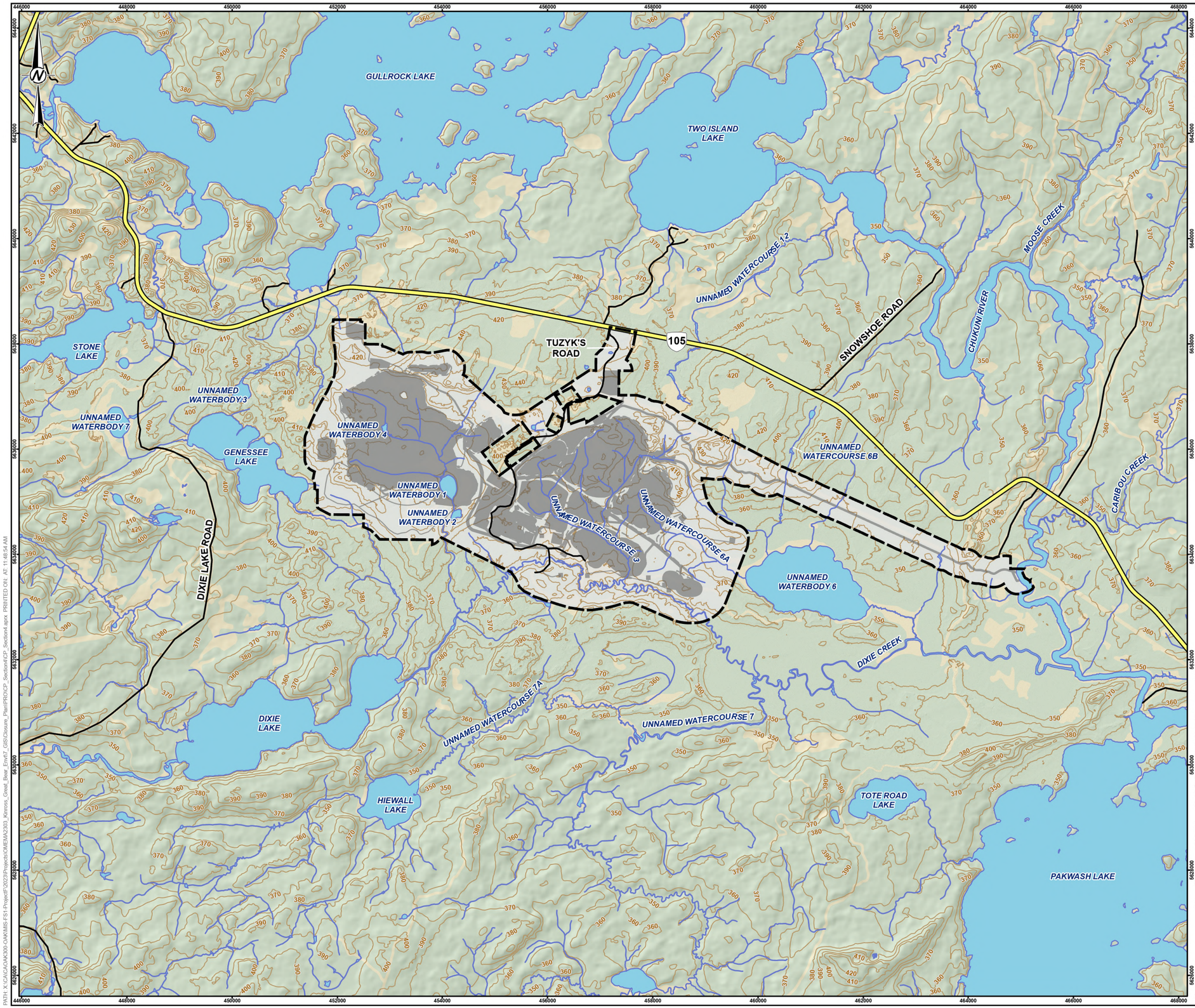

LEGEND

- CLOSURE PLAN BOUNDARY
- GREAT BEAR PROJECT FOOTPRINT
- HIGHWAY
- LOCAL ROAD
- CONTOURS (10 M INTERVAL)
- WATERCOURSE
- WATERBODY

0 1 2 4

1:72,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR.
3. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.1
4. CONTOURS ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF), 2022 AND DERIVED FROM 2022 LIDAR PROVIDED BY GREAT BEAR RESOURCES.
5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
LOCAL TOPOGRAPHY

CONSULTANT

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25mm

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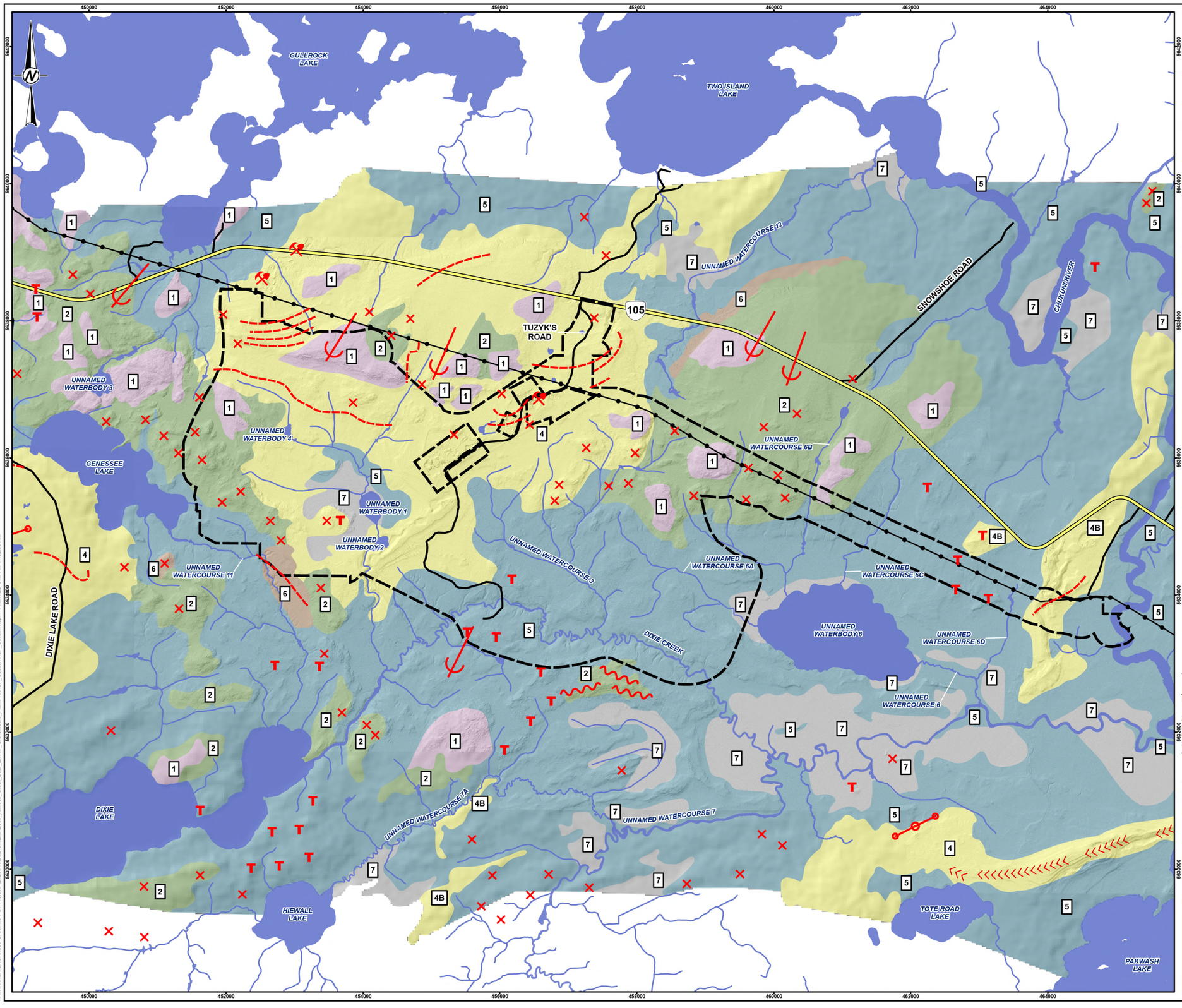

LEGEND

- CLOSURE PLAN BOUNDARY
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY
- SAND AND OR GRAVEL PIT
- SMALL BEDROCK OUTCROP (NOT SHOWN FOR UNIT 1)
- T SMALL OUTCROPS OF TILL
- ABANDONED SHORELINE FEATURES
- GLACIAL STRIATION (ICE FLOW DIRECTION INFERRED)
- TRANSVERSE MORAINE RIDGE
- ESKER (DIRECTION OF FLOW INFERRED)
- MORAINE RIDGE

QUATERNARY GEOLOGY

HOLOCENE **NONGLACIAL**

7 **ORGANIC DEPOSITS:** PEAT AND MUCK; 1-4 M THICK; MUSKEGS, FENS STRING BOGS; COMMONLY OVERLIES GLACIOLACUSTRINE MUD

LATE WISCONSINAN **PROGLACIAL AND GLACIAL**

GLACIOLACUSTRINE DESPOSITS: SEDIMENTS DEPOSITED INTO GLACIAL LAKE AGASSIZ PREDOMINANTLY AS UNDERFLOW AND AS LITTORAL DEPOSITS

6 **SHORELINE AND SHALLOW WATER DEPOSITS:** SAND, GRAVEL, SILT; 1-3 M THICK; SMALL BEACH RIDGES OVER OUTWASH DEPOSITS; MAINLY REWORKED MORAINIC DEPOSITS. 6A, GRAVEL AND GRAVELLY SAND; 6B, SAND WITH SILTY FINE SAND; 6C, THIN SAND OVER CLAY OR TILL

5 **DEEP WATER DEPOSITS:** LAMINATED TO VARVED CLAY, SILT AND FINE SAND; 1-50 M THICK; MAINLY OCCUPIES DEPRESSIONS

GLACIOFLUVIAL DESPOSITS: SEDIMENTS DEPOSITED PREDOMINANTLY INTO GALCIAL LAKE AGASSIZ AS SUBAQUEOUS FANS

4 **OUTWASH DEPOSITS:** SAND AND GRAVEL; 1-5 M THICK; MAINLY SUB-AQUEOUS FAN SEDIMENT, INCLUDES SOME ESKERS; 4A, GRAVELLY SAND; 4B, SAND WITH MINOR GRAVEL

GLACIAL

GLACIAL DESPOSITS: SEDIMENT DEPOSITED DIRECTLY FROM GLACIAL ICE

2 **TILL:** GRAVELLY TO BOULDERY, SAND TO SANDY-SILT TILL; NONCALCAREOUS; 1-6 M THICK; BLANKETS MOST BEDROCK; MINOR BEDROCK INCLUDED; 2A, TILL LESS THAN 1 M THICK; 2B, TILL WITH THIN COVER OF SAND, CLAY, OR MODIFIED SEDIMENT

1 **DRIFT AND BEDROCK:** ROCK DOMINATED TERRAIN (25-100% OUTCROP); ICE AND WATER ERODED ARCHEAN GRANATIC, METAVOLCANIC, AND METASEDIMENTARY ROCKS; THIN TILL AND STRATIFIED DEPOSITS, 1-3 M THICK IN DEPRESSIONS

0 0.5 1 2

1:55,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. QUATERNARY GEOLOGY BASE MAPPING IS EXTRACTED FROM QUATERNARY GEOLOGY OF RED LAKE-CONFEDERATION LAKE AREA; SHARPE, D R; RUSSELL, H A J. GEOLOGY SURVEYS OF CANADA, OPEN FILE 2876, 1996.
3. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
QUATERNARY GEOLOGY

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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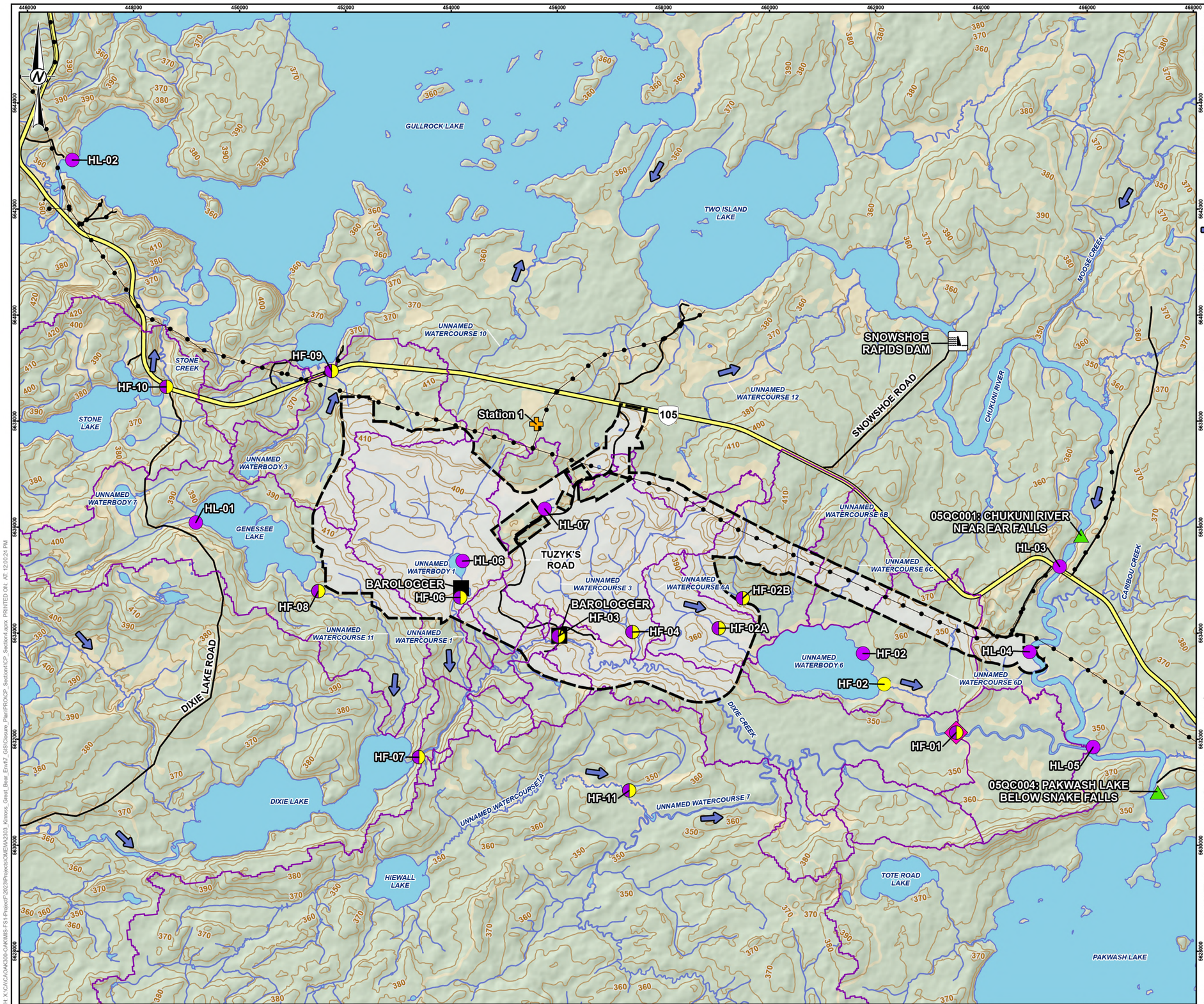

LEGEND

- CLOSURE PLAN BOUNDARY
- LOCAL SUBCATCHMENT
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- CONTOURS (10 M INTERVAL)
- WATERCOURSE
- WATERBODY
- WATER SURVEY OF CANADA STATION
- METEOROLOGICAL STATION
- SNOWSHOE RAPIDS DAM
- FLOW DIRECTION

HYDROMETRIC STATION (BY INSTRUMENTATION)

- BAROLOGGER
- LEVEL
- FLOW
- LEVEL AND FLOW
- SONTEK IQ

0 1 2 4

1:72,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
HYDROLOGICAL MONITORING STATIONS AND LOCAL WATERSHEDS

CONSULTANT

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

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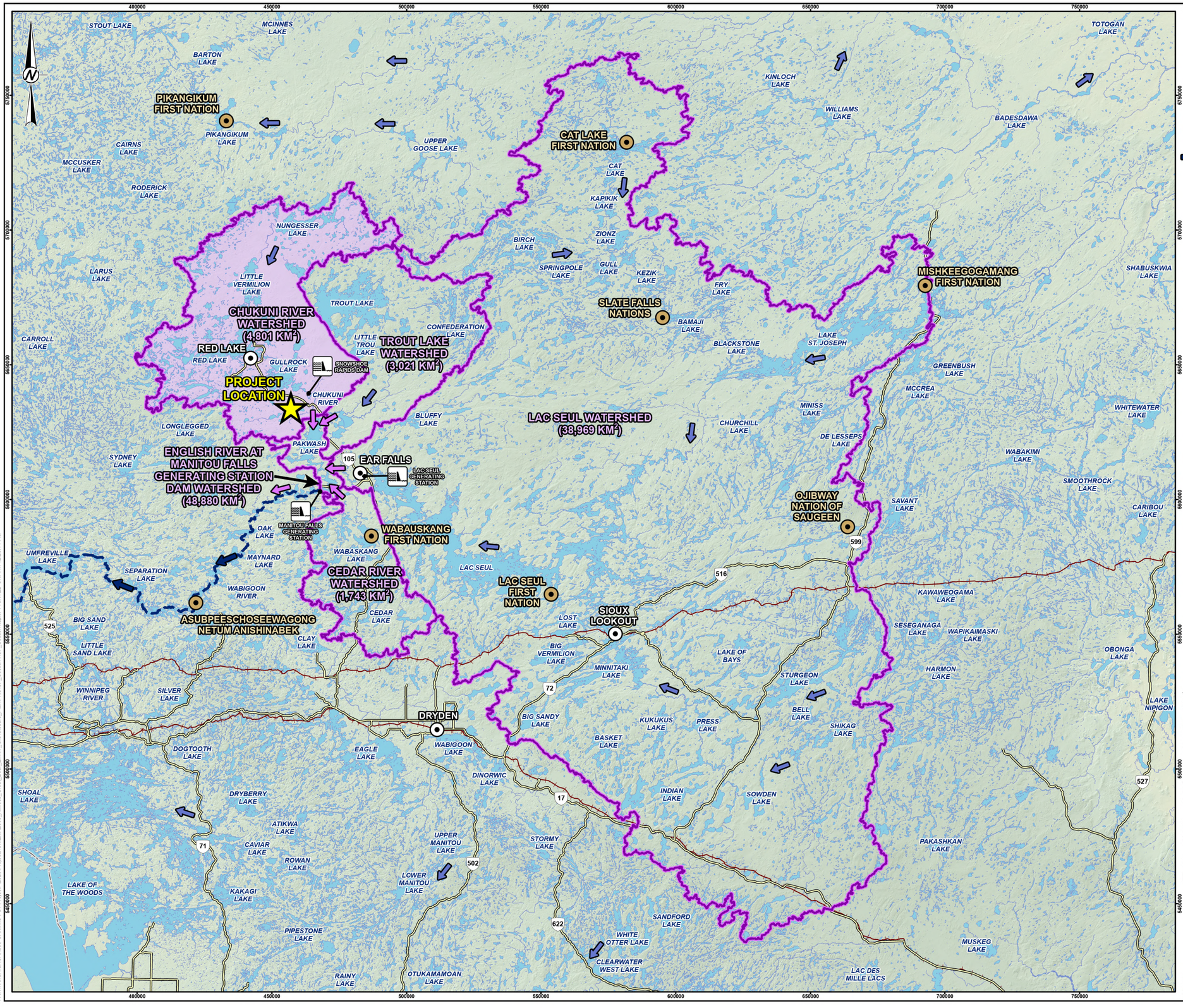


LEGEND

- PROJECT LOCATION
- FIRST NATION RESERVE
- TOWN
- DAM / GENERATING STATION
- CHUKUNI RIVER WATERSHED
- OTHER WATERSHED
- APPROXIMATE FLOW DIRECTION OF THE ENGLISH RIVER SYSTEM
- HIGHWAY
- RAILWAY
- NATIONAL BOUNDARY
- WATERSHED OUTLET
- FLOW DIRECTION

0 12.5 25 50

1:1,400,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERSHEDS DELINEATED USING ONTARIO WATERSHED INFORMATION TOOL (MNRF).
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

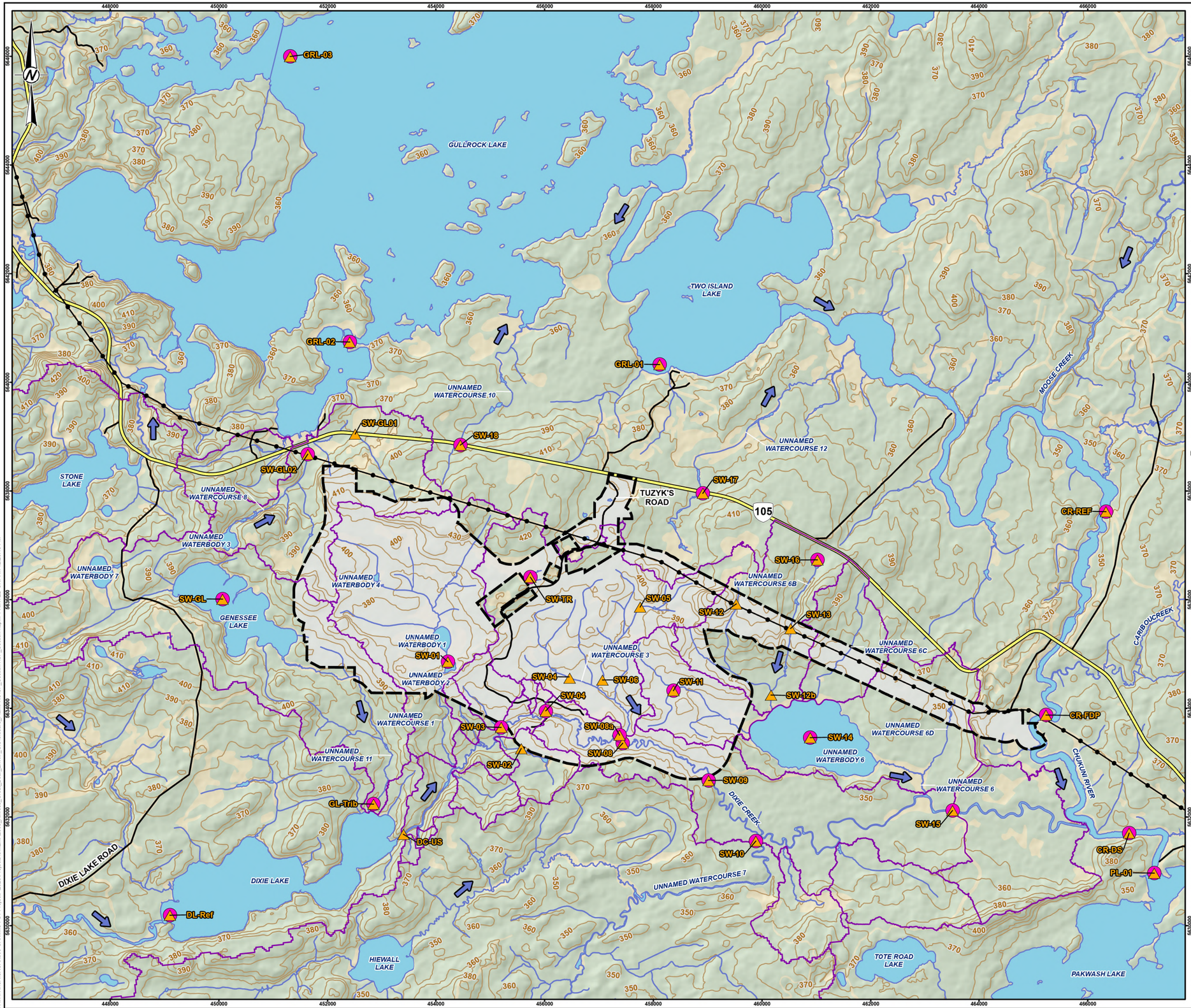
TITLE
REGIONAL WATERSHEDS

CONSULTANT

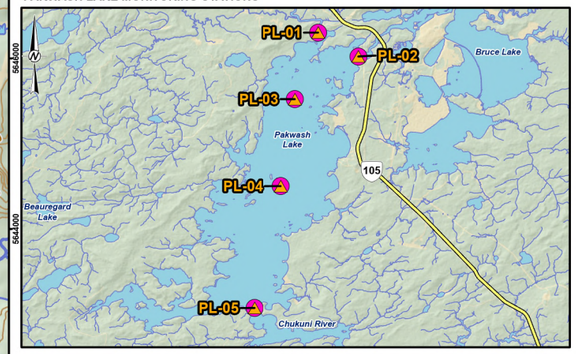
wsp

YYYY-MM-DD	2026-01-07
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-8



PAKWASH LAKE MONITORING STATIONS



SCALE: 1:350,000

LEGEND

- CLOSURE PLAN BOUNDARY
- SURFACE WATER QUALITY MONITORING STATION
- METHYLMERCURY AND SUPPLEMENTAL ULTRALOW MERCURY MONITORING STATION
- LOCAL SUBCATCHMENT
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- CONTOURS (10 M INTERVAL)
- WATERBODY
- WATERCOURSE
- FLOW DIRECTION

0 1 2 4

1:70,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
3. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
BASELINE SURFACE WATER MONITORING STATIONS

CONSULTANT
wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-9

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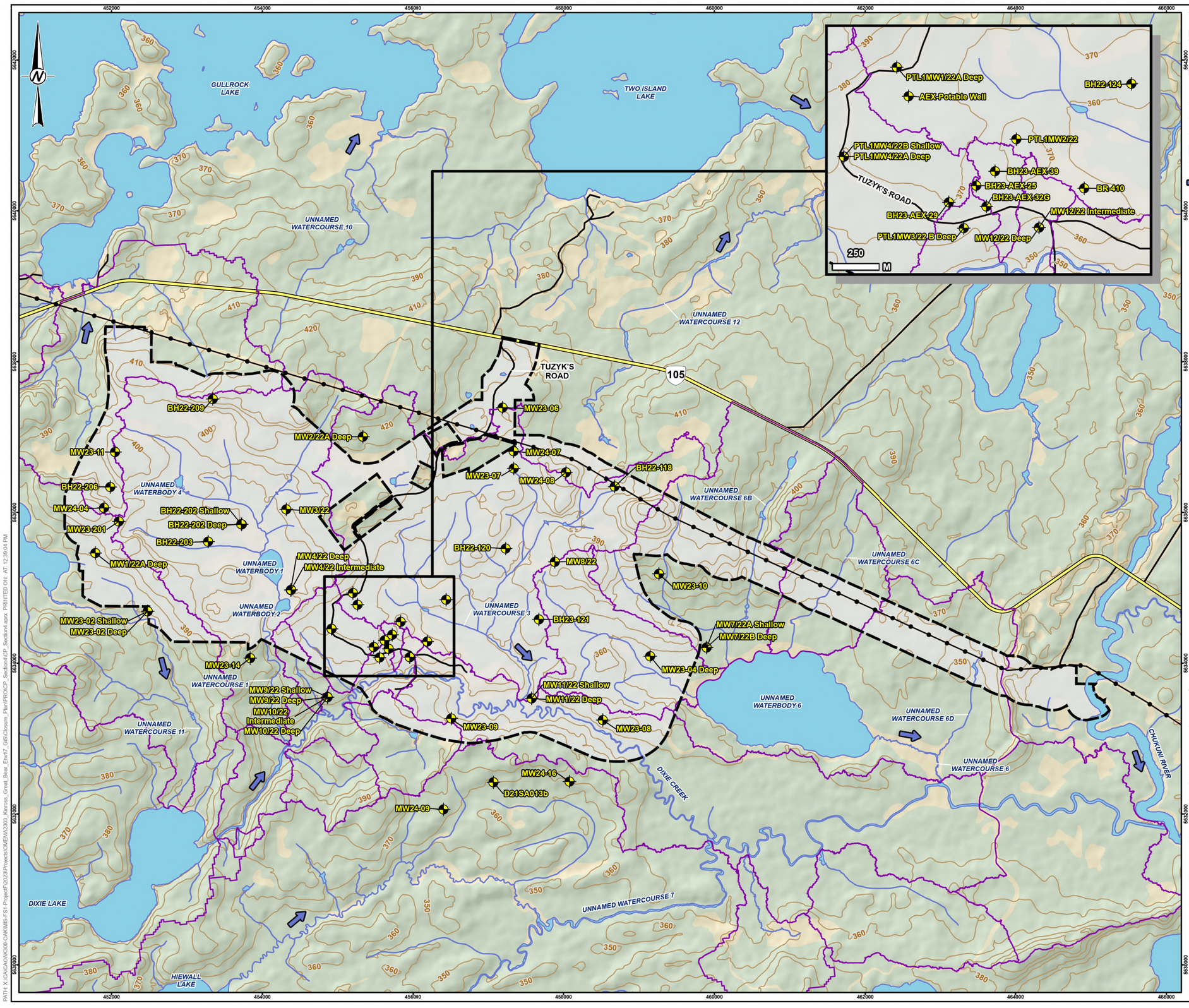


LEGEND

- CLOSURE PLAN BOUNDARY
- GROUNDWATER QUALITY MONITORING STATION
- LOCAL SUBCATCHMENT
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- CONTOURS (10 M INTERVAL)
- WATERBODY
- WATERCOURSE
- FLOW DIRECTION

0 0.5 1 2
KILOMETRES
1:50,000

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
3. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

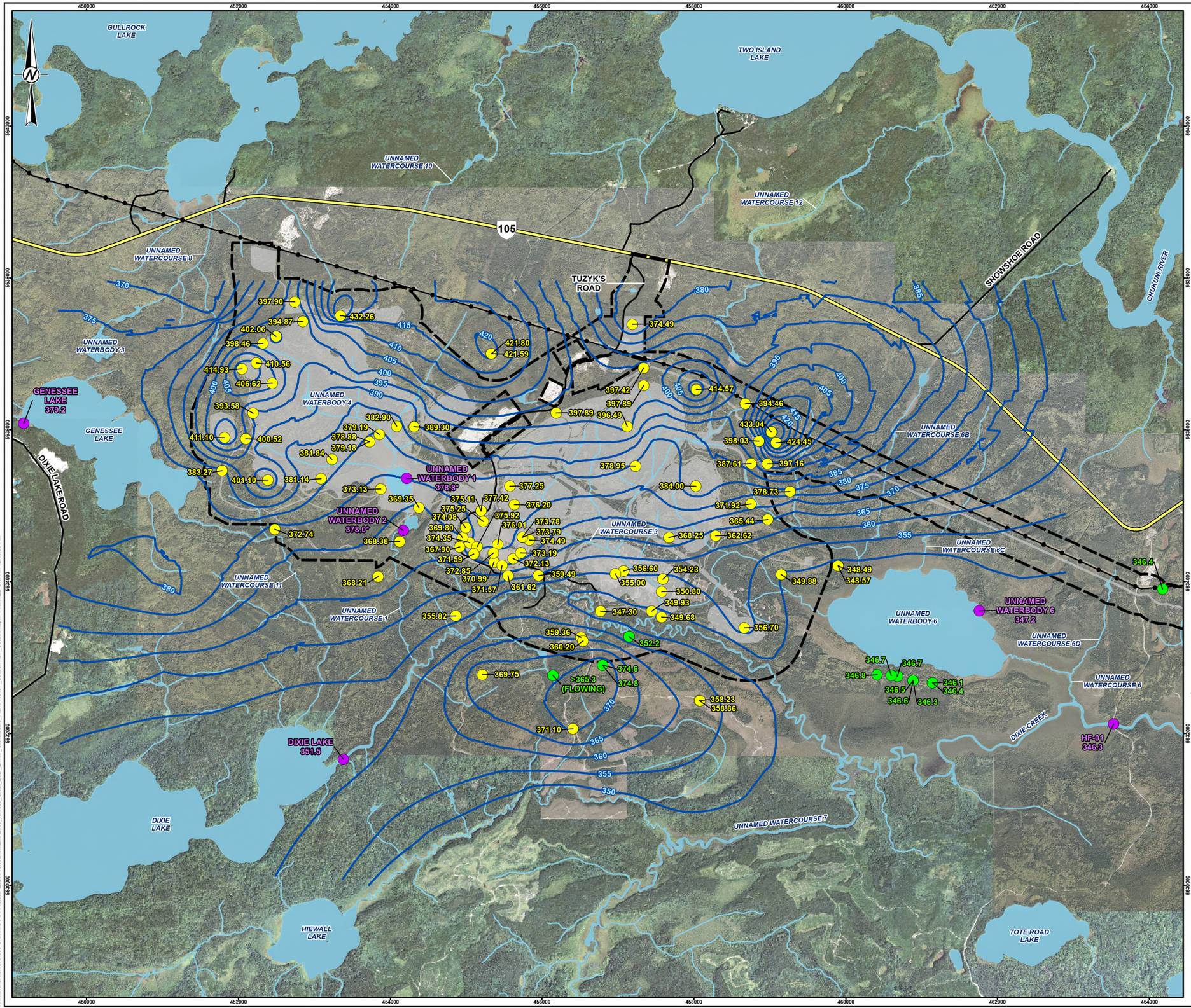
PROJECT
GREAT BEAR PROJECT

TITLE
BASELINE GROUNDWATER MONITORING STATIONS

CONSULTANT

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-10



LEGEND

- CLOSURE PLAN BOUNDARY
- GREAT BEAR PROJECT FOOTPRINT
- MEASURED GROUNDWATER LEVELS (AVERAGE VALUES FROM 2022 - 2033 QUARTERLY MONITORING ROUNDS)
- MEASURED GROUNDWATER LEVELS (DATA COLLECTED FROM EXPLORATION DRILLHOLES)
- SURVEYED WATER LEVEL (SUMMER 2023, MASL) (*UNNAMED WATERBODY 1 AND UNNAMED WATERBODY 2 ARE PERCHED ABOVE THE WATER TABLE AND HAVE NOT BEEN INCLUDED IN THE INTERPOLATION OF THE GROUNDWATER EQUIPOTENTIAL CONTOURS)
- INTERPRETED GROUNDWATER LEVEL CONTOURS (LABELLED WITH ELEVATION (MASL))
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

0 0.5 1 2

1:50,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
3. AERIAL IMAGERY PROVIDED BY GREAT BEAR RESOURCES (SCENE DATE: SEPTEMBER 2022).
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
INTERPRETED GROUNDWATER ELEVATION CONTOURS

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-11

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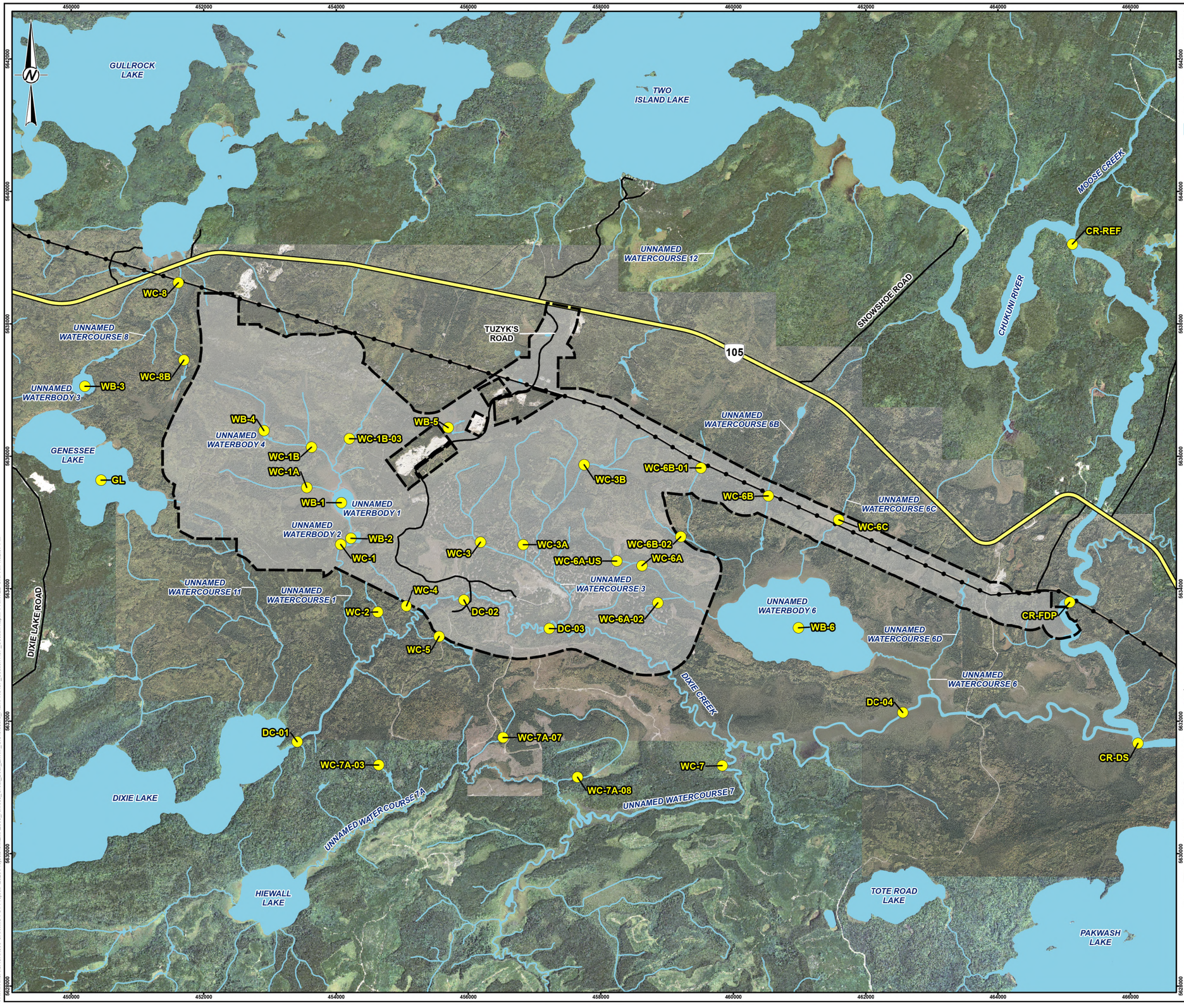


LEGEND

- CLOSURE PLAN BOUNDARY
- AQUATIC RESOURCE MONITORING LOCATION
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

0 0.5 1 2

1:57,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
3. AERIAL IMAGERY PROVIDED BY GREAT BEAR RESOURCES (SCENE DATE: SEPTEMBER 2022).
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
BASELINE AQUATIC RESOURCE MONITORING LOCATIONS

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	4-12

5 PROJECT DESCRIPTION

5.1 PROJECT SUMMARY

The Project is accessible by Tuzyk's Road which connects to Highway 105. Access south of the commercial aggregate operations is proposed to be restricted, for security and safety reasons. A security checkpoint will be established at that location, and the road to the south repurposed as the mine access road.

Ore extraction from the open pit and / or underground mine and onsite ore processing is planned to occur at a nominal combined rate up to 15,000 tonnes per day (tpd) or less. Unconsolidated surface materials (overburden and mine rock) will also need to be removed from the open pits and underground workings to access the ore. There may be periods when the rate of mining ore is higher when only ore is being extracted. Overburden and mine rock will be re-used in Project construction and reclamation as appropriate, or stored in surface facilities.

Processing of mined ore to produce gold and silver (doré) bars will occur at the Project in a conventional process plant designed with a high level of water recycle. Tailings resulting from processing the ore in the process plant will be treated with the purpose of reducing cyanide and total sulphur contents prior to storage in the tailings management facilities. Contact water from the Project will be collected and managed. Excess water from the Project will be treated to meet all regulatory requirements prior to discharge to the environment in accordance with applicable environmental approvals and permits.

Mining and processing operations will be supported by other onsite buildings including: mine office and maintenance complex, cold and warm storage buildings, laydown areas and accommodations camp. These will be supported by related roads, power, tankage and piping infrastructure as needed. Solid and liquid wastes will be collected and managed in accordance with regulatory requirements. Hazardous wastes will be transported to existing approved facilities off site.

5.2 MINERALOGY AND GEOCHEMISTRY

5.2.1 GEOLOGY

The Project is located within the Red Lake greenstone belt of the Uchi Subprovince of the Archean Superior Province of the Canadian Shield. The rocks of Red Lake greenstone belts originated on an active continental margin, in a setting characterized by volcanic eruption and deposition of volcanic sedimentary sequences, which was followed by subduction related arc volcanism and later continental collision causing metamorphism.

At a local scale, the Project is bounded by intrusive batholiths within a northwest-southeast trending belt of metavolcanic and metasedimentary rocks that are interpreted to have been formed in a marine setting next to active volcanism prior to metamorphism. The southwestern portion of the Project is within a mafic domain and consists of intercalated mafic volcanic flows, argillite, siltstone, iron formation and minor local felsic volcanics. The mafic domain hosts two mineralized zones, the Limb Zone and Hinge Zone. Gold mineralization in the Limb Zone occurs as silica-sulphide replacement alteration zones, including replacement of sediments if present, or as silica flooding and quartz-calcite veins in the absence of sediments. Gold mineralization in the Hinge Zone is present in quartz veins and is associated with weak carbonate quartz alteration.

At the center of the Project, a younger sequence of intermediate to mafic volcanic and volcaniclastic rocks are present, which have a similar stratigraphy, but higher proportion of felsic pyroclastic rocks compared to the western and eastern portions of the Project. These rocks host the most significant gold mineralization for the project in the LP Zone, and contains disseminated gold hosted by felsic volcanics

and volcaniclastic sediments. Alteration of the LP Zone is variable and includes strong to pervasive albitization and silicification of the felsic volcanic units, and sericite and muscovite alteration of the metasedimentary units.

The northeastern portion of the Project is characterized by a felsic domain consisting of porphyritic dacite flows and volcaniclastic rocks intercalated with sedimentary layers.

Sulphide minerals including pyrite and pyrrhotite are the main sulphide minerals associated with gold mineralization in all three ore zones. Lesser amounts of arsenopyrite, chalcopyrite, sphalerite and galena have been observed to be associated with the mineralized zones.

5.2.2 PROGRAM OVERVIEW

Geochemistry studies were initiated during environmental baseline investigations in 2022 and will continue as part of an ongoing geochemistry program over the life of the mine. The results summarized herein are reflective of the natural characteristics of the overburden and rock at the site. Additional details are provided in the Geochemistry Summary for Impact Statement (WSP 2025e). A copy of this report is appended to the Impact Statement and will be provided with the regulatory Closure Plan for the Province.

The sampling approach and testing methods for the geochemical assessment were based on the requirements described under the *Mining Act*, namely guidance found within the document Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND 2009), which represents best practice and industry standard approaches and methodologies for metal leaching / acid rock drainage (ML / ARD) sampling and characterization in Canada. Samples were analyzed at accredited Canadian laboratories.

The overall goal of the ML / ARD program is to establish the necessary data to support mine planning and management decisions for various mined materials including overburden, mine rock and ore-grade materials, as well as exposed mine surfaces, along with other geologic materials including tailings. The data are also used to support engineering studies and permitting for the Project.

The overall objectives of the ML / ARD characterization program for mined materials included:

- Obtaining samples that accurately represented the geochemical variation of mine rock and ore-grade materials at proposed development
- Evaluating the geochemical characteristics of overburden that will be relocated as part of Project development.

Table 5-1 provides a summary of the testing programs for mined materials:

- Static and kinetic testing of overburden samples representative of overburden to be excavated as part of Project development. The static testing program included 172 overburden samples, and kinetic testing included 17 trickle leach column tests. Construction of six overburden field kinetic tests is currently underway at the Property.
- Static and kinetic testing was completed of drill core samples, representing mine rock and ore-grade materials, including future stockpiled materials and exposed mine surfaces. Static testing included a program with 3,885 drill core samples from the mine volume. The kinetic testing program included 84 kinetic tests, with 35 humidity cell tests and 34 column tests operated in the laboratory, and 15 field leach barrel tests operated in the field at the Property.

In addition to the above geochemical data, the Project has an extensive exploration geochemistry database including multi-element inductively coupled plasma data representing approximately 500,000 drill core samples within the mine volume. Analyses conducted as part of the baseline assessment are being used to develop acid base accounting (ABA) analogue relationships with the exploration geochemistry database. These relationships are being utilized to generate a ML / ARD block model for the Project that can be used to manage rock during construction, operations and closure as appropriate.

5.2.3 OVERBURDEN

A geochemical characterization program was undertaken to assess overburden materials that are expected to be relocated as part of Project development. The overburden characterization program conducted for the Project exceeds standard approaches for overburden materials for similar mining projects undergoing the approvals process in Ontario.

Geochemical testing on 172 samples of overburden indicated that the overburden is non-potentially acid generating (NPAG) based on an average carbonate neutralization potential ratio of 37. The samples had a very low total sulphur content; total sulphur was below the analytical detection limit in approximately 30% of the samples. Where detectable, total sulphur concentrations ranged from 0.006% to 0.11% (median 0.01%).

Ninety-six percent (96%) of the samples (i.e., 165 samples) had a carbonate neutralization potential ratio greater than 2 and were considered NPAG. Seven samples had lower carbonate neutralization potential ratios less than or equal to 2 and generally consisted of glacial sands with no neutralization capacity and sulphur contents that were at or very close to the detection limit. These materials are not considered to be at risk for acid generation. This was consistent with net acid generation test results that indicated that these samples were NPAG.

Most overburden samples had a modified neutralization potential content on the order of 8 kg $CaCO_3$/t, although it ranged from -0.7 to 135 kg $CaCO_3$/t. Neutralization potential was predominantly represented by carbonate neutralization potential for most samples; however, samples with a low modified neutralization potential content often contained no carbonate neutralization potential. Samples that comprised glacial sand most often had low levels of neutralization potential, likely reflecting the predominance of quartz in these samples.

Solid phase elemental content results were compared to ten times the crustal abundance values presented in Price (1997) for screening purposes. Sample concentrations greater than the screening value were considered enriched in those elements, noting that this screening approach does not provide a direct assessment of metal leach potential or resulting water quality. The samples had a low solid phase metals content that were usually below screening values utilized for the investigations. Solid phase mercury concentrations were below the analytical detection limit for most samples and below screening values for all samples.

Results from the shake flask extraction tests are used as a screening tool to identify parameters of potential interest and do not represent future runoff or seepage quality. Shake flask extraction testing showed concentrations of metals in leachates that were generally low and below screening values, with the exception of silver, chromium and copper in approximately 15% of samples, and concentrations of arsenic, cobalt, tungsten, uranium, vanadium and zirconium in isolated samples. Mercury concentrations in the shake flask extraction leachates were below screening values for all samples, and below analytical detection limits for 96% of the samples.

Static testing demonstrated that the overburden samples were NPAG with very low sulphur contents and low solid phase metal contents. Typically, materials with very low sulphide and metal contents below screening values are not subject to kinetic testing. Kinetic tests usually focus on material with a higher sulphur or metal content considered to pose a potential risk for ML / ARD. Despite this, the Project utilized a proactive and protective approach and included kinetic testing on overburden. Data is available for 14 trickle leach columns that have operated between 8 and 47 weeks.

The pH of leachate from 13 of the 14 column tests was generally stable between 6 and 8 throughout testing. Median sulphate and metal concentrations in leachate over the last five weeks of testing were low and usually similar to, or lower than those observed in baseline surface water quality data for the site. Concentrations of many of the parameters tested including mercury, were consistently below analytical detection limits. Column testing included three samples with low neutralization potential and a range of sulphur contents (<0.01 to 0.05%) that were collected from near surface. Owing to their low neutralization potential content, these samples had a neutralization potential ratio equal to or less than two, however net acid generation pH testing indicated the samples were NPAG. Two of these three samples had column

leachate pH values that were consistent with the other column tests (i.e., pH 6 to 8), including other tests that had a lower neutralization potential content. Leachate pH for one sample (COL-3) was notably consistent with the blank columns. This was attributed to the pH of deionized water used in the laboratory test, as well as the low neutralization potential of the sample and the potential influence of natural organic acids that may have been present as the sample was collected near the soil interface. The sample had a very low sulphur content overall (0.03%) and leachate sulphate concentrations were low, indicating that sulphide oxidation was not driving the pH response of the test. Similar drainage quality is not anticipated to occur under field conditions, as testing indicates that in contrast to the COL-3 sample, most overburden materials produce alkalinity which provides buffering capacity to drainage.

Construction of six field kinetic tests for overburden is underway to further assess drainage quality under field conditions.

5.2.4 MINE ROCK AND ORE

Comprehensive geochemical characterization programs were undertaken for representative rock samples from the Project to characterize its ML / ARD potential of mine rock and ore-grade rock. This included a static testing program with 3,885 drill core samples and a kinetic testing program with 84 kinetic tests with dozens of weeks to several years of data. The kinetic testing program includes 35 humidity cell tests and 34 column tests operated in the laboratory, and 15 field leach barrel tests operated at the Great Bear Property.

Baseline geochemistry programs for Project rock have been underway for several years. The sampling approach and testing methods utilized are based on the requirements described under the Ontario *Mining Act*, namely guidance found within the reference document Prediction for Drainage Chemistry for Sulphidic Geologic Materials (MEND 2009), which represents best practice and industry-standard approaches and methodologies for ML / ARD sampling and characterization in Canada.

The scope of the baseline program has been updated as needed over time based on ongoing development of the Project and subsequent technical findings of the geochemistry programs, as well as feedback received from regulatory agencies and stakeholders. Overall, the characterization program for Project rock is highly robust and comprehensive. The magnitude of the collected dataset exceeds standard approaches for similar mining projects completed or undergoing the approvals processes in Ontario.

Static testing results for 3,885 samples indicated that sulphur contents of drill core samples were variable, ranging from below the analytical detection limit (0.01%) up to 10%. Samples of the most abundant rock types (Felsic Volcanic 1 and Felsic Volcanic 2) generally had sulphur contents on the order of 0.5 to 0.7%. Samples of ore-grade materials generally had higher sulphur contents (1.3%) compared to mine rock samples (0.39%). Sulphur was primarily present as the acid-generating sulphide minerals pyrite and pyrrhotite, although low levels of sphalerite and galena were also identified to co-occur with acid generating sulphide minerals in some samples. Sulphate was present in low abundance (median 0.06%) in most samples tested by ABA; this result was confirmed by mineralogical testing. Total sulphur was found to be strongly correlated with sulphide content and an accurate measure of the acid generation capacity of the rock.

Most samples had a low neutralization capacity with a median carbonate neutralization potential of 11 kg $CaCO_3$/t, although it ranged from 1 to 200 kg $CaCO_3$/t, and the higher carbonate neutralization potential contents were observed for some specific rock types (e.g., Basalt had a carbonate neutralization potential on the order of 50 kg $CaCO_3$/t). Carbonate neutralization potential was typically similar to or lower than modified neutralization potential, suggesting most neutralization capacity in the samples was present as carbonate minerals, with calcite as the primary carbonate mineral as identified by mineralogical testing. Some subsets of major rock types including Felsic Volcanic 1, Felsic Volcanic 2, Fragmental 1, Fragmental 2, Metasediment 2 or Metasediment 3, had samples that contained no detectable carbonate neutralization potential and low levels of modified neutralization potential.

A carbonate neutralization potential ratio threshold of 2 was used to classify samples as potentially acid generating (PAG) or NPAG. Approximately 80% of tested drill core samples were classified as PAG using

this threshold value, including 78% of mine rock samples. Most samples from the LP Central pit (85%) and Viggo pit (67%) were classified as PAG, along with approximately half of the samples (50%) from the underground mine. A majority of mine rock samples of Felsic Volcanic 1 (78%), Felsic Volcanic 2 (90%), Fragmental 1 (75%), Metasediment 2 (98%) and Metasediment 3 (77%) were classified as PAG; most mine rock samples of Fragmental 2 (73%) and Basalt (79%) were NPAG.

Results for the 35 humidity cell tests (19 to 109 weeks of data) supported the classification of samples as PAG or NPAG as determined by ABA testing. Overall, sulphide oxidation rates in the humidity cell tests were low. The data suggest that Project rock may have a range of lag times, including: low sulphide oxidation rates in typical pyrite and pyrrhotite bearing materials leading to long lag times (10 years or longer), low sulphide oxidation rates in high sulphide, low neutralization capacity materials with accessory sulphides (e.g., sphalerite and galena), and acidification within a limited timeframe in high sulphide, low neutralization capacity samples. Material with a low neutralization capacity and high sulphide content is currently understood to represent a minor component of the overall Project rock.

The observed low sulphide oxidation rates in the samples may be due to trace metal substitution and continues to be evaluated. Galvanic interactions may also be influencing sulphide oxidation rates, but given the current mineralogical dataset, the prevalence of non-acid generating sulphides is thought to be limited and therefore not notably affecting the observed low sulphide oxidation rates. Kinetic testing continues to be routinely monitored.

Comparison of humidity cell release rates to release rates obtained from 15 field kinetic tests suggests that sulphide oxidation rates under field conditions may be up to 10 times slower than those observed in the laboratory. This is attributed to differences from the laboratory setting in water movement through (flushing), temperature and sample grain size, and indicates that practical lag times in the field could be longer than those currently estimated from humidity cell testing in the laboratory. Net acid generating conditions may however, still occur within a limited timeframe for samples with very low neutralization capacity and higher sulphide content, as progression toward acidic conditions was observed for two field tests after one year of monitoring.

Initial static testing of drill core including elemental content analysis and short-term leaching tests (shake flask extraction tests) identified several parameters of potential interest for neutral metal leaching. Primarily this included arsenic, as solid phase contents were above screening values in 48% of the drill core samples and leachate concentrations were above screening values in 65% of the shake flask extraction tests.

The results of kinetic testing demonstrated that arsenic release rates varied distinctly based on the arsenic content of the sample and arsenic sulphide mineralogy present. Different arsenic sulphide associations are also observed among the different Project rock types, indicating that different arsenic leaching behaviours are present amongst the various rock types. Comparisons of laboratory and field kinetic test data generally showed alignment; samples with a higher solid phase arsenic content generally had higher arsenic release rates than samples with a lower solid phase arsenic content. Arsenic release rates were lower for some materials with a lower arsenic solid phase content in field kinetic tests relative to laboratory tests, possibly due to reduced reactivity under field conditions.

For major Project rock types, including Felsic Volcanic 1 and Felsic Volcanic 2, if arsenic was present in the samples, it typically occurred in pyrite (arsenic-bearing pyrite) or as arsenopyrite (which was typically present with pyrite or pyrite and pyrrhotite). These samples were observed to leach arsenic at relatively low rates, and below the interim Provincial Water Quality Objectives for protection of aquatic life (iPWQO), used as a screening value (with no direct regulatory application), except where solid phase arsenic concentrations were elevated (greater than 100 milligrams per kilogram; mg/kg). These elevated arsenic content samples represent a small fraction of the dataset overall and much of the Felsic Volcanic 1 and Felsic Volcanic 2 rock was determined to be non-arsenic leaching.

Other rock types including Metasediment 2, Metasediment 3, Fragmental 1, Fragmental 2, and Basalt hosted arsenic in arsenic-bearing pyrite, arsenopyrite, and the arsenic sulphide mineral gersdorffite-cobaltite. This mineral is understood to occur in isolated samples and not be present in the bulk of the Project rock. Testing of samples of these rock types that contained a high proportion of gersdorffite-cobaltite and little Fe-sulphide (pyrite / pyrrhotite) however, indicated a higher potential for arsenic

leaching. This is because any oxidation of gersdorffite-cobaltite that leaches arsenic without concurrently oxidizing pyrite or pyrrhotite will contain insufficient secondary iron-oxyhydroxide surfaces to adsorb arsenic. This behaviour was observed for samples of Metasediment 2, Metasediment 3, Fragmental 1, Fragmental 2 where arsenic was greater than 12 mg/kg, and for some Basalt samples where arsenic was greater than 46 mg/kg. Arsenic leaching rates from these rock types are expected to be low below these solid phase content thresholds based on the kinetic testing data.

Other elements that had solid phase content or leachate concentrations in short term leaching tests above screening values, did not appear to be of interest for metal leaching under neutral pH conditions for the bulk of the Project rock based on low release rates in the extensive laboratory and field kinetic testing programs undertaken.

Project rock generally contained low levels of mercury with no potential for mercury leaching observed in kinetic tests. Greater than 99% of the samples had solid phase mercury concentrations that were below screening values and 90% of the overall dataset had mercury concentrations that were at or below the analytical detection limit (0.005 to 0.05 mg/kg). Mercury release rates in all kinetic tests were based on concentrations at or near the analytical detection limit (0.000005 to 0.00001 mg/L) for all tests for the duration of testing. Ultra low level mercury analysis (detection limit of 0.00000004 mg/L) was recently initiated for ongoing kinetic tests to supplement the currently available data. Results of this analysis confirms very low mercury release rates in humidity cell tests.

Net acid generation leachate analyses indicated that some metals (aluminum, arsenic, boron, cadmium, cobalt, chromium, copper, iron, lead, molybdenum, nickel, phosphorus, selenium, silver, thallium, tungsten, uranium, vanadium and zinc) may be of potential interest under acidic leaching conditions. Humidity cell tests are generally showing longer lag times to net acidic conditions and stable acidic leaching conditions have not yet developed for many PAG samples undergoing kinetic testing. Metal release rates for the kinetic tests will continue to be monitored.

5.2.5 TAILINGS GEOCHEMISTRY

Static testing and kinetic testing were conducted on synthetic tailings samples produced as part of metallurgical testing for the Project, including desulphurized tailings and concentrate tailings. Static testing and kinetic testing were also conducted on samples representing whole tailings that will be used to generate paste backfill, as well as samples of prepared paste backfill. Table 5-2 provides a summary of the testing programs for tailings.

As the tailings are a by-product of processing of Project ore to recover gold in the process plant (Section 5.4. Engineering optimization studies determined that production of two segregated tailings streams provides the best means to manage ML / ARD in the long term. The desulphurization flotation circuit in the process plant will produce a larger volume of desulphurized tailings and lower volume of sulphide-containing concentrate tailings. Producing a larger volume desulphurized tailings that are NPAG, and lower volume of concentrate tailings which are PAG, allows for separate management approaches, providing environmental benefits to water quality during operation and after closure.

5.2.5.1 DESULPHURIZED TAILINGS

Desulphurized tailings samples have a low total sulphur content (median 0.18% achieved in the lab), primarily present as sulphides (pyrite) and are NPAG. As a result of the desulphurization process, the desulphurized tailings had no potential for net acidic leachates and low metal release rates based on humidity cell testing. Mercury concentrations in test leachates were below or at the analytical detection limit throughout testing. Solid phase metal concentrations were low and were usually below screening values.

Analyses conducted on supernatant samples after cyanide destruction, representing process water to be discharged with the tailings, indicated that the process water generally had a pH around neutral with generally low metal concentrations. Metal concentrations were below qualitative screening values for most elements with the exception of cobalt and phosphorus (all samples), and antimony, arsenic, copper, iron and molybdenum in isolated samples. Sulphate concentrations were on the order of 1,000 mg/L and were attributed to the addition of sulphate as a reagent during the cyanide destruction process.

5.2.5.2 CONCENTRATE TAILINGS

The lower volume of sulphide-containing concentrate tailings purposefully produced in the process plant through the desulphurization flotation circuit are PAG. The samples had an elevated total sulphur content (median 32%) present as sulphides (mainly pyrite). Consistent with their high sulphide content, the samples had elevated solid phase concentrations of several metals (arsenic, cadmium, copper, lead, molybdenum, selenium, silver, tungsten and zinc).

Results of the subaqueous recirculating column test on the concentrate tailings sample indicated that oxidation of the material was limited under submerged conditions as are proposed. Consistent with low rates of sulphide oxidation, metal release rates for the concentrate tailings sample were low and many parameters (including antimony, beryllium, chromium, lead, molybdenum, nickel, silver, thallium, tungsten, vanadium, zinc and zirconium) were below analytical detection limits.

Analyses conducted on supernatant samples after cyanide destruction, representing process water to be discharged with the tailings indicated that supernatant had approximately neutral pH and sulphate concentrations of approximately 1,000 mg/L, which is attributed to the addition of sulphate in the cyanide destruction process. Most elements in the concentrate supernatant were below qualitative screening values with the exception of cobalt and phosphorus (all samples) and several other elements (antimony, arsenic, cadmium, chromium, copper, iron, molybdenum and lead) in isolated samples. Mercury was below screening values and the analytical detection limit.

5.2.5.3 WHOLE TAILINGS AND PASTE BACKFILL

Whole tailings are tailings generated within the process plant prior to the flotation circuit, which will be used in production of paste backfill for the underground mine. The whole tailings samples representative of the LP Zone were PAG and had a median total sulphur content of 1.2%. Sulphur was mainly present as pyrite in the samples, although some samples contained pyrite and pyrrhotite.

Humidity cell testing indicated that metal release rates from the whole tailings samples were generally low under current neutral leaching conditions. Based on the humidity cell test results, lag times to net acidic conditions were estimated to be on the order of 10 years for whole tailings that represent the life of mine LP Zone tailings to be used for backfill generation.

A paste backfill sample was prepared from whole tailings samples representing the life of mine whole tailings. Properties of the paste backfill sample were similar to the whole tailings from which the paste was prepared. The paste backfill sample had a total sulphur content of approximately 1% (present as pyrite) and was classified as PAG by acid base accounting.

Subaerial and subaqueous kinetic testing conducted on paste backfill samples generally indicated low metal release rates. Release rates from the subaqueous kinetic test, representing submerged backfill under closure conditions, were generally lower than release rates observed from the subaerial test.

Based on trends in release rates for the whole tailings, and the neutralization potential and acid potential content of the paste backfill, a lag time to net acidic conditions for the paste backfill is currently estimated to be on the order of 10 years under laboratory conditions. Placement of the paste backfill underground in sealed stopes will limit its interaction with oxygen and water, which is expected to prolong the laboratory-estimated lag time under in-field conditions.

5.3 MINING ACTIVITIES

The underground mine development for the Project will begin from the AEX Program twin ramps, which will also provide ventilation and emergency egress for the early stages of underground mining. Limited additional development activities are required on surface to initiate underground mining. During the construction of the Project, two vent raises will be established on surface. Later in the mine life a shaft and headframe will be developed to support access to deeper ore zones underground. Additional ventilation through vent raises will be developed as mining progresses, based on the mine plan.

Two open pit mines are proposed to be developed on the Project early in the mine life: LP Central pit and Viggo pit. The primary open pit for the Project is the LP Central pit. The Viggo pit will be depleted during construction to provide an early source of NPAG rock for use in construction and to allow for future re-use for concentrate tailings storage (as the VMF; Section 5.9).

5.3.1 PRE-DEVELOPMENT ACTIVITIES

Stripping of the surface overburden consisting primarily of mineralized soil with some surface organic materials is necessary to gain access to the bedrock and allow extraction of ore from the open pits. The overburden thickness at the open pits varies based on field investigations. At the LP Central pit the overburden consists of a thin layer of topsoil (0.1 m to 0.8 m) that is sometimes overlain by fibrous peat, underlain by varved silt and clay stratum (deep water glaciolacustrine deposit; up to approximately 19 m thick) and glacial till (up to approximately 23 m thick). The stratigraphy at Viggo pit is similar; approximately 1 m of topsoil, underlain by a deep water glaciolacustrine deposit (approximately 6.0 m), on top of glacial till (approximately 7 m), or directly over bedrock.

Overburden will be stripped using shovels, loaders, bulldozers and / or comparable equipment. Overlying organic materials will be stripped and stored separately from the overburden for use during reclamation where practical, recognizing that the thickness of organic materials is generally less than 1 m (0.1 m to 0.8 m) at the pit locations based on current field investigations.

The primary sources of overburden will be from the open pits (23 Mt), infrastructure (1.4 Mt) and the TMF dams (1.2 Mt). Stripped overburden will be trucked to an overburden stockpile for storage, or transported directly to the proposed construction or reclamation location for use. Five overburden stockpiles are proposed, located close to the overburden source, but also in consideration of subsurface conditions that could potentially affect stockpile stability. Pre-development activities will include the construction of haul roads to connect the open pits to the stockpiles, the service and administration area, and TMF, built with a combination of local overburden and NPAG mine rock. Haul roads will be approximately 30 m wide within the pit. On surface the haul road corridors will be of similar width, consisting of a road surface, safety berm, side slopes and ditching. Where appropriate, utilities (such as pipelines and power) will be placed within the same road corridor. Haul roads will be built with a combination of local overburden sources and NPAG rock extracted from the open pits.

A portion of LP Central pit is located within the natural flood plain of Dixie Creek. During periodic flood conditions, flood waters could potentially enter the pit. A flood mitigation analysis has determined that a flood protection berm may be needed to mitigate Timmins flood event. A flood protection berm will be built during the construction phase to protect the watercourse, LP Central pit and workers.

5.3.2 VIGGO PIT MINING ACTIVITIES

Mining and blasting at the Viggo pit will start during the early construction and will continue for approximately 2.5 years, for completion before the end of construction. A two lobe open pit is proposed as shown in Figure 3-3. This mine production schedule has purposefully been established to provide rock from Viggo pit for construction of the Project, and to limit the requirement for dedicated aggregate sources and additional environmental disturbance.

By utilizing this mine scheduling approach, it also provides for:

- Early ore access for the process plant including for commissioning
- Availability of the depleted east lobe of the Viggo pit for the storage of concentrate tailings and contact water management as the VMF from the start of ore processing
- The depleted west lobe of the Viggo pit to be available and re-used for the temporary storage of reject solution from select contact water treatment using membrane filtration once water treatment commences.

The Viggo pit has a surface area of approximately 22.8 ha and a maximum depth of about 120 m. The pit has been designed with approximate bench heights of 10 m for single benches and 20 m for double benches. A minimum single bench width of 7.5 m is proposed but bench widths will vary as needed. The

overall slope angle in hard rock is approximately 45° varying for rock type and geotechnical stability assessment. The ramps from surface will be either single or double lane width (25 to 35 m width), designed to accommodate the heavy equipment and have an approximate 10% slope. Horizontal drains are also envisioned within the bedrock slopes where needed to facilitate dewatering and improve pit wall stability.

Rock (ore and mine rock) will be broken at the pit wall using explosives. Conventional mining equipment (i.e., blast hole drill rigs, mining shovels, excavators, loaders, bulldozers and / or comparable equipment) will be used during mining activities at the pit, with equipment selected to meet the production requirements.

5.3.3 LP CENTRAL PIT MINING ACTIVITIES

Mining of rock at the LP Central pit is planned to start near the end of the second year of construction and will continue for a total of approximately nine years until the near surface ore is depleted. Once sufficient bedrock is exposed through overburden stripping, ore and mine rock will be extracted from the pit using explosives and conventional mining equipment.

LP Central pit has a surface area of approximately 87 ha and a depth of 255 m. The LP Central pit has been designed with approximately 10 m benches and 20 m catch berm widths. Average pit slope in hard rock is 45° depending upon the rock type. The ramps from surface have an approximate 10% design gradient and will be either single or double lane width (25 m to 35 m width), designed to accommodate the heavy equipment.

5.3.4 UNDERGROUND MINING ACTIVITIES

Underground mining will be used to access deeper ore that cannot be readily or reasonably be extracted by open pit mining. The mine plan includes development of the underground workings to a depth of about 1,500 m below the surface or potentially deeper.

Figure 3-4 and Figure 3-5 provide cross-sections of the proposed underground development based on current knowledge. A plan view of the underground workings projected at surface is shown on Figure 3-6. Early production mining will be focussed on the LP Zone. Mine development will begin from the AEX Program twin ramps, which will also provide ventilation and emergency egress for the early stages of underground production mining. The underground ramp dimensions for the production mine will also be in the order of 5.5 m wide and 6.0 m high, and will have a gradient of 15%. The dimensions of horizontal lateral development off the ramp dimensions will vary based on the mine plan. Ore and mine rock will be extracted at the active mining face using explosives and transferred by load haul dump vehicles or scoop trams to trucks for haulage to surface along the ramp. Some mine rock will be retained underground for use as backfill. Rock brought to surface via the portals will be transferred to open pit haul trucks for transport to the process plant or stockpiles.

As mining continues, other ore zones will be accessed by extending the ramp laterally and vertically. Material mined in the upper zones (approximately upper 800 m) will be trucked to surface via the main underground ramps through the portals. A system of vertical ore and waste passes will allow internal transfer of material to centralized loading areas.

There are three distinct ore bodies that will be accessed by means of underground mining: LP Zone which is the primary ore deposit, and the Hinge Zone and Limb Zone. The sequence of mining is dictated by the underground mine plan where mining starts close the surface and progresses deeper, spreading out laterally as needed according to the ore body configuration.

Longitudinal longhole open stoping and Alimak stoping are the main mining methods proposed. Cable bolting and conventional ground support will be provided to the workings as appropriate. Backfilling will be predominantly completed using cemented paste, potentially supplemented with cemented rock fill and unconsolidated rock fill based on spatial limitations. These two backfill systems will have dedicated surface facilities. A paste backfill plant will be constructed on surface near the portals to manufacture the paste, including using tailings from the process plant and membrane filtration reject solution. This

approach will re-use and stabilize a waste product to support underground mining while minimizing storage requirements on surface. The paste system includes the paste plant facilities and the ancillary equipment required to deliver the product to the underground stopes, such as a high-rate thickener, disc filter, initial reticulation piping and paste pump. The cemented rock fill backfill plant also located near the portals will manufacture cemented rock fill using crushed and screened mine rock. Less than 10% of all stopes (underground voids) are expected to be left open, or filled or partially filled only with underground mine rock.

Appropriate thickness crown pillars will be left at surface for stability purposes based on geotechnical stability investigations, currently estimated as 30 m for the LP Zone, and 15 m for the Hinge Zone and Limb Zone. The LP Zone has stopes that interact with the bottom of the LP Central pit, but they will be mined out and backfilled with cemented paste before the open pit reaches those depths. Special operational protocols will be followed when mining near potential voids or previous underground mining to support safe working conditions.

Once mining progresses to the lower levels of the mine, construction of a shaft to surface will be initiated in approximately Year 7, which will take about three years to complete including the related ore pass system underground. The shaft will progressively become the main material handling system replacing the ramps to transport ore to surface. At that time, truck haulage on the ramps to surface will decrease. The shaft allows for shorter transportation and more efficient for material transportation and is common in deeper underground mines in Ontario.

The production shaft includes a skip hoist system and personnel / supplies cage. The shaft will be approximately 6 m in diameter and is projected to extend up to 1,300 m underground. Ore and mine rock will be trucked, sized for conveying, conveyed to the shaft and hoisted to the surface. Rock brought to surface via the shaft will be transferred to open pit haul trucks for transport to the process plant or stockpiles.

5.4 PROCESSING

The process plant is a conventional grind and gravity, carbon-in-pulp plant designed with an average throughput capacity of 10,000 tpd of ore. The process flowsheet selected is based on proven unit operations in the mining and mineral processing industry. The process plant is designed with typical design growth, where there may occasionally be days where up to 15,000 tpd of ore is processed; however, the annual throughput is planned to average the 10,000 tpd due to weather, maintenance downtime and operating delays.

Ore will be hauled either directly from the open pit or underground mine, or extracted from the ROM or LGO stockpile 1 or 2 (LGO1 or LGO2), and fed into the primary (jaw) crusher. The primary crusher is the start of the crushing circuit which will produce ore to a suitable size for conveying and grinding. Crushed ore will be stockpiled in a 30,000 t crushed ore stockpile located within a storage dome until needed, at which time it will be conveyed to the process plant for further sizing and processing.

Ore processing will involve the following steps:

- Grinding and classification: grinding circuit will reduce the particle size of the ore down to a product size amenable for processing. This is completed through two stages of milling, with a semi-autogenous mill in closed circuit with a screen and pebble crusher, and a ball mill in closed circuit with a cyclone.
- Gravity concentration: a portion of the hydro-cyclone underflow will be sent to a gravity concentration circuit, including scalping screens, batch centrifugal gravity concentrators, and an intensive leach reactor treating gravity concentrates produced.
- Thickening: pre-leach thickener will adjust the slurry percent solids prior to leaching.
- Leaching and carbon-in-pulp: cyanide and lime will be added to the leach circuit to leach gold from the ground ore into solution. Activated carbon will be used to recover dissolved gold from the leach solution. The reject by-product from the carbon-in-pulp process are tailings, which consist of finely ground processed rock in solution.

- Elution, regeneration and bar production: loaded carbon will be stripped of gold using the Pressure Zadra process and recovered from the pregnant solution using electrowinning cells. Gold sludge removed from the stainless-steel cathodes will then be filtered, dried, and mixed with fluxing agents prior to being smelted in an induction furnace. Once smelted, the furnace contents will be poured into doré bars and transferred to the vault after they have cooled, been cleaned and weighed.

The process plant will operate with high efficiency of water recycling currently. In addition, most of the activated carbon used in the process will be reactivated for re-use in the carbon-in-pulp circuit.

Tailings produced in the process plant after the gold has been recovered will contain all of the mill feed minus the gold and silver, plus residual process chemicals. The thickened tailings will be sent to the cyanide destruction circuit, followed by either a desulphurization flotation circuit or pumping to the paste backfill plant to be used in the underground mine as backfill.

5.4.1 CYANIDE USE AND DESTRUCTION

Cyanide in liquid form (as dissolved sodium cyanide) will be added to the leach circuit at a rate of approximately 0.65 kg of cyanide per solid tonne of ore feed. Cyanide will be partially consumed during the leaching and carbon-in-pulp processes as a result of reactions with sulphur, oxygen and various metals. The pre-detoxification thickener will enable recycling of some of the residual cyanide back to the plant process water system.

The tailings thickener underflow will be pumped to two parallel, cyanide destruction tanks for additional retention and treatment. Cyanide destruction is expected to use the SO_2/air process with sodium metabisulphite used as the source of SO_2. The residual cyanide concentrations will naturally degrade when exposed to sunlight within the TMF and east VMF.

5.4.2 TAILINGS DESULPHURIZATION

Tailings will be produced in two segregated tailings streams to support the best management practices for ML / ARD in the long term. Following cyanide destruction, the majority of detoxified tailings will be pumped to a desulphurization flotation circuit comprised of three cells in series. This additional step will produce a larger volume of desulphurized tailings that are NPAG and lower volume of sulphide-containing concentrate tailings (concentrate tailings). Producing a larger volume NPAG (desulphurized) tailings and lower volume PAG (concentrate) tailings allows for separate management of the lower volume PAG tailings, providing environmental benefits to water quality during operation and after closure.

The desulphurized tailings will be thickened at the process plant to about 60% solids by wet weight and pumped to TMF for storage. The concentrate tailings will be pumped as a slurry at approximately 35% solids to the east VMF for permanent sub-aqueous storage.

5.5 BUILDINGS, EQUIPMENT AND INFRASTRUCTURE

5.5.1 BUILDINGS AND YARDS

5.5.1.1 PROCESS PLANT ASSOCIATED BUILDINGS

The process plant and the crusher building require competent foundations because of the heavy equipment loads, and close tolerance limits for ground settlement. The proposed location is in an area of good geotechnical conditions west of the mine access road well above the water table. This site is reasonably positioned with respect to proximity to the LP Central pit and TMF which shortens haul distances, and tailings and water reclaim pipelines to the extent practical. Table 5-3 provides a summary of the buildings and covered areas associated with ore processing.

5.5.1.2 ACCOMMODATIONS

A camp complex will be established as part of the Project located east of Tuzyk's Road and north of the regional transmission line. The camp is designed to accommodate approximately 1,000 people on a temporary basis during construction and approximately 300 people during operations. This location was selected as it facilitates worker access and Project security, and does not conflict with other mine facilities or external commercial operations, including for safety aspects. The operations phase accommodations is proposed to be comprised of nine, 36 person interlinked, pre-engineered dorms (total 324 permanent accommodations), which will be supplemented by 19, 36 person dorms for construction. The camp complex will also include:

- Commercial kitchen and diner complex
- Recreation and administration complex
- Cultural and interfaith space
- Covered corridors
- Infrastructure area (sewage holding tanks, water tanks and fire water tank)
- Power and communications
- Gravel parking area
- Sewage treatment plant
- Potable water treatment plant.

5.5.1.3 OTHER BUILDINGS AND YARD

A number of additional buildings will be required on site to support the operations. Modular or pre-engineered, steel frame buildings are planned to be brought to site and installed during the construction phase.

The majority of other site buildings will be located near mine access road in the service and administration area near the centre of the Project. The total yard area associated with the process plant, crusher building, and ancillary building complex, including the building footprints themselves, occupies an area of approximately 50 ha. This entire area will be cleared, grubbed and backfilled as needed for improved trafficability and erosion control.

A large laydown area has been specifically identified north of the LP Central pit to allow future laydown area or development if needed which is within the contact water collection area. It has been assumed that the areas between proposed facilities will also be used over the life of the mine including for laydown. Shorter-term rock or overburden stockpiles could potentially be located in laydown areas if needed.

5.5.2 AGGREGATE SOURCES

Aggregate and rockfill needed for site preparation and construction purposes will primarily be sourced from repurposed NPAG mine rock sourced from development of the open pits (LP Central pit and Viggo pit). As needed this material will be supplemented during the construction and operations phases by onsite dedicated quarries, and sand and gravel pits (Figure 3-3), including for specialized requirements. The rock sources from quarried are located within or near the TMF. Two locations have been identified within the TMF footprint and these locations also have the benefit that once excavated of providing additional capacity for tailings storage where the rock is removed, and are a short haul distance to where the rock is required for dam construction include the TMF, TMF pond and MWP.

Additional aggregate will be required for specialized uses such as tailings dam filters, concrete manufacturing, and road construction and maintenance. Two raised sand and gravel areas have been identified on the Property north of the TMF (Figure 3-3). A portable screening plant may be used for size control. It may be necessary to supplement the Project quarries and borrow sources with offsite materials that are available regionally from licensed sources.

5.5.3 SITE ACCESS AND ROADS

Access to the Project will be via Highway 105 to Tuzyk's Road which is part of the regional road network. The road network will include both haul road and lighter vehicle roads required to provide access to the various facilities around the Project. The road network was designed as practical and for safety considerations. Considerations were given to separating large haul truck and heavy equipment traffic from other site vehicular traffic during ongoing design, and decreasing crossings for large haul trucks and heavy equipment from other site vehicular traffic.

Secondary access roads will be provided off the main access road for access to the remainder of the site area, either directly or indirectly. Ditching and placement of tailings and water pipelines and other infrastructure alongside the road will widen the overall corridor, but minimize the requirement for additional pipeline-dedicated corridors.

For more remote locations, single lane roads may be established with pullout areas. Culverts will be installed in low areas as needed for surface drainage management. Parking for buses, personal and contractor vehicles, and other service vehicles will be available at the site as needed.

Roads will be gravel surfaced, constructed from aggregate either developed on site, or purchased from local commercial aggregate operations. Dust from traffic will be controlled by vehicle speed limits, but also as needed by using water amended by government-approved suppressant if appropriate. Materials that are PAG or NPAG-metal leach (ML) will not be used in road construction or maintenance. The following access and haul roads are currently anticipated to support the Project:

- Main access from Highway 101 along Tuzyk's Road (as restricted mine access road south of the Lafarge property)
- Haul roads
- Open pit / vent raise access roads
- Process plant / infrastructure complex access road
- TMF access roads
- Sand and gravel pit / quarry access roads
- Explosives plant access road
- Effluent / fresh water pipeline road
- OVB1 / East pond access road
- Overburden stockpile haul roads
- MRS haul road
- Truck shop complex
- Substation access road
- Vent raise access road (south of Dixie Creek).

5.5.4 POWER SUPPLY

The main, long-term power supply for the Project will come from a combination of grid power from the Hydro One Networks E2R transmission line which crosses the Property and power generated from natural gas drawn from the nearby Enbridge Gas pipeline. The construction phase and early operations will utilize the following infrastructure developed for the AEX Program:

- 115 kV overhead transmission line connecting to the E2R regional transmission line
- 115 kV / 34.5 kV main substation containing the required electrical equipment to step down the power to be able transfer across the site at a lower voltage
- Natural gas distribution line connected to an Enbridge Gas metering station located south of Highway 105
- Natural gas plant that will included natural gas generators as well as necessary electrical equipment.

Overhead 34.5 kV distribution lines will transmit the power across the Project. Additional electrical infrastructure will be installed at designated areas across the site to support the operations. This includes modular e-houses, stepdown transformers and similar. The site electrical infrastructure (such as the substation and overhead lines) may need to be reinforced area when an expanded regional electrical grid is in place.

Temporary diesel-fired generators will be used at remote locations, primarily during the construction phase, as needed supplementary power. The generators used to provide power during the AEX Program (or equivalent) will be kept on site as back-up, emergency generators to provide emergency power at key locations on surface and to support underground ventilation.

5.5.5 PIPELINES

The majority of the pipelines on site will be small water pipelines used to transport water around the Project. The Project will incorporate freshwater, contact water and tailings that will be transferred via pipelines within the Project during operations and will include the following pipelines;

- Chukuni River to camp and process plant (freshwater; operations and closure)
- Process plant to TMF (desulphurized tailings; operations)
- Process plant to east lobe of the VMF (concentrate tailings; operations)
- Membrane filtration to west lobe of the VMF (reject solution; operations)
- Process plant to paste backfill plant (tailings and reject solution; operations)
- TMF to process plant (reclaim water; operations)
- Viggo pit / VMF to water treatment plant (contact water; construction and operations)
- Collection water pond to VMF (contact water; operations)
- TMF pond to membrane filtration plant (contact water; operations)
- MWP to the water treatment plant (contact water; operations)
- AEX mine water pond to underground mine (contact water; operations)
- Membrane filtration plant to holding pond and paste backfill plant (reject solution; operations)
- Water treatment plant / membrane filtration to the advanced exploration treated water pond to Chukuni River (treated effluent; construction, operations and closure).

The Chukuni River (Figure 3-3) was selected as the receiver of treated contact water through an alternatives assessment process. The Chukuni River is large receiver (watershed of approximately 4,415 km^2 at the proposed discharge location) that has a high assimilative capacity even under the lowest flow conditions. The maximum predicted effluent discharge rate of 1,330 m^3/hr represents approximately 1.2% of the river's mean annual flow and 3.6% of flow during extreme low-flow conditions (1 in 100-year dry event). The high flows on the Chukuni River also promote turbulent mixing, which helps to rapidly disperse and assimilate treated effluent discharges into the natural riverine flows minimizing the size and extent of the mixing zone.

The AEX effluent pipeline to the Chukuni River will continue to be utilized for the Project. An additional larger above grade high density polyethylene pipeline will be installed to support the higher flow rate for the Project. The Project effluent pipeline will be installed primarily within the AEX pipeline corridor, although the discharge location for the new pipeline will be a short distance (approximately 160 m) further downstream at a better location in the river for the diffuser. The diffuser will be designed to meet both Fisheries and Oceans Canada and Ministry of Environment, Conservation and Parks (MECP) criteria.

Great Bear Resources established a gas pipeline to connect the AEX Program with the Enbridge main pipeline at the Property boundary. This pipeline will continue to be used for the Project.

5.6 TAILINGS MANAGEMENT FACILITY

Tailings are a by-product from processing ore in a process plant. The means of tailings deposition and storage are important to the operability and long term closure strategy for the Project site. Two primary tailings streams will be produced as part of the precautionary approach to managing ML / ARD at the Project site and will include:

- High density, thickened desulphurized tailings which are NPAG, to be stored in the TMF
- Residual, sulphide concentrate slurry tailings which are PAG and will be stored in the east VMF.

In addition, a smaller portion of the tailings prior to the desulphurization circuit will be used in backfill underground.

The tailings will be pumped from the process plant to the following locations through high density polyethylene pipelines design to accommodate the required volume:

- Desulphurized tailings: pumped approximately 4.3 km to the TMF; water from the TMF pond will be returned by pipeline to the process plant for re-use
- Concentrate tailings: pumped approximately 4 km via a pipeline corridor to the east VMF for deposition under a water cover
- Tailings for backfill: pumped approximately 2.5 km via a pipeline corridor with a water return line back to the process plant.

A leak detection system for tailings pipelines will be installed that will conform to or exceed the industry standards and practices for pipeline leak detection. Designs are proposed to include remote monitored flow in and out, and pressure differential. Secondary containment will be provide for pipelines containing tailing (and contact water) at and near watercourse crossings.

The TMF will be located west of the process plant and the tailings will be deposited into a single cell facility with an approximate footprint of 345 ha (excluding external ponds) and designed to contain an estimated 52 Mt of desulphurized tailings. The desulphurized tailings will be contained by a combination of natural topography and containment dams. The TMF dams will be designed in accordance with the Kinross internal Tailings Standard which aligns with best practices including: the Mining Association of Canada Tailings Management Protocol (MAC 2019), Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams (CDA 2019), Geotechnical Design and Factors of Safety – Technical Bulletin (MNR 2011).

The TMF dams are expected to be constructed with aggregate or re-purposed mine rock. Mine rock used for the construction of the dams will be a NPAG mine rock, which will be used to provide the overall slope required for the dam stability. Granular fill layers will be designed to contain the desulphurized tailings, let water pass through the embankment and allow the desulphurized tailings to consolidate. The granular fill dams will be designed to allow water to pass through the TMF dam, draining to the TMF pond located immediately south of the TMF south dam. Runoff from the TMF will be routed to the TMF pond via a spillway (WSP 2024). Pump station 1 will collect seepage from beneath or through the dams and this will be pumped back to the TMF pond.

A more comprehensive description of the TMF and typical dam cross-sections will be provided with the final certified Closure Plan for the Province.

5.7 MINERAL MATERIALS MANAGEMENT

During the Project, ore, mine rock (PAG and NPAG) and overburden will be managed in accordance with a mineral materials management plan that will be provided with the final certified Closure Plan for the Province.

5.7.1 OVERBURDEN

The primary sources of overburden will be from overburden stripping at the following facilities: the open pits (23 Mt), infrastructure (1.4 Mt) and the TMF dams (1.2 Mt). Stripped overburden will be trucked to an overburden stockpile for storage, or transported directly to the proposed construction or reclamation location for use. Five overburden stockpiles are proposed, located close to the source, but also in consideration of subsurface conditions that could potentially affect stockpile stability. Table 5-4 provides a summary of the stockpile characteristics based on current information. These locations and the preliminary stockpile areas and heights may be refined during detailed design. Stockpiles will be constructed using a combination of end dumping from trucks and dozer assisted pushing. The average lift height will be approximately 5 m with benching provided as needed for stability.

Stability analyses will be carried out during detailed design to finalize the appropriate overburden stockpile design criteria for shorter term and long term stability. The overburden stockpiles will be construction with side slopes from 3H:1V when underlain by outwash, to 10H:1V when within the glaciolacustrine deposit area. The 10H:1V side slopes are applicable to OVB1, OVB2 and OVB3 stockpiles which will also be limited to less than 25 m in height. The side slope angle may be altered and optimized during operation, based on observations during the initial stockpile development. The stockpile development may be staged to allow time for material settlement (WSP 2024a).

All OVB stockpiles will be seeded to support vegetation and to provide erosion protection. During operations runoff from OVB1 and OVB2 will be collected in gravity drainage ditches reporting to the main collection channel. The main collection channel will report to the west VMF and the water will be treated at the WTP prior to discharge to the environment. Runoff from OVB3 is captured via gravity ditches and is collected in the TMF pond. The runoff from OVB4 and OVB5 is also collected in the TMF pond via the TMF. Once in the TMF pond, the water will be used either to support the process plant, or sent to for membrane filtration prior to discharge to the environment.

5.7.2 MINE ROCK

Mine rock will be managed on the Project site according to source location and ML / ARD potential. A portion of the mine rock produced underground will be retained underground for use in backfill. Approximately 10.1 Mt of generated mine rock will be rehandled for general underground backfill or as cemented rock fill. The remaining mine rock will be brought to surface and will be either stored in surface stockpiles or used in site construction, depending on the ML / ARD potential. The majority of the mine rock generated from the Project will come from the open pits.

Mine rock brought to surface will be segregated by its ML / ARD potential utilizing the following criteria:

- A neutralization potential ratio of 2 is proposed as the threshold between PAG rock and NPAG rock. A preliminary sulphur threshold of 0.15% has also been proposed to differentiate between PAG rock and NPAG rock. These thresholds will continue to be validated through ongoing testing programs.
- NPAG-ML mine rock will be handled in the same manner as PAG mine rock. Currently available geochemical data suggest that arsenic is the primary risk for metal leaching. A threshold has been developed to differentiate between arsenic leaching and non-arsenic leaching rock. The arsenic threshold was generated based static and kinetic baseline test work and creates a dynamic threshold based on rock lithology. This preliminary threshold will be validated through ongoing testing programs. Other metal leaching risks will also be evaluated as additional data becomes available.

Approximately 165 Mt of mine rock will need to be extracted from the Viggo pit, LP Central pit, and underground mine to gain access to ore over the mine life. Excluding the material that will remain underground for backfill, the anticipated life of mine rock production for the Project is 155 Mt, estimated as follows based on internal engineering studies and ML / ARD criteria:

- NPAG mine rock: 25 Mt
- NPAG-ML mine rock: 3 Mt
- PAG mine rock 126 Mt.

A large majority of the NPAG mine rock will be used for construction of the Project, including in construction of the TMF dams, to minimize need to dedicated aggregate sources. A single storage area has been identified for combined mine rock northwest of the open pits. The MRS will cover an area of approximately 170 ha and will have a maximum height of approximately 120 m. The PAG portion of the stockpile will be created by end dumping a rock pad compacted via haul truck traffic, to provide trafficability and a buffer between the PAG stockpile and the native overburden below. A perimeter ditch will be established around the stockpile to collect runoff and drainage.

The MRS designs includes an overall slope of 3H:1V to 7H:1V is proposed based on the subsurface conditions, with lift heights of 10 m and a berm width of 7 m (WSP 2024). An appropriate setback around the stockpile will be left undeveloped to accommodate minor slumping or sloughing that typically occurs during stockpile management. Compaction of the mine rock surface will actively occur by haul truck traffic and dozers operating on the MRS, which help reduce permeability and oxygen ingress.

5.7.3 ORE STOCKPILE

5.7.3.1 LOW GRADE ORE STOCKPILES

Two low grade ore stockpiles (LGO1 and LGO2) will be established to temporarily store ore having a lower grade for blending with higher grade ore over the life of the mine, as needed based on the production schedule:

- LGO1 will be initiated during the construction phase from the Viggo pit and will have a total capacity of about 8.1 million cubic metres (Mm^3) and area of 30.2 ha. All material will be rehandled to the process plant during operations.
- LGO2 will be established during the operations phase as a temporary stockpile for ore before behind rehandled to the process plant. LGO2 is planned to have a capacity of approximately 2.6 Mm^3 and area of 17.2 ha.

The LGO1 and LGO2 will be approximately 50 m and 25 m high respectively. The stockpiles will be created by end dumping on a pad constructed of NPAG mine rock placed on top of native overburden. An overall slope of between 3H:1V and 7H:1V is proposed depending on foundation soil conditions, with lift heights of 10 m and a berm width of 7 m. An appropriate setback around LGO1 and LGO2 to account for any minor slumping or sloughing during stockpile management. The ore temporarily stored in LGO1 and LGO2 will be extracted and transported to the process plant for processing prior to mine closure.

5.7.3.2 RUN OF MINE STOCKPILE

A ROM area of up to 3 ha will be established south of the process plant to receive ore trucked from the mine prior to the crushing. The ROM stockpile will be used for very short-term storage (hours to days) before going to the process plant. The stockpile will be continuously emptied and partially filled on a weekly or monthly basis. Maximum tonnage envisioned to be stored at one time is approximately 0.3 Mt. The ROM will be created by free dumping on a pad constructed of mine rock over a low permeability liner. The stockpile design is proposed to have an overall slope of 2H:1V and total height of less than 5 m.

5.8 WASTE MANAGEMENT

5.8.1.1 DOMESTIC SEWAGE AND GREY WATER

During the construction phase of the Project, a construction camp will be established to provide accommodation on the Property. Domestic sewage may be temporarily trucked to an approved offsite facility for disposal; however, the construction camp will have approved water and sewage systems. Treated effluent that meets requirements will be discharged to the environment, potentially connected to the Chukuni River pipeline until such time as the integrated water management system is in place.

Domestic sewage and grey water from the permanent camp and other site buildings will be collected and transferred by pipeline or tanker truck, and treated by an appropriately sized packaged sewage treatment plant. Pre-insulated high-density polyethylene pipelines are proposed located in trenches or berms.

Sewage will be treated in a self-contained, membrane bioreactor package. Outlying site facilities are expected to be provided with holding tanks which will be periodically emptied and transferred for treatment in the onsite sewage treatment plant. The AEX sewage treatment plant may be re-used where capacity exists. Treated effluent from the domestic sewage treatment plant will enter into the integrated water management system, and will eventually be discharged to the Chukuni River. Sewage sludge from the plant is proposed to be vacuum-trucked to a licensed facility located off site, such as the Red Lake or Ear Falls wastewater treatment plant.

5.8.1.2 SOLID WASTE

A number of solid waste streams will be generated, primarily during the construction and operations phases:

- Domestic solid waste: food wastes, paper, glass, metals, batteries, light bulbs and plastic waste generated by all onsite facilities. The majority of the wastes will be generated at the camp complex, and services and administration area.
- Packaging materials: wood packaging, cardboard and plastic wraps are commonly used to provide protection during transportation to site. Most of the packaging materials volume will be associated with the construction phase.
- Industrial solid and liquid waste: includes used oil filters, used batteries, used packaging and similar, primarily from the services and administration area associated with heavy equipment operation and maintenance.
- Construction materials: removal of temporary facilities during construction and operation when no longer needed or useful. This will include scrap metal.
- Contaminated soil: spillage of hydrocarbons and similar to the ground may occasionally occur from heavy equipment operations.
- Treatment sludge and sediments: will be produced from the domestic sewage treatment plant and WTP. May also arise from maintenance of sumps, ditches and ponds.
- Demolition waste.

Anticipated waste volumes of domestic solid waste during the construction and operations phases are expected to be in the order of 1,000 m^3 and 5,000 m^3 per year, with the higher volumes expected during the construction phase. The total quantity of solid wastes that require storage is estimated at approximately 40,000 m^3 excluding demolition waste. Temporary storage in accordance with regulatory requirements is proposed, followed by transport to an approved landfill (such as the Red Lake Regional Landfill (Environmental Compliance Approval A600903) or Ear Falls Landfill (Environmental Compliance Approval A7107001), subject to appropriate commercial arrangements. Food wastes will be handled to avoid attracting nuisance wildlife.

An open burn area may be requested on the Project site for burning of paper and clean wood wastes in accordance with provincial approval requirements. An investigation will be completed at the time for opportunities for recycling, and wastes will be sorted as appropriate if a practical recycling receiver is available.

Special management solid wastes will be stored in sealed containers in lined, bermed areas (or in other means of secondary containment as appropriate). Used lubricants and associated materials will be stored in tanks with secondary containment and shipped off site by a licensed disposal company. Quantities of other used fluids, such as cleaning solvents and degreasing agents, will be classified by type and either treated on site, if appropriate, or stored and transported off site to licensed processing facilities in accordance with applicable regulations and best management practices. Minor quantities of biomedical waste from workers will be temporary stored and transported off site to an appropriate waste disposal facility. Soils contaminated with hydrocarbons or other chemicals will be removed off site to an approved facility. An onsite bioremediation facility is not currently planned but would need to meet provincial design and approval requirements if determined to be appropriate later in the mine life.

Two types of treatment sludge are expected to be produced from the Project (membrane filtration reject solution handling is described in Section 5.9). Thickened sludge from the domestic sewage treatment

plant is expected to comprise a small volume (a few cubic metres per day). This sludge would be disposed of at the Red Lake or Ear Falls sewage treatment plant. Sludge from the water treatment plant is collected in the clarifier and periodically pumped to the tailings pump box for co-disposal in the TMF. Sediments from periodic maintenance of sumps, ponds and ditches will be assessed individually for content and quality as they arise. The materials may be disposed of in the TMF, VMF or mine rock stockpile as appropriate.

Demolition waste management is described in Section 9.5.

5.9 WATER MANAGEMENT AND TREATMENT

Water will be managed for the Project, according to the following approach:

- Diversion of non-contact water from the mine infrastructure where reasonable
- Collection and transfer of contact water into the integrated site water management system
- Management of contact water in facilities designed to be protective of the environment
- Recycling and re-use of contact water on the site, including for use in ore processing and dust control
- Treatment of excess contact water to meet regulatory requirements, with discharge of treated excess water to the Chukuni River.

Non-contact water from the upper watershed of Unnamed Watercourse 3B, north of the MRS and OVB1 will be diverted away from the stockpile area into Unnamed Watercourse 6B as shown in Figure 3-3. The engineered diversion pond and channel for non-contact water will be designed for fish passage to the extent the natural topography allows, and will incorporate fish habitat and offsetting features. The new pond and channel will naturalize following construction and will become the permanent creek channel even after closure, since reinstating the old channel would be unnecessarily disruptive. The resulting diversion pond and channel will result in creation of new fish habitat.

The primary contact water management and treatment facilities for the Project will include:

- AEX ponds
- Main collection channel
- CWP
- TMF pond
- East VMF
- MWP
- Local ditches, sumps and minor ponds
- AEX effluent treatment plant (early construction contact water management)
- WTP
- Holding pond
- Membrane filtration plant
- Effluent pipeline and diffuser.

During the early operations (approximately the first 15 years), contact water will be directed to one of three primary storage facilities:

- TMF pond will collect runoff from the TMF and will be the primary source of reclaim water for the process plant. Excess water from the TMF pond is proposed to be sent for additional treatment by membrane filtration.
- AEX ponds will manage runoff from their local watershed as well as from underground dewatering. Excess water from the AEX mine water pond will be pumped to the WTP prior to discharge to the environment.
- East VMF will receive concentrate tailings from the process plant, as well as site runoff from the eastern side of the site (collection water pond, MRS, OVB 1 and LP Central pit) facilitated by the main

collection channel. Water will be pumped from the east VMF to the WTP. The east VMF will maintain an approximate minimum 1 m water cover over the concentrate tailings.

As the east VMF continues to receive and store concentrate tailings during the operations phase, the available storage capacity in the east VMF for water storage decreases. In approximately Year 16, the MWP will be established down slope from the TMF pond to provide additional water management capacity. Once available, runoff from watershed west of the main access road will be directed to the MWP instead of the east VMF. Excess water in the MWP will be pumped to the WTP for treatment. Treated effluent from the WTP and membrane filtration will be combined in the treated water pond and excess water discharged via a pipeline to the Chukuni River on a year-round basis.

The WTP and membrane filtration treatment will process waste byproducts by way of sludge from the WTP and reject solution from the membrane filtration process. Sludge from the WTP will be pumped to the tailings pump box for co-disposal in the tailings. Additional treatment steps may be added, if required. The reject solution from the membrane filtration process will be primarily used in the paste backfill mixture that will be sent to the underground to fill underground voids and solidify. Excess reject solution not used in the paste backfill formation, will be pumped via a HDPE pipeline to the bottom of the west VMF. The reject solution in the west VMF will be maintained below the bedrock saddle that separates the west and east lobe of the VMF. A holding pond will also be constructed to provide storage for additional reject solution if needed. The holding pond is illustrated in Figure 3-3.

5.9.1 WATER REQUIREMENTS

The Project aims to minimize the amount of surface and groundwater takings by re-using water where practical for advanced exploration needs. Water requirements for the Project are expected to include:

- Potable water
- Process plant make up water, required in processing and cooling
- Dust control
- Fire water for use in the sprinkler and hydrant system
- Water for mining operations, including for drilling in the underground.

Recycling will provide the majority of the water needs at the Project. Recycled water requirements are managed through utilization of site storage, which eliminates the need for additional water takings under dryer climatic conditions.

Fresh water will be required for specialty uses where use of recycled water is not appropriate and so that sufficient water is available for processing at all times of the year. Average fresh water takings including to supply the process plant, camp complex and other uses.

The potable water well established for the AEX Program will provide fresh water for site uses until the fresh water pipeline to the Chukuni River is established. If needed, a new well or wells may also be established closer to the process plant where subsurface conditions are conducive to water well production.

The primary source of fresh water for the Project will be the Chukuni River. A fresh water pumphouse and intake will be established on the Chukuni River near the effluent discharge location, a large river with an average annual flow of 2.6 Mm^3/d or 949 Mm^3/a. The maximum average fresh water taking volume during operations per day is less than 0.05% of this flow rate. A new, 0.02 m high HDPE pipeline able to transmit up to 150 m^3/hr water supply will be placed in the existing AEX pipeline corridor to bring the water to the main site, and potentially to the potable water treatment system. The AEX pipeline corridor includes the AEX effluent pipeline as well as an access road to the discharge location that was required for construction and maintenance. Alternatively, the AEX effluent pipeline may be repurposed as the fresh water supply pipeline if reasonable. Water will be pumped from the Chukuni River as required to maintain the required water levels in the water supply tanks.

Groundwater will enter the underground workings and ramp (mine water), dewatering is required for a safe working environment. Some of this water will be re-used for underground for drilling purposes, with

additional water for underground operations coming from recycled water. Excess water will be pumped to surface for treatment as needed, prior to discharge to the environment.

A potable water treatment system will be established to treat water for human consumption. Bulk bottle water may also be used for drinking purposes.

5.10 CHEMICALS, FUELS AND EXPLOSIVES

The primary chemicals to be used and stored at the Project site are:

- Process-related chemicals and reagents
- Fuels (diesel, gasoline, propane gas and compressed natural gas)
- Equipment maintenance materials (oil, grease, lubricants and coolants).

Chemicals will be transported, stored and handled in accordance with applicable regulations and good management practice. Tanks will be protected against possible vehicular collisions as appropriate and secondary containment will be provided as applicable. Care will be taken that incompatible materials are not stored in proximity, within the warehouse or other areas.

Reagents that will be used in ore processing and for water treatment at the Project are typical of Ontario gold mines. Process reagents will be stored according to supplier and safety guidance, including in separated and contained areas as applicable. Reagent mixing systems will be located in the process plant within containment areas, designed to contain any upsets and prevent incompatible reagents from mixing. Storage tanks will be equipped with level indicators, instrumentation and alarms. All of the chemicals will be handled and stored according to all applicable regulatory requirements.

The primary reagents required to process the ore and the anticipated form and storage are provided in Table 5-5. Industry-equivalent reagents are available and could potentially be used. Consumption rates are approximate as they are based on test work and operating practices at other existing process plants. Approximately one week of reagent requirements are planned to be stored on site reflecting site logistics and relative remoteness of the Project site.

Other chemicals typically required for vehicle and equipment maintenance will also be stored on site. All consumables will be stored in appropriate containment facilities that meet applicable regulations. Table 5-6 provides a summary of the fuel and related tankage expected to be used on the site and approximately storage volumes. There will be no storage of natural gas on the site, although there will be a pipeline connection to the regional Enbridge natural gas pipeline.

The bulk of the liquid fuel used at the Project will be diesel needed for the heavy equipment fleet. Two fuelling stations will be established onsite at surface: at the service and administration complex and at the mining laydown area, outside the blast radius of the open pit, but readily accessible by heavy equipment and particularly haul trucks. Tanks are sized for three day nominal storage and two days operational volume. Gasoline will also be stored in a double-walled Enviro tank or equivalent at the site for use by site small vehicles, all-terrain vehicles, snowmobiles, boats and gas-powered tools, along with propane. Liquid fuel transfer areas where there is a reasonable potential for spills, will be constructed to contain fuel that might inadvertently be spilled. Automatic shut-off valves and other such equipment as dictated by best practice will be installed to further reduce the risk of spills during fuel transfer operations. Oil water separators will be installed in these locations to manage runoff. For the underground mine, a combination of the existing fueling station from the AEX project on surface will continue to be re-used, as well as up to three small portable, self-contained, fueling stations underground at any time in the life of mine.

Propane may be required at the site for use in equipment and potentially for heating. Storage of pressurized gases will be according to applicable regulations.

Equipment maintenance materials, such as engine oil, hydraulic oil, transmission fluid, gear oils and greases, will be stored in secured containers within the maintenance shop or warehouse. Lubricants will also be securely stored for use at the process plant.

Solvents, other cleaners and antifreeze will also be required for equipment and vehicle maintenance. These materials will be stored in secured containers in the maintenance garage and protected area of the warehouses. Solvents and cleaners will also be securely stored for use at the process plant.

Explosives will be required for mine development and operation. The explosive components are not individually reactive and will only react if mixed in appropriate proportions, placed under certain confined conditions and detonated with an external device. There may also be a limited requirement for explosive use for construction-related rock removal including within Project quarries, and at other site locations. Handling and manufacturing of explosives will remain under the care and control of a licensed third party, although the associated facilities may be constructed by Great Bear Resources and it will be located within the Property.

The explosives-related facilities will be built at a safe distance away from the other facilities and public access, in compliance with the *Explosives Act* and associated regulatory guidance. A location northeast of the Viggo pit is proposed subject to regulatory confirmation (Figure 3-3). The explosives manufacturing and storage facility will be a pre-engineered building with an associated modular office building. Indoor tankage will be provided for trucked water and diesel fuel to be used in explosive manufacture.

Magazines will be used to store packaged explosive products and blasting accessories. A surface explosives magazine will also be constructed to regulatory requirements and will be a secure, unheated modular building. Underground magazine(s) will also be required for temporary explosives storage for the underground mine, designed and operated according to regulatory requirements. Three operational explosive magazines and detonators storages are currently planned, placed at strategic locations throughout the underground mine as needed to support mining. The magazines will be established in safe locations in accordance with regulatory guidelines, and are currently proposed at depths of 70 m, 460 m and 850 m below surface but will adjust based on mining activity.

A temporary magazine and explosives-related facility will be placed onsite during the construction period, until the long-term storage can be established. Temporary facilities will meet all applicable regulatory guidance.

Annual explosives consumption will be up to approximately 10,500 tpa when mining at the LP Central pit and underground mine are occurring simultaneously. Explosive consumption decreases to approximately 5,000 tpa later in the operations phase when only underground mining is occurring.

5.11 PROJECT SCHEDULE

Great Bear Resources proposed to develop, construct, operate and decommission the Project. The Project schedule has been established based on current knowledge. The Project phases are planned as follows:

- Construction phase: Year -3 to Year -1, 3 years in length
- Operations phase: Year 1 to Year 26, 26 years in length
- Decommissioning and closure (closure) phase:
  - Active closure period: Year 27 to Year 29, 3 years in length
  - Passive closure period: Year 30, approximately one additional year
  - Final closure period (removal of water management infrastructure): Year 31, < 1 year in length.

5.11.1 CONSTRUCTION PHASE

Construction can begin once the impact assessment process is complete and initial environmental approvals are received. Great Bear Resources will work with local Indigenous communities to determine the appropriate ceremony requirements.

The construction phase is expected to take approximately up to three years. Certain activities, such as those involving working in wet or poorly accessible terrain, are best carried out when the ground is frozen.

Sequencing of activities will also consider environmental aspects, such as fish spawning and bird nesting seasons. The total length of time for construction activities to be completed may vary depending on the time of the year when approvals are received, as well as according to personnel and equipment availability and scheduling constraints.

Primary construction phase activities are expected to include:

- Refinement of environmental management planning and documentation to support construction activities
- Development of construction camp, associated infrastructure and staging areas (the camp is designed to accommodate 1,000 people on a temporary basis during construction, and then be scaled down during operations)
- Site preparation activities including clearing, grubbing and bulk earthworks
- Onsite haul and access road construction
- Establishment and operation of water management and treatment facilities
- Completion of stripping of overburden, and extraction of mine rock and ore from Viggo pit (approximately 2.5 years), and initiation of these activities in the LP Central pit
- Expansion of the AEX underground workings including production mining with stockpiling of ore on surface
- Management of stripped overburden including storage in designated stockpiles and re-use in construction
- Management of extracted mine rock according to the metal leaching and acid rock drainage (ML / ARD) management plan
- Stockpiling of ore for future processing
- Onsite quarry, and sand and gravel (aggregate) resource development and operation
- Construction of diversions, dams and berms for water collection and management, and associated with for future tailings storage
- Establishment of offsetting and compensation-related features
- Construction of permanent buildings and infrastructure
- Establishment and operation of waste management facilities
- Initiation of the environmental monitoring and reporting required by construction phase environmental approvals
- Ongoing engagement and consultation with Indigenous Nations and stakeholders.

5.11.2 OPERATIONS PHASE

During the operations phase, overburden, ore and mine rock will be extracted from the underground mine workings and LP Central pit for stockpiling or transport directly to the primary crusher for sizing. Sized ore will be processed to recover the gold and silver, and to produce doré bars for periodic shipment off site, approximately twice per month.

The operations phase is anticipated to last approximately 26 years and will include the following primary activities:

- Extraction and transport of ore and mine rock to surface via ramps, supplemented by a shaft to underground later in mine life
- Operation of the LP Central pit for up to about 9 years, including periodic stripping of surface overburden as needed
- Operation of the underground mine for approximately 26 years
- Processing of ore from the ROM and LGO in the process plant
- Management of overburden, mine rock, tailings and ore in designated facilities, including according to the ML / ARD management plan as applicable

- Operation of water management and treatment facilities, including temporary storage of membrane filtration reject solution on surface
- Camp complex operations (approximately 300 persons)
- Operation of waste management facilities
- Progressive reclamation of stockpiles, facilities and yards as practical
- Environmental monitoring and reporting required by construction phase and operations phase
- Ongoing engagement and consultation with Indigenous Nations and stakeholders.

5.11.3 CLOSURE PHASE

The integrated closure approach which is a required element of the Great Bear Resources social performance management system, requires planning for the end of mine life prior to construction, considering both environmental and social impacts. This holistic strategy encompasses physical and environmental activities like reclamation and monitoring, as well as social aspects like employee transition and community engagement. The goal is to create a positive legacy for host communities and ensure long-term benefits beyond the mine's operational lifespan.

Proposed closure activities and measures for the Project are detailed in Section 9 and are governed primarily by the Ontario *Mining Act* and its associated Regulations and Codes. The final Closure Plan will be certified to the Mine Rehabilitation Code by qualified professionals, prior to disturbance associated with the mining project being initiated, and that financial assurance be provided to the Ministry of Energy and Mines before substantive development takes place.

During the initial active closure stage the following activities will be completed which will take up to three years after operations cease to be completed:

- Continuation of environmental monitoring and compliance reporting required by environmental approvals as applicable
- Execution of Closure Plan measures for final reclamation of facilities and site
- Removal of assets that can be salvaged for re-sale or re-use
- Initiate re-filling of the LP Central pit with water if not started during operations
- Pumping of contact water treatment (membrane filtration) reject solution into the underground mine for permanent storage, and re-filling of the underground mine and VMF with water
- Demolition and recycling and / or disposal of remaining materials in approved facilities
- Reclamation of affected areas, such as by re-grading, placement of an appropriate cover as needed and revegetation
- Ongoing engagement and consultation with Indigenous Nations and stakeholders.

A passive closure period is proposed to follow during which the site will be on care and maintenance. The following activities will continue:

- Continuation of environmental monitoring and compliance reporting required by retained environmental approvals
- Completion of filling of the VMF, underground workings and LP Central pit with water diverted or pumped from the Project footprint watersheds, and freshwater from the Chukuni River
- Maintaining the water level below surface in the VMF and LP Central pit until water quality is acceptable for passive discharge to the environment, during this period excess water will be treated prior to discharge to the Chukuni River
- Ongoing engagement and consultation with Indigenous Nations and stakeholders.

After it has been determined that site waters are suitable for passive discharge to the environment, the water levels in the VMF, underground workings and LP Central pit lake will be allowed to rise to final steady state levels. Excess water from the LP Central pit lake will periodically overflow through a spillway to residual channel of Unnamed Watercourse 3 (which flows to Dixie Creek). Water treatment system and

remaining site facilities will be decommissioned during a final closure period. This work will be completed in less than one year.

Table 5-1: Summary of Geochemistry Testing of Mined Materials

Static Testing	Mineralogical Testing	Kinetic Testing
Drill Core (mine rock and ore-grade materials)		

• ABA parameters (n=3,885)
• Full ABA (n=933)
• Sulphur and total inorganic carbon (n=2,952)
  o n= 2,952 samples analyzed by ICP sulphur and inorganic carbon
  o n=433 samples also analyzed by total S (Leco), inorganic carbon, modified neutralization potential
  o n=15 total sulphur (Leco) and inorganic carbon
• Elemental content (n=3,885)
• Net acid generation pH (n=658)
• Shake flask extraction (n=228)
• Net acid generation leachate (n=52)
	• Rietveld X-ray diffraction (n=198)
	• Detailed mineralogy (n=65)
		• Humidity cells (n=35)
		• Column tests (n=34)
		• Field leach barrel kinetic tests (n=15)

Overburden		
• ABA (n=172) • Elemental content (n=172) • Net acid generation pH (n=100) • Shake flask extraction (n=126)	• Rietveld X-ray diffraction (n=31)	• Column tests (n=4) • Field kinetic tests (n=6; under construction)

Note:
N: number of samples

Table 5-2: Summary of Geochemistry Testing for Tailings and Related Materials

Static Testing	Mineralogical Testing	Kinetic Testing
Tailings		
Desulphurized Tailings • ABA (n=7) • Elemental content (n=7) • NAG pH (n=7) • SFE (n=7) • Supernatant testing (n=6) Concentrate Tailings • ABA (n=9) • Elemental content (n=9) • NAG pH (n=1) • SFE (n=4) • Supernatant testing (n=6) Whole Tailings • ABA (n=9) • Elemental content (n=9) • NAG pH (n=9) • SFE (n=9) • NAG leachate (n=9) • Supernatant testing (n=13)	• Desulphurized tailings Rietveld X-ray diffraction (n=6) • Concentrate tailings Rietveld X-ray diffraction (n=1) • Whole tailings Rietveld X-ray diffraction (n=5)	• Desulphurized tailings humidity cells (n=4) • Concentrate tailings column tests (n=1) • Whole tailings humidity cells (n=5)
Paste backfill		
• ABA (n=1) • Elemental content (n=116)	• Rietveld X-ray diffraction (n=1)	• Kinetic tests (n=2)

Note:
N: number of samples

Table 5-3: Primary Buildings and Facilities on Surface

Item [1]	Description [1]
Headframe	Steel frame, heated structure, footprint of 20 m x 20 m and approximately 80 m in height
Hoist room	Pre-engineered building on concrete slab, heated, measuring 25 m x 25 m and having a height of 15 m
Production shaft laydown	200 m x 300 m laydown area where all shaft facilities and infrastructure are located
Shaft collar house	Pre-engineered building, concrete slab on grade, heated, having a footprint of approximately 35 m x 20 m and 18 m height including a loadout area for a bin to load haul trucks on surface
Shaft office building and shop	Modular buildings founded on Sono tubes, heated and measuring 20 m x 6 m x 4 m and 12 m x 8 m x 3 m
Paste backfill plant	Pre-engineered, enclosed and heated steel frame metal cladded building on a concrete slab, measuring 40 m x 25 m x 24 m, with a steel thickener, slurry tank, binder silo and related infrastructure area of about 5,000 m^2
Cemented rock fill backfill plant	Portable crusher and conveyor supplying mine rock, cement silo and a mixing tank, on a concrete pad measuring 60 m x 45 m
Explosives manufacturing and storage	Heated modular office (12 m x 6 m x 3 m) with associated non-heated pre-engineered building (20 m x 20 m x 5 m); will include diesel tanks for site mixed explosive manufacture
Explosives magazine	Non-heated pre-engineering building, approximately 12 m x 8 m x 3 m and elevated from the ground (about 1 m), rated for 20,000 kg
Ventilation: return air raise (Hinge and Limb, LP #1, LP #2, Discovery and Viggo)	Concrete pad, approximately 35 m x 25 m with parallel fans in a metal enclosure and a modular small electrical control room (6 m x 6 m x 4 m)
Ventilation: fresh air raise (Hinge and Limb #1 and #2, Discovery and Viggo)	Concrete pad, approximately 50 m x 100 m with a parallel fan in a metal enclosure, mine air heater houses (10 m x 5 m x 5 m), modular electrical control room (6 m x 6 m x 4 m), modular intake gas monitoring building (6 m x 6 m x 4 m) and potential propane tank
Open pit mine fuel station	Pre-fabricated double-walled steel tanks to store fuel for mobile equipment on site and dispensed; footprint is approximately 35 m x 30 m for up to four tanks
Mine administration building	Modular building to be used for admin and change rooms for mining operations staff (35 m x 20 m x 5 m)
Maintenance building at mine portals	Pre-fabricated structure on a slab on grade concrete foundation (30 m x 40 m x 10 m)
Underground fuel storage (at mine portals)	Pre-fabricated double-walled steel tanks to be used to store fuel for mobile equipment onsite and dispensed; footprint is approximately 35 m x 30 m and will hold up to three tanks
Mine laydown area	Footprint is approximately 300 m x 125 m for including for parking mobile equipment; will contain small modular offices and washroom facility (12 m x 5 m x 3 m)

Note:
1. Buildings and descriptions are approximate and subject to change or replacement including during detailed design.

Table 5-4: Approximate Mine Rock and Overburden Volume

Stockpile	Area (ha)	Volume (Mm^3)	Height (m)
Overburden [1]			
OVB1	92.2	12.3	25
OVB2	34.7	3.1	25
OVB3	24.0	1.6	25
OVB4	9.9	0.4	8
OVB5	8.6	0.4	10
Mine Rock			
MRS	165.0	81.2 total: 77.1 (PAG), 4.1 (NPAG)	120
Low Grade Ore [2]			
LGO1	29.5	8.1	50
LGO2	20.4	2.6	25
Run of Mine Ore [2]			
ROM	3.0	0.3	<5

Notes:

1. An additional, approximately 1 Mm^3 overburden stockpile may be established during the construction phase located between the LP Central pit and Viggo pit. If developed, the stockpile will not cover a watercourse or waterbody, and could be used to store clay from stripping of the Viggo pit for re-use, rather than placing the material in OVB1.
2. There is the potential for the development of one or two additional ore stockpiles on laydown areas within the main site pending increased gold prices. The stockpiles would be in the order of 1 to 2 Mm^3 each and will not cover watercourses or waterbodies. They provide short-term storage for a few years, and the stored ore will be processed during the operations phase.

Table 5-5: Anticipated Reagent Use and Handling

Reagent [1]	Use	Anticipated Form and Delivery [1]	Storage and Handling [1]
Quick lime	pH adjustment; mixed into a hydrated lime slurry in plant	Fine powder in approximately 30 t container trucks	Storage silo; handled in accordance with industry standards for the protection of worker safety and the environment
Sodium cyanide	Leaching agent for dissolution of gold; mixed to form a leach solution	Solid (briquettes) in bulk ISOtainer carried by licenced carrier	Stored ISOtainers; handled in accordance with industry standards for the protection of worker safety and the environment
Activated carbon	Adsorption of gold in solution	Solid granular, bulk (up to 1 t) bulk bags	Bulk bags stored outdoors; inert material handled for dust control.
Flocculant(s)	Slurry thickening (various)	Solid powder, bulk (up to 1 t) super bags	Bulk bags stored with secondary containment; handled in accordance with industry standards for the protection of worker safety and the environment
Sodium hydroxide	For pH control, cyanide mixing, carbon neutralization / stripping and electrowinning	Liquid in approximately 30 t tanker trucks	Stored in a holding tank(s) in plant; handled in accordance with industry standards for the protection of worker safety and the environment
Hydrochloric Acid	For carbon stripping / washing	Liquid (various % solution) in approximately 30 t tanker trucks	Stored in holding tank(s); handled in accordance with industry standards for the protection of worker safety and the environment
Copper sulphate	Catalyst to aid in the cyanide destruction process	Solid powder, bulk (up to 1 t) super bags	Bulk bags stored with secondary containment; handled in accordance with industry standards for the protection of worker safety and the environment
Sodium Metabisulphite	Used in the cyanide destruction process	Solid powder, bulk (up to 1 t) super bags	Bulk bags stored with secondary containment; handled in accordance with industry standards for the protection of worker safety and the environment
Calcium chloride	Anti-freezing within the crushed ore dome	Liquid (various % solution) in approximately 30 t tanker trucks	Handled in accordance with industry standards for the protection of worker safety and the environment
Anti-scalant	Used as needed for maintenance	Liquid in 1,000 L tote bins	Handled in accordance with industry standards for the protection of worker safety and the environment
Coagulant(s), collector(s), frother(s), promoter(s), xanthate	Used within the flotation circuit and to thicken tailings	Liquid in 1,000 L tote bins	Handled in accordance with industry standards for the protection of worker safety and the environment
Industry standard flux	For use in the induction furnace	Solid powder, bulk (up to 1 t) super bags	Handled in accordance with industry standards for the protection of worker safety and the environment

Table 5-6: Summary of Approximate Fuel and Related Onsite Tankage

Material [1]	Location(s) [2]	Approximate Tank Volume [2]
Diesel	Mine laydown fuelling station	2 x 75,000 L
Diesel	Service and administration complex	1 x 11,356 L
Diesel	AEX site	1 x 75,000 L
Diesel	Explosives facility	1 x 10,000 L
Diesel	Quarry	1 x 10,000 L
Diesel	Borrow source	1 x 10,000 L
Diesel	Emergency generators	1 x 25,000 L
Diesel	Future construction locations (TMF or shaft)	2 x 10,000 L
Gasoline	Service and administration complex	1 x 11,356 L
Gasoline	AEX site	1 x 5,000 L
Propane	Underground ramps (at AEX site)	1 x 10,000 L 1 x 37,800 L
Propane	Shaft	1 x 10,000 L
Propane	Viggo fresh air raise	1 x 68,040 L
Propane	LP – Hinge and Limb fresh air raise #1	1 x 68,040 L
Propane	Discovery fresh air raise #1	1 x 68,040 L
Propane	Paste plant	1 x 10,000 L
Propane	Service and administration complex	1 x 68,040 L
Propane	WTP	1 x 68,040 L
Propane	Accommodation camp	1 x 68,040 L 1 x 10,000 L
Coolant	Service and administration complex	1 x 5,000 L
Diesel exhaust fluid	Mine laydown fuelling station	1 x 11,356 L
Engine oil	Service and administration complex	1 x 30,000 L
Hydraulic oil	Service and administration complex	1 x 10,000 L
Transmission fluid	Service and administration complex	1 x 10,000 L 1 x 5,000 L
Axle fluid	Service and administration complex	1 x 30,000 L
Waste oil	Service and administration complex	2 x 30,000 L
Waste coolant	Service and administration complex	1 x 5,000 L
Gear oil, windshield fluids transmission fluid and grease	Service and administration complex	Various, typically 1,200 L
Compressed natural gas	Power generation area	Up to 6 x 15,000 m^3 trailers

Notes:
1. Natural gas pipeline connection only, no onsite storage
2. Location and tank size may change during detailed design but are representative.

6 PROGRESSIVE REHABILITATION

6.1 PROGRESSIVE REHABILITATION MEASURES

Progressive rehabilitation measures will include work tasks that can be performed prior to final rehabilitation / closure of the Project, and that do not pose an impediment to day-to-day activities. In general, progressive rehabilitation tasks involve rehabilitation of a portion(s) of the Project with the aim of reducing the amount of work required at the time of closure. Progressive reclamation also provides opportunities to collect useful knowledge to improve final reclamation success, particularly with respect to cover designs and revegetation methods.

The following potential progressive rehabilitation measures have been identified at the current stage of the Project. The proposed progressive rehabilitation measures may be revised as the engineering and permitting phases advance for the Project.

- Recontouring and revegetation of areas disturbed during construction activities that are not needed during operations
- Decommissioning and salvage of equipment and infrastructure when no longer needed
- Filling of the Viggo pit with concentrate tailings and contact water (i.e., repurposing the Viggo pit as the VMF) to reduce the time for filling with water after operations cease and maintain concentrate tailings continuously under water
- Completion of revegetation field studies during operations to evaluate amendments and seed mixes with native overburden materials, and provide field information to support the success of the final revegetation program
    - Key values identified during consultation identified the use of native seeding including natural, original or medicinal plant species, during vegetation trials native species will be considered.
- Progressive reclamation of the final open pit slopes in overburden above the eventual water level in the LP Central pit and VMF, such as reshaping, revegetation and application of erosion protection at the future water interface or for erosion control if appropriate
- Progressive shaping, covering and revegetating the PAG MRS as maximum stockpile extent and contours are achieved
- As stockpiled ore (ROM, LGO1 and LGO2) is processed, the depleted ore stockpile areas may be progressively reclaimed which is anticipated to include:
    - Excavation of portions of the pad underlying the stockpiles for placement in the PAG MRS or VMF as appropriate
    - Recontouring of the area to promote natural drainage
    - Cover with in 0.3 m of growth media (amended overburden) and revegetation.
- During operations, Great Bear Resources will evaluate potential cover alternatives and may conduct field trials to support the final cover designs this may include:
    - Different overburden thicknesses / cover profiles
    - Soil amendments to support self sustaining vegetative covers
    - Non-soil cover alternatives
    - Plant species..

Other progressive rehabilitation measures that could be completed during operation to expedite final reclamation may include:

- Establishment of a boulder fence or berm in whole or in part around the LP Central pit and VMF

- Construction of the future drainage channel from the LP Central pit to a residual channel of Unnamed Watercourse 3 (which flows to Dixie Creek)
- Initiate filling of the LP Central pit with contact water during operations, if determined to be a sound approach from operational and geotechnical perspectives.

7 REHABILITATION MEASURES – TEMPORARY SUSPENSION

The following rehabilitation measures at a minimum will be implemented during a Temporary Suspension, as defined by the *Mining Act* as “the planned or unplanned suspension of a project in accordance with a filed Closure Plan where protective measures are in place and the site is being monitored continuously by the proponent”.

If the Project becomes temporarily shut down, a notice will be provided to the Director of MEM, as per Subsection 144(1) of the *Mining Act* and Section 11(1) of O. Reg. 35/24, immediately following a decision to proceed to place the Project in Temporary Suspension.

For the purposes of Section 145 of the *Mining Act*, the rehabilitation measures that may be carried out by the Crown or an agent thereof are not limited to the rehabilitation measures explicitly set out in the final Certified Closure Plan. In those circumstances, the term rehabilitation measures include any rehabilitation measure that the Director, acting reasonably, believes is necessary in the circumstances.

7.1 RESTRICTION OF ACCESS AND SITE SECURITY

During a state of Temporary Suspension security of the Project will be maintained through the provision of 24-hour per day site security. Reasonable measures will be taken to restrict access to authorized persons only for the Project, including buildings and other structures. Appropriate signage will be posted to warn of potential hazards. Routine inspections and monitoring will continue on a regular schedule and in accordance with any applicable regulatory requirements and environmental approvals. Site security personnel will manage all security measures will be carried out. A contact person will be identified for access purposes.

Remaining chemicals, not required for temporary suspension, including explosives and fuels, will be sold for reuse and / or removed by appropriate contractors.

7.2 MINE OPENINGS

The Project will include the following mine openings at surface:

- One shaft and headframe
- Two portals
- Seven raises (combination of exhaust and fresh air)
- LP Central pit
- Viggo pit, repurposed to the VMF during operations.

As discussed in Section 7.1, site access will be restricted to authorized personnel only and the Project will be maintained by security provided 24 hours / 7 days a week. During a temporary suspension the shaft, portals and raises will be barricaded with fencing and locked, as appropriate, and posted with appropriate signage. The keys for gates will be kept at the security control centre. Security personnel will inspect these areas such that they remain safe and secure.

During a Temporary Suspension, the underground dewatering pumps will continue to operate to manage groundwater inflow underground. Water within the LP Central pit and VMF will continued to be managed. Contact water will continue to be managed in the integrated water management system as needed. Effluent discharge and quality will continue in accordance with the applicable environmental permits and approvals.

During a temporary suspension, the boulder fence around the open pits and posting of signage may or may not be completed. If not completed at the start of a temporary suspension, signage will be placed around the pit perimeter (approximately every 20 m) and the entrance to the open pit ramps will be fenced or barricaded to prevent inadvertent access during this period. Should the Temporary Suspension period extend beyond three months, an inspection will be conducted by a qualified professional engineer to evaluate the stability of the open pit walls. Recommendation activities from the stability review will be completed, as appropriate, to protect the public and Project from any potential damage.

7.3 SECURITY OF MECHANICAL, HYDRAULIC AND ELECTRICAL SYSTEMS

During a temporary suspension, equipment required for site security, including environmental aspects will be maintained in good working condition. This is anticipated to include but is not limited to: power distribution, communication lines, domestic water and sewage services. Live electrical systems will be fenced, locked and otherwise secured against inadvertent entry and appropriate signage will be placed to warn people of the potential hazard. Any exceptions will be outlined in a Notice to the Director.

In general, processing equipment and related tankage will generally be emptied of their contents, rinsed as necessary, and residual tailings will be transferred to the TMF. Pipelines not required during a Temporary Suspension will be emptied and rinsed, with contents transferred to the TMF or contact water management system.

Non-essential mechanical, hydraulic and electrical systems will be left in a no-load condition. Processes involved with the mine water management facilities and support services will continue to be utilized during the Temporary Suspension phase.

The following processes and services are essential during a Temporary Suspension, and will continue to function:

- Project dewatering systems (underground workings) and water management structures
- TMF runoff collection (i.e., TMF pond)
- MRS, OVB1 and OVB2 runoff collection (i.e., main collection channel, east VMF, sumps)
- ROM, LGO1 and LGO2 runoff collection system (i.e., via collection ditching / berms, CWP)
- OVB3, OVB4 and OVB5 runoff collection (i.e., via collection ditching, TMF and TMF pond)
- Water management ponds (TMF pond, MWP, AEX Mine Water Pond, AEX treated water pond, holding pond, CWP, east VMF) as required
- Water treatment plant and membrane filtration, as required
- Sludge drainage management, as required
- Reject solution management (i.e., holding pond, west VMF)
- Security.

7.4 CONTROL OF EFFLUENTS

The only contact waters requiring control during a Temporary Suspension will be mine water from the underground workings, runoff from the stockpiles (MRS, OVB, ROM and LGO), TMF and collected site runoff.

The underground workings will continue to be dewatered until a decision is reached to either restart operations, place the Project in a State of Inactivity or to close the Project permanently. Mine water from the underground, runoff from the stockpiles (MRS, OVB and LGO) and general site runoff will continue to be directed to the site water management system, which will continue to be operated in accordance with applicable environmental permits and approvals, including discharge of treated effluent to the environment. Monitoring will continue as required by applicable permits and approvals. Additional

parameters, in accordance with the closure plan may also be monitored if not specified in applicable permits, as per Section 10.2.1. If it occurs, a temporary suspension is anticipated to be a short term period where mining ceases temporarily. Additional measures, such as placement of covers as discussed in Section 9 may be completed during this period, if warranted by ongoing environment monitoring.

7.5 STABILIZATION OF STOCKPILES

During Temporary Suspension, stockpiles (MRS, OVB, ROM and LGO) will be monitored for stability and stockpile slopes maintained at stable slope angles. In general, the mine rock will be stockpiled and appropriately sloped during placement. During a Temporary Suspension, the stockpiles will be inspected on the same schedule as operations.

7.6 STABILIZATION OF IMPOUNDMENT STRUCTURES

The impoundment structures at the Project will included: TMF, TMF pond, MWP, CWP, East pond and holding pond. All AEX ponds will be developed via excavation and will not have any associated impoundment structures. In the event of a Temporary Suspension, impoundment structures will continue to operate in accordance with requirements of each structure's associated environmental permit(s) and approval(s), as appliable and needed.

Impoundment structures will continue to be inspected by site personnel on a regular basis to maintain structural integrity. Additional monitoring will be undertaken after storms and spring freshet periods if not part of each structure's regular monitoring program. Pond water levels (if any) will be monitored and pumping systems will be maintained and operated as required to prevent overtopping of embankments / dams / berms. All monitoring and maintenance including dam safety inspections and dam safety reviews will continue on their regular schedule, as applicable. Impoundment structure inspections completed during a Temporary Suspension will be documented and recorded.

7.7 SCHEDULE OF MEASURES FOR TEMPORARY SUSPENSION

Items to be performed upon placing the Project in a Temporary Suspension will include the following:

- Any additional fencing and / or gates will be installed (where required) and locked, with appropriate signage, to restrict access to the Project, with the main access road remaining open with continuous security personnel coverage
- Buildings will be equipped with appropriate locks and secured if not in use
- Unused and / or unnecessary chemicals, explosives and fuels will be removed from the Project
- Any unused tanks and pipelines will be emptied, as required
- Mine openings (portals, shafts and raises) will be barricaded and / or secured against inadvertent access
- Appropriate warning signage will be placed around the open pits
- Non-essential mechanical, hydraulic and electrical systems will be left in a no-load condition
- The water management system and supporting services will continue to be operated, as per applicable environmental permits and approvals
- Monitoring will continue as required by applicable permits and approvals
- A contact person will be designated to provide authorized access to the Project and to promote continuity for all regulatory monitoring and reporting obligations

A schedule for implementation of the preceding rehabilitation measures will be submitted to MEM at the time that Great Bear Resources provides notification of their intent to place the Project under Temporary

Suspension. In general, measures will be implemented within six months of the notification to the Director, except security measures, which will be implemented immediately.

The above measures will be implemented to comply with O. Reg. 35/24, schedule 1 (2) (as amended) and the Mine Rehabilitation Code, which requires the following for Temporary Suspension:

- Reasonable measures shall be taken to restrict access to the site and buildings and other structures to authorized persons only
- All mine openings that are potentially dangerous shall be protected against unauthorized or inadvertent access
- All electrical systems shall be protected from inadvertent access
- All mechanical and hydraulic systems shall be maintained in a no-load condition
- All physical, chemical and biological monitoring programs shall be continued
- All contaminated effluents shall be controlled
- All waste management systems and sites and petroleum products, chemicals and waste shall be made secure
- All explosives shall be disposed of or removed from the site
- Stockpiles including rock piles and stockpiles of ore, concentrate, overburden and other materials and tailings, water and other impoundment structures shall be maintained in a stable and safe condition
- All other reasonable measures shall be taken to prevent personal injury or property damage that is reasonably foreseeable as a result of placing the project in a state of temporary suspension.

The above checklist will be reviewed to confirm that all necessary closure measures have been undertaken for Temporary Suspension.

8 REHABILITATION MEASURES – STATE OF INACTIVITY

The following rehabilitation measures at a minimum will be implemented during a State of Inactivity as defined by the *Mining Act* as “the indefinite suspension of a project in accordance with a filed closure plan where protective measures are in place but the site is not being continuously monitored by the proponent”. The term inactivity refers to the period of time after which production has been suspended indefinitely, and although protective measures are in place, the Project will no longer be monitored on a continuous 24-hour basis. As site supervision is not continuous, a higher level of preparation for passive site safety and security is required, compared with that required for Temporary Suspension.

On intent to enter to a State of Inactivity, a notice will be provided to the Director of MEM, as per Subsection 144(1) of the *Mining Act*. A copy of the Project surface site plans and underground workings will be revised as needed, and submitted to the appropriate office of the Resident Geologist for MEM.

For the purposes Section 145 of the *Mining Act*, the rehabilitation measures that may be carried out by the Crown or an agent thereof are not limited to the rehabilitation measures explicitly set out in the final Certified Closure Plan. Under those circumstances, the term rehabilitation measures include any rehabilitation measure that the Director, acting reasonably, believes is necessary in the circumstances.

8.1 RESTRICTION OF ACCESS AND SITE SECURITY

During the State of Inactivity, the main gate on the mine access road to the Project will be locked to prevent inadvertent access, and will be posted with No Trespassing sign(s). As well, entrances to buildings and other structures will be locked, and / or fenced and gated and locked, as appropriate. Potentially unsafe areas will be posted with appropriate warning signage. Machinery and equipment will be removed, as appropriate.

Site personnel will carry out general site inspections on a periodic basis:

- At least once a month during periods when contact water is not being treated or discharged
- Up to daily (or more frequently if appropriate) when contact water is being treated and discharged; see Section 8.10).

Records will be maintained of these inspections.

The names of contact persons will be provided to pertinent provincial ministries, such as MEM, MNR, MECP and Ministry of Labour, for their information and to facilitate their access to the site, if and when necessary.

The level of site security will be matched to the level of remaining hazards at the Project.

8.2 SECURITY OF MINE OPENINGS – SHAFTS, RAISES AND OPEN STOPES

The Project will have one shaft and seven raises. All surface and underground workings will be assessed by a qualified professional engineer to assess their stability at the onset of a State of Inactivity. Stabilization of surface areas will occur as needed, or if such stabilization is not practical, areas will be protected against inadvertent access by other means, such as fencing.

The shaft and raises will be secured in accordance with the Mine Rehabilitation Code, with either a reinforced concrete cap or steel cap anchored to bedrock, as appropriate for the opening after mining

related infrastructure is removed. All caps / covers will be certified by a professional engineering and designed to meet the regulatory requirements.

8.3 SECURITY OF MINE OPENINGS – PORTALS, ADITS AND DECLINES

The Project will have two portals and twin decline ramps for underground access. The portals will be barricaded, gated or fenced, and appropriately secured.

8.4 SECURITY OF OTHER MINE OPENINGS

Two open pits, LP Central pit and Viggo pit will be developed during the construction phase. During operations, the Viggo pit will be repurposed to the VMF and utilized to support management of the concentrate tailings, reject solution and some contact water. The intent for final closure is to fill both LP Central pit and the VMF with water.

At the onset of a State of Inactivity assuming that it occurs subsequent to completion of Project construction, the following activities will be initiated:

- In-pit infrastructure will be removed to surface and secured as appropriate
- Dewatering of the LP Central pit will cease
- Membrane filtration will cease operations, and the associated infrastructure will be secured as appropriate
- A qualified professional engineer will complete a pit wall stability assessment and evaluation of long-term stability of the LP Central pit and VMF
- Any stability requirements or recommendations form the pit wall study will be addressed as appropriate
- If not completed during progressive rehabilitation, a bounder fence will be placed around the LP Central pit and VMF, and signage (approximately every 20 m) will be posted as appropriate to prevent inadvertent access
- Access to the LP Central pit and VMF (ramps) will be barricaded.

During a State of Inactivity, the open pits (LP Central pit and VMF) will be allowed to fill with natural runoff from local catchment areas. If it is determined, it is beneficial to progress closure of the open pits and underground workings, such as based on results of ongoing environmental monitoring, the measures taken for augmentation of pit filling and final closure measures described in Section 9 may be advanced during a State of Inactivity. This may include the following:

- Relocation of the reject solution to the underground workings
- Covering of the concentrate tailings with a NPAG cover
- Regrading to capture runoff from the process plant area, MRS, OVB1 and OVB2 areas in LP Central pit
- Augmented filling of the underground workings, LP Central pit and VMF with redirected runoff collected from the Project and freshwater pumped from the Chukuni River
- Construction of a gravity drainage channel from LP Central pit to Dixie Creek.

8.5 SECURITY OF MECHANICAL, HYDRAULIC AND ELECTRICAL SYSTEMS

Mechanical and hydraulic systems not in use or otherwise required, will be removed or left in a no-load condition. Access to remaining mechanical and hydraulic systems will be barricaded, locked and posted with appropriate signage. Non-essential systems will be de-energized and other electrical systems will be secured to prevent tampering.

Materials which cannot be reused elsewhere, or sold, and which are identified as non-hazardous, will be disposed of in an approved landfill facility.

8.6 STABILIZATION OF IMPOUNDMENT STRUCTURES

The impoundment structures at the Project will included: TMF, TMF pond, MWP, CWP, East pond and holding pond. All AEX ponds will be developed via excavation and will not have any associated impoundment structures. In the event of a State of Inactivity, all structures will continue to operate in accordance with requirements of each structure's associated environmental permit(s) and approval(s), as appliable.

Impoundment structures will continue to be inspected by site personnel on a regular basis to maintain structural integrity. Additional monitoring will be undertaken after storms and freshet periods as needed. Pond water levels (if any) will be monitored and pumping systems will be maintained and operated as required to prevent overtopping of embankments / dams / berms. Monitoring and maintenance including dam safety inspections and dam safety reviews will continue on their regular schedule, as applicable. All impoundment structure inspections completed during a State of Inactivity will be documented and recorded.

If the TMF monitoring shows that placement of the final cover may be beneficial, this may be carried out as described in Section 9.13.

8.7 LANDFILL OR OTHER WASTE MANAGEMENT SITES

Not applicable. There will be no onsite landfill facility at the Project site.

Prior to entering a State of Inactivity, domestic sewage remaining in the sewage treatment plant and / or holding tanks will be hauled off site to a treatment facility and the sewage treatment plant will be secured.

8.8 REMOVAL AND / OR MANAGEMENT OF PETROLEUM PRODUCTS, CHEMICALS, AND EXPLOSIVES

Where practical, petroleum products and chemicals no longer required will be: removed from the site and either recycled where practical, disposed of at an appropriate landfill site, or isolated and managed at the Project site with ongoing monitoring by security personnel.

Explosives, detonators, and accessories, if not already removed during Temporary Suspension, will be managed according to regulatory requirements, including returned to the supplier if applicable.

8.9 STABILIZATION OF STOCKPILES

The MRS, OVB. LGO and ROM will have been contoured to stable slopes to minimize hazards during ongoing operational activities. Stockpile runoff will continue to be collected and directed to the contact water management system where it will be treated as needed prior to discharge to the Chukuni River.

Water quality monitoring will continue as per applicable environmental permits and approvals (see Section 8.10).

At the onset of a State of Inactivity, the MRS may have already been covered in whole or in part during progressive rehabilitation. If monitoring identifies a benefit to complete the cover over the PAG MRS during a State of Inactivity, this may be completed consistent with the methods described in Section 9.14.

8.10 SITE INSPECTION PROGRAM

At the onset of a State of Inactivity, a review will be conducted to assess the current status of the Project to determine any specific requirements for the site inspection program. This review will focus on, but is not limited to considering regulatory requirements, site safety and environmental project through the State of Inactivity.

A contact person(s) will be identified to facilitate the on-going monitoring, maintenance and regulator compliance for the Project during a State of Inactivity. This person(s) will oversee authorized access to the site to support these activities and associated monitoring and reporting.

The general site area will be inspected on a regular basis, with inspections occurring at least once every month. The purpose of these inspections is to confirm the implementation of required maintenance and monitoring activities that are required during a State of Activity, such as, but not limited to, stabilization of stockpiles, inspection of water management ditches, channels and pipelines that may be in use. During this period physical, chemical and biological monitoring will continue with applicable environmental approvals and permits and as described in Section 10.

During a State of Inactivity the inspection and monitoring activities will be documented. Regular site inspections and environmental monitoring will be carried out in accordance with applicable environmental permits, approvals and as described in Section 10. The observations and results of these inspections, including any corrective actions taken or issues identified, will be recorded in a report. Written reports summarizing these activities will be submitted to the Director on an annual basis.

In the event that major maintenance work is deemed necessary to maintain the site in a safe and secure condition the Director will be notified in advance of any such work. This notification will include a description of the proposed maintenance, the rationale for undertaking it, and the anticipated impacts on site operations and environmental controls.

8.11 SCHEDULE OF MEASURES FOR STATE OF INACTIVITY

The following activities will be carried out within approximately six months of a decision being made to place the site in a State of Inactivity (if not already completed during Temporary Suspension):

- A copy of the Project surface site plans and underground workings will be revised as needed, and submitted to the appropriate office of the Resident Geologist for MEM
- The access gate to the Project will be locked
- All buildings will be locked, and any storage areas fenced, gated and / or locked, to prevent inadvertent access (fencing will already be in place, where feasible)
- The portals will be barricaded, gated or fenced, and secured
- Machinery and equipment not required, will be removed or placed in a no-load condition and will be secured to prevent tampering
- All surface and subsurface workings associated with the Project will be assessed by a qualified professional engineer to determine their stability and any rehabilitation requirements
- All unused pipelines will be drained
- All unnecessary mobile equipment will be removed
- A contact person will be designated for authorized access to the Project

- Monitoring will continue as per applicable environmental approvals
- Additional fences or barriers, as required, will be constructed to restrict access to the site or specific areas within the site
- Explosives, fuels, chemicals, and hazardous wastes will be inventoried, and secured in a protective environment or removed from the site
- Explosives will be removed from site no longer than four months following the initiation of Temporary Suspension.

Twenty-four hour per day site security will remain in place during the State of Inactivity until such time as all potential safety hazards have been secured.

Within one year of a decision being made to place the site in a State of Inactivity, the following additional activities will be completed, if not already undertaken:

- Remaining unnecessary fuel, chemicals, oil, grease, and any used oil will be removed from the site for reuse by others, or disposal.

9 REHABILITATION MEASURES – FINAL CLOSURE

Final closure, or closed out as defined by the *Mining Act*, means “that the final stage of closure has been reached and that all requirements of a closure plan have been complied with.” Notification will be made to the Director of MEM, as per Subsection 144 (1) of the *Mining Act*, immediately following a decision to proceed to proceed to closure of the Project. Underground plans, revised to the end of operations for the Project, will also be submitted to the Resident Geologist.

A key objective of this preliminary Closure Plan is to describe the rehabilitation of landscapes affected by the Project to a stable and safe condition, and the return of affected ecosystems to a self-sustaining and functioning state. This means that areas disturbed by the Project activities are returned to a naturalized and productive condition, where practical, on completion of activities. The terms naturalized and productive are interpreted to mean a revegetated site, without infrastructure (unless otherwise agreed to with the MEM), that is capable of supporting plant, wildlife and fish communities.

Three periods of closure are envisioned for the Project, which are described in the following sections and summarized schematically below. Conceptual rehabilitation site plans are provided for the end of the passive closure period (Figure 9-1) and post-closure (Figure 9-2). Closure water management schematics are shown in Figure 9-3 through Figure 9-5, inclusive of the active closure period, passive closure period and post-closure (after the final closure period), respectively.

- Active closure period:
  - The majority of the physical decommissioning, demolition and rehabilitation of Project will occur during this time, for infrastructure not required to support the passive closure period or post-closure
  - Site contact waters are re-routed to fill the underground mine, LP Central pit and VMF, and discharge of treated waters to the Chukuni River is discontinued during the active closure period
  - The effluent pipeline is repurposed to pump freshwater from the Chukuni River to fill the underground mine, LP Central pit and VMF
  - Covers are placed on the stockpiles, and the TMF surface and general areas are revegetated
- Passive closure period:
  - Active and passive filling of the underground mine, LP Central pit and VMF is completed to passive closure water levels
  - Water levels are maintained below discharge level until water quality is acceptable for passive discharge to the environment (excess water treated via the WTP and discharged to the Chukuni River)
- Final closure period:
  - Once site water quality is suitable for passive discharge, LP Central pit water level allowed to rise for eventual passive discharge through a constructed channel to Dixie Creek
  - Once the TMF water quality is suitable for passive discharge, the TMF will drain via gravity to Dixie Creek via Unnamed Watercourse 1
  - Residual site infrastructure not required for environmental monitoring, such as the Chukuni River pipelines are decommissioned.

Maintenance, inspection and environmental monitoring continues post-closure, as described in Section 10.

9.1 SHAFTS, RAISES AND OPEN STOPES

The Project will have one shaft and seven raises (exhaust and fresh air) that open to the surface. During closure the shaft and raises will be secured with a reinforced concrete cap designed by a qualified professional engineer to meet the *Mining Act* requirements and as detailed in the Part 1 of the Mine Rehabilitation Code of Ontario.

9.2 PORTALS, ADITS AND DECLINES

At the onset of closure, underground equipment will be removed when no longer needed. The two portals and declines will be closed to meet the following objectives:

- Improving long term crown pillar stability of the declines near the portals
- Backfilling and grading of the box cut to prevent fall hazard
- Blocking of the portals (openings) that provide access to the underground.

The box cut, portals and near surface portion of the declines will be backfilled with NPAG rockfill. It is proposed that the declines will be tightly backfilled to a depth where the crown pillar rock is greater than two times the decline span, to improve the stability of the crown pillar for long term. Prior to closure an assessment of the crown pillar stability will be undertaken by a qualified professional to confirm this determination. The backfill would then be progressed up the twin declines to the surface where the box cut will be completely backfilled for its 25 m height above the portals. The backfill in the box cut will be flush with the ground surface, and the backfill and box cut will be sloped at three horizontal to one vertical, as illustrated in Figure 9-6 (WSP 2023).

The underground workings will be allowed to fill with water through natural groundwater inflow. The conceptual portal backfill design is illustrated in Figure 9-6. This design may be refined and will be provided with the final certified Closure Plan for the Province.

9.3 OTHER MINE OPENINGS

The Project will include two open pits, the LP Central pit and the Viggo pit (repurposed to the VMF during operations.) Once mining is completed, the dewatering of the LP Central pit and underground mine workings will cease. The following measures will be taken to reclaim the LP Central pit and VMF, if not completed progressively during operations:

- Remove mobile and fixed, equipment and infrastructure
- Test surface materials for potential contamination and clean up petroleum hydrocarbons, explosives and other spills if identified
- Shape and revegetate overburden side slopes to a stable condition and place riprap at anticipated final pit lake level if needed to prevent potential erosion by future wave action
- Block the entrances to the open pits and install a boulder fence (or equivalent) around the pit perimeter to support safety while the pit is filling with water and post appropriate signage (approximately every 20 m) to prevent inadvertent access
- Maintain two points of egress to allow safe exit from the facilities in the event of wildlife inadvertent access
- Develop a spillway from the LP Central pit to allow the pit lake to eventually overflow to Unnamed Watercourse 3 as the pit lake outlet channel to Dixie Creek, once the pit lake quality meets regulatory requirements (the required connection channel may be developed during passive closure period or earlier).

Additional measures for the VMF:

- Near the end of ore processing, the process plant will process stockpiled, low sulphur, NPAG ore to produce a single, NPAG tailings stream, approximately 60,000 m^3 of NPAG tailings will be pumped to the east VMF, to establish a 1 m thick NPAG tailings cover over the concentrate tailings that will remain submerged long-term
- Near the end of operations or at the onset of closure, the reject solution temporarily stored in the west VMF will be pumped into the underground workings at depth.

The Project site plan has purposefully been designed so that at closure, runoff from a large portion of the site including the primary stockpiles, will drain by gravity into the LP Central pit. The filling of the underground mine, LP Central pit and VMF will be enhanced by active water filling to minimize the length of time until the water-filled pit (pit lake) reaches and stabilizes at the natural groundwater level. This will reduce the length of time PAG pit walls are exposed and submerge the walls under water sooner than other natural passive filling (by precipitation and inflows), and increase the safety at the site when there less workers present to monitor the surface openings. To enhance filling of the underground mine, LP Central pit and VMF the following will be undertaken:

- Runoff and seepage collected from the TMF, TMF pond, MWP and AEX mine water pond will be directed to the LP Central pit
- Operation of the effluent discharge pipeline that discharges treated effluent to the Chukuni River will cease during pit filling, and the pipeline will be repurposed to transmit fresh water from the Chukuni River to the LP Central pit, VMF and underground mine.

The enhanced filling of the LP Central pit with additional site runoff and freshwater from the Chukuni River, it is anticipated that filling of the LP Central pit to an approximate elevation of 343 masl will be completed within about four years after following cessation of operations. It is anticipated that filling of the VMF or underground mine will be completed early during the active closure period. The VMF will fill with water naturally from direct precipitation, groundwater inflow and localized runoff once operation of the VMF ceases. Active filling of the VMF is proposed to start after the reject solution has been pumped underground (i.e., approximately one year after mine operations cease). It is anticipated that the VMF will achieve its passive water level of about 352 masl within one year of active filling. The water-filled facility, based on current hydrogeological modelling and the Viggo pit design, is expected to remain as an isolated pit lake and is anticipated to achieve a water level of about 354 masl during post-closure. The required freshwater taking at the maximum pipeline capacity, will be approximately 3% of the flow in the Chukuni River during the driest month. The post-closure discharge from the pit lake was evaluated for annual average and a climate change scenario. The climate change projects were developed for 2080s summarized as follows (WSP 2025f):

- An increase in annual evaporation from 584.7 mm/a for annual average conditions to 650.6 mm/ for climate change conditions
- An increase in annual precipitation from 633.0 mm/a for annual average conditions rising to 673.5 mm/a for climate change conditions
- Increase in monthly average temperatures with average monthly temperatures increases ranging from +3 ^oC to +5 ^oC.

The estimated annual average passive pit lake discharge was estimated to be 4.35 Mm^3 and this may rise to an estimated passive discharge of 4.67 Mm^3 for the climate change scenario (WSP 2025f)

The water level and water quality will be monitored while the underground mine, LP Central pit and VMF are filling with water to confirm predictions on pit lake water quality and the ability to meet regulatory requirements to allow passive discharge from the LP Central pit once filled. If needed, the pit lake will be maintained at a lower level by treating and pumping excess water to the Chukuni River, until such time as all regulatory requirements are met. Once the water quality in the pit lake meets, and is predicted to continue meet water quality requirements, the water level will be allowed to rise to the final elevation, approximately 348 masl which will be controlled by means of a gravity draining spillway connected to the residual channel of Unnamed Watercourse 3 which flows to Dixie Creek. This will involve constructing a channel through the former Dixie Creek flood protection berm. Details regarding the filling of the LP

Central pit with water during closure are provided in the Great Bear Project Mine Site Water Balance (WSP 2025f). A copy of this report is appended to the Impact Statement and will be provided with the regulatory Closure Plan for the Province.

A mass balance water quality pit lake model was developed to estimate the anticipated LP Central pit lake water quality and the VMF pit lake water quality during the passive closure period and post-closure. The pit lake water quality model was developed using the water balance from the Great Bear Project Mine Site Water Balance (WSP 2025f). For the purposes of this assessment, pit lake modelling followed a mass balance approach in GoldSim, with additional geochemical modelling in PHREEQC. An initial evaluation regarding the potential for pit lake stratification to occur and its influence on pit lake water quality was also conducted. Lake stratification occurs due to differences in water density between surface waters and the underlying water volume. The density of water is a function of both its temperature and the concentration of total dissolved solids (TDS) (i.e., sulphate and metals) in the water. Stratification can occur due to vertical gradients in TDS, or solar heat flux which causes surface waters to become warm, and therefore less dense, than underlying cooler waters. Pit lakes are prone to chemical stratification as they are generally deep relative to their surface area and often receive mine waters with high concentrations of TDS (often primarily represented by sulphate). For stratification to be permanently maintained, chemical density differences must be large enough to overcome mixing forces within the pit lake (primarily velocity shear due to wind stress), despite changes in thermal density due to seasonal fluctuations in water temperature. If density stratification is maintained over time, a pit lake is considered to be meromictic (the water column does not fully mix). A preliminary assessment of the potential for significant chemical stratification to develop in the LP Central pit lake was conducted through review of the TDS contents and estimated configurations of the various inflow sources to the pit lake. Key inflows to the pit lake along with estimated sulphate and TDS for each inflow, inflow rates, and inflow configuration based on currently available data are provided in Table 9-1. Overall, any source areas with a higher TDS content (i.e., covered MRS seepage) have a relatively low inflow rate (<0.75% of the annual inflows) and discharge near the water surface, where the water will be well mixed due to wind-driven mixing, as observed in similar pit lakes in northern Ontario. Further, high volume inflows of low TDS water from the Chukuni River are expected to physically mix the water in the pit lake during accelerated filling, promoting additional mixing to homogenize concentrations. Therefore, higher TDS inflows are not likely to be naturally isolated at depth in the pit lake. However, during summer months, thermally stratified conditions are expected to develop consistent with most temperate zone lakes. A thermocline depth of 10 to 20 m with surface temperatures of up to 20 °C could be expected based on similar pit lakes in the northern Ontario region, depending on water clarity. Thermal stratification could isolate inflows to the surface water layer during the summer months and influence water quality during that time . Given the relatively low surface area to depth ratio of the VMF it was assumed that the water in the VMF is fully mixed (i.e., meromixis does not develop; WSP 2025g).

To be conservative, several conditions were evaluated as part of pit lake modelling.

- A fully mixed pit lake (mixing from the maximum lake depth of 110 masl to surface)
- Summer thermal stratification conditions, with a mixed epilimnion thickness of 10 m and 20 m, that fully mixes with the pit lake water column in the autumn during isothermal conditions.
- Summer thermal stratification conditions, with a mixed epilimnion thickness of 10 m and 20 m, that mixes with a portion of the underlying water column (bottom mixing depth of 270 masl assumed, selected based on open pit geometry).

During the Passive Closure period it is estimated that the LP Central pit lake has a neutral pH (pH 7) and a sulphate concentration of approximately 60 mg/L after accelerated filling is complete (Table 9-2). Mass balance estimates (fully mixed condition) showed generally low metal concentrations and further polishing of metal concentrations is estimated to occur due to natural adsorption of metals to iron oxyhydroxide precipitates that form in the pit lake water column, as indicated in the equilibrated simulations. During passive closure, the primary loading source to the LP Central pit lake is contact water from the covered MRS, which enters the pit lake via the gravity channel / overland flow and direct seepage. Due to the overall low concentrations of model parameters in the pit lake inputs, estimates of pit lake water quality were not highly sensitive to assumed potential pit lake stratification conditions. Additional details on the pit lake water quality modelling will be provided with the final certified Closure Plan for the Province.

Concentrations of sulphate and metals in the VMF pit lake and fugitive seepage further decrease during the passive closure period (Table 9-3). This occurs as loading inputs decrease due to closure rehabilitation activities and continued mass load loss via fugitive seepage.

The post-closure water quality estimates for the LP Central pit lake, including when the pit lake initially reaches its long-term elevation (348 masl) and long-term steady state conditions. LP Central pit lake results consider a fully mixed and stratified condition. The LP Central pit lake is estimated to have relatively low sulphate and metal concentrations which continue to decline into post-closure as shown in Table 9-4. The pit lake water is estimated to have a neutral pH (approximately pH 7.5), with sufficient buffering capacity in the pit lake waters to neutralize any acidic inputs from the small areas of acidic PAG pit walls exposed above the pit lake surface. During post-closure the primary loading source to the LP Central pit lake is contact water from the MRS (via the gravity channel and direct seepage). The concentrations in post-closure were similar for the fully mixed LP Central pit lake and the potential stratification scenarios assessed.

The post-closure water quality for the VMF are provided in Table 9-5. As discussed above, it is anticipated that the VMF will reach a steady-state elevation of 354 masl and is not expected to discharge to the environment.

9.4 STABILITY OF SURFACE AND SUBSURFACE WORKINGS

At final closure, applicable surface facilities (i.e., shaft, raises, portals, impoundment structures and stockpiles) and underground workings, will be assessed by a qualified professional engineer to determine their long-term stability. A qualified professional engineer will conduct and certify a geotechnical study for any crown pillars and would also certify any crown pillar rehabilitation measures.

9.5 REMOVAL OF BUILDINGS AND INFRASTRUCTURE

Buildings will be inventoried, decontaminated, dismantled and / or demolished, and non-hazardous material (i.e., concrete, steel and other inert materials) will be disposed of according to regulatory requirements at appropriate approved offsite facilities.

Water pipelines will be removed during two periods. During the active closure period the dewatering pipelines from the underground and open pits will be removed. Water pipelines used to enhance filling of the LP Central pit, VMF and underground mine by collecting runoff and seepage from the TMF, TMF pond, MWP and AEX mine water pond will remain during the active closure period. Once the LP Central pit, VMF and underground mine are filled and water quality is proven to be suitable for discharge to the environment, these pipelines will be removed from the Project for reuse, scrap or disposal.

Once no longer required, the natural gas line owned by Great Bear Resources will be purged, removed and disposed of in an approved facility. The pipeline corridor will be regraded if needed and revegetated.

9.6 REMOVAL OF MACHINERY, EQUIPMENT, AND STORAGE TANKS

Surface equipment will be dismantled and removed for possible salvage, resale or reuse. Remaining underground infrastructure (mobile or otherwise) will be removed where feasible. Any equipment remaining underground at the time of closure will be purged of any hazardous fluids and materials and left in an inert state.

Salvageable machinery, equipment and other materials will be dismantled and taken off site for sale or re-use if economically feasible, or cleaned of oil and grease where appropriate and taken off site for disposal. Gearboxes or other equipment containing hydrocarbons that cannot be readily cleaned will be

removed from equipment and machinery and trucked off site for disposal at a licensed facility. It is anticipated that much of the equipment and machinery can be sold for reuse, or recycled as scrap metal.

9.7 TRANSPORTATION CORRIDORS

The main access road and bridge over Dixie Creek are anticipated to be retained to provide access to the area. The bridge will be decommissioned and the road reclaimed in the same manner as other site roads, if deemed not necessary or the maintenance cannot be transferred to another body, in discussion with MNR.

Site roads will be scarified and reshaped as applicable when no longer needed to support final reclamation, long-term site management and environmental monitoring. Culverts will be removed, and roads will be breached at the culvert locations at the Project to restore natural drainage where practical. The corridors will be allowed to passively revegetate.

9.8 CONCRETE STRUCTURES AND FOUNDATIONS

Concrete foundations will be broken in place, infilled with overburden, or NPAG mine rock as needed. Concrete building foundations and structures will be broken up to within 1 m of grade or removed, and slaps will be broken to allow for infiltration of water and to naturalize drainage of the area. Steel rebar in the concrete will be trimmed to be flush with the concrete. Concrete structures remaining in place will be filled with overburden or NPAG mine rock, if needed, covered with overburden, regraded to naturalize runoff and revegetated.

9.9 REMOVAL OF PETROLEUM PRODUCTS, CHEMICALS, EXPLOSIVES AND WASTES

Petroleum products, chemicals and explosives will be depleted towards the end of operations. Remaining materials will be disposed of according to regulatory requirements at the time.

9.10 PCBS OR PCB CONTAMINATED MATERIAL

Not applicable. Polychlorinated biphenyls (PCBs) will not be used for any aspect of the Project.

9.11 WASTE MANAGEMENT SITES

Not applicable. There will be no onsite landfill facility for the Project.

9.12 SOILS TESTING

An environmental site investigation will be conducted at the end of operations or early in the closure phase. The primary soil contamination that could potentially occur from the Project activities would result from the use / spillage of petroleum / diesel fuels. A soil sampling / testing plan will be developed by a qualified consultant at the time of closure to sample and assess the site area for potential hydrocarbon or chemical contamination, as appropriate.

Surficial materials which could potentially be contaminated (i.e., are likely to contain chemical or fuel residues, based on odour testing and visual inspection) will be tested in accordance with applicable guidelines, best management practices and regulatory requirements. Any contaminated area(s) will be cleaned up according to the appropriate cleanup criteria under these guidelines, where practicable. If required, a risk assessment will be completed to evaluate cleanup alternatives for contaminated soils.

Surficial materials found to exceed acceptable criteria will be segregated for appropriate management and / or disposal offsite in accordance with regulatory requirements.

Surficial materials found to exceed acceptable criteria will be remediated on site or transported to an approved disposal facility off site in accordance with regulatory requirements.

9.13 TAILINGS MANAGEMENT FACILITY

The primary tailings storage for the Project, will be the TMF which will store high density, thickened desulphurized tailings which are NPAG. The design and operation, as well as the decommissioning and closure concept for the TMF has been developed to promote the long-term chemical and physical stability, and to minimize long-term maintenance requirements. Concentrate tailings (smaller portion) will be stored in the VMF; closure of the VMF is described in Section 9.3.

The TMF surface will be covered with a layer of overburden amended as needed to support plant growth. This cover will be revegetated during the active closure period and seeded with commercially available non-invasive native plant species. As the tailings surface is relatively flat, a vegetative cover is anticipated to provide sufficient long-term erosion control. As engineering advances the need for drainage channels and / or rockfill check berms for erosion control (wind / runoff) and / or other elements may be added if needed.

Following cessation of operations, runoff and seepage collected from the TMF will be transferred to the LP Central pit, VMF and underground mine to enhance the filling of these features. During this period, the water quality from the TMF will be monitored. Following filling of the LP Central pit, VMF and underground mine, runoff and seepage from the TMF will be collected for treatment and discharge to Chukuni river. Once the water quality from the TMF is proven to meet the water quality objectives, the TMF sumps will be naturalized to restore flows and associated pumps and pipelines will be removed from the Project for either reuse, resale or disposed of in an approved facility off site. The TMF drainage will be naturalized towards Dixie Creek via Unnamed Waterbody 2 and Unnamed Watercourse 1.

Drainage from the rehabilitated TMF cover runoff and seepage were estimated to have a neutral pH and be consistent with drainage from the site overburden. The anticipated drainage from the covered TMF is summarized in Table 9-6. Seepage during post-closure was assumed to represent the long-term steady state condition for the TMF, whereby residual process water within the tailings pores has been depleted and mass load contributions are only from the covered desulphurized tailings and NPAG / non metal leaching mine rock used to construct the TMF dams. The anticipated TMF seepage is summarized in Table 9-7. Additional details on the geochemical assumptions and water quality estimates will be provided with the final certified Closure Plan for the Province.

9.14 STABILIZATION OF STOCKPILES

Permanent stockpiles will be designed to consider reclamation requirements at closure, including contouring and seeding for revegetation. Progressive reclamation opportunities for the stockpiles are discussed in Section 6 and will be completed during operations where practical.

At the end of the operations, the ore stockpiles (ROM, LGO1 and LGO2) will be depleted and no longer present. Ore stockpile areas will be progressively reclaimed as summarized in Section 6. If not completed prior to closure, the ore stockpile areas will be reclaimed in the same manner and will include:

- Excavation of portions of the pad underlying the stockpiles for placement of the excavated materials in the PAG MRS or VMF
- Regrading of the area to promote natural drainage
- Cover with in 0.3 m of growth media (amended overburden) and revegetate.

The MRS will be closed progressively during the operations phase as described in Section 6, excluding an area in the NPAG MRS that will be left to allow for extraction of NPAG for use during the closure

phase. Residual areas not reclaimed progressively will be reclaimed in the same manner, and will include:

- PAG MRS: regraded if needed for long-term stability, covered to limit water and oxygen entry and revegetated
- NPAG MRS: regraded if needed for long-term stability, covered to support revegetation growth and revegetated.

Overburden from the overburden stockpiles will be used during progressive reclamation and closure to support covers and vegetative growth. It is anticipated that the overburden stockpiles near the TMF (OVB3, OVB4 and OVB5) will be depleted or lowered to single lifts following reclamation of the TMF. These areas will be regraded for stability and revegetated by seeding potentially supplemented by hand planting of trees.

Overburden from OVB1 and OVB2 will be primarily used for reclamation of the MRS and general site areas. Based on a preliminary mass balance, it is estimated that up to 9 Mm^3 of overburden material may remain in OVB1 and OVB2. Once overburden is removed from OVB1 and OVB2 for reuse during reclamation as needed, the residual side slopes and area will be contoured for stability. The area will be revegetated with commercially available native seeds to minimize the potential for long-term erosion of the stockpiles.

Drainage from the rehabilitated MRS and OVB are estimated to have a neutral pH. The estimated runoff water quality from the covered MRS and OVB are provided summarized in Table 9-6.

9.15 IMPOUNDMENT STRUCTURES

The Project will include three primary water impoundment structures on the site at closure: the CWP, TMF pond and MWP.

Use of the CWP for closure water management will be reviewed at the start of the closure phase. Once the structure is not required, water remaining in the CWP will be pumped to the LP Central pit to expedite filling of the open pit, or treated at the WTP and discharged to the Chukuni River. After the water is removed, sediment in the base of the structure will be tested and if needed relocated to a selected facility for management. If the sediment quality is suitable, it may remain at the CWP location. The CWP dam will be contoured and stabilized such that the reclaimed area will drain by gravity. The CWP area will be seeded to support revegetation.

The TMF pond and MWP will support the closure water management strategy including the enhanced filling of the LP Central pit, VMF and underground mine. Once the structures are not required to support the enhanced filling, the water will be fully drawn down, and the sediment remaining in the ponds will be tested and managed in an approved facility or if suitable, will remain in place. The dams will be contoured and stabilized to naturalize flows towards Dixie Creek and the area will be seeded for to support revegetation. Drainage from the reclaimed TMF pond and MWP areas will be restored to Unnamed Watercourse 1 which drains into Dixie Creek.

At the onset of active closure, reject solution remaining in the holding pond will be pumped to the underground workings for storage. After the reject solution is removed, the remaining sediment in the holding pond will be tested and if needed relocated to another facility for management. If the sediment is found to be of suitable quality, it will remain in the holding pond. The holding pond berm will be contoured and stabilized, and the area will drain via gravity and the former holding pond footprint will be seeded for vegetation.

Fish habitat will be increased through the creation of new habitat in the east pond area. At closure, the east pond dam will remain to continue to support the new fish habitat area.

The remaining AEX ponds do not have dams (i.e., are not water impoundments) and are developed by excavation. These ponds will be decommissioned during the active closure period when no longer be required. Remaining water will be pumped to the LP Central pit or treated at the WTP and discharged to the Chukuni River. Sediments collected at the bottom of the ponds, will be tested and if needed removed

to a suitable facility. The AEX ponds will be backfilled to grade with NPAG mine rock and / or overburden, and seeded for vegetation. The reclaimed pond area will be regraded and the reclaimed area will drain by gravity.

The on-surface reject holding pond that is planned to be developed, will be decommissioned during the active closure period. Remaining reject solution will be pumped to the underground mine at the same time as the west VMF is emptied. The associated dams will be contoured and stabilized such that the drainage will be naturalized are the area will be seeded for vegetation. The drainage from the holding pond area will be naturalized towards Dixie Creek.

9.16 DECANT STRUCTURES

Not applicable. The Project does not include any decant structures.

9.17 WATERCOURSES AND SITE DRAINAGE

The proposed site drainage and discharge during the closure phase and post-closure is described in the sections that follow.

9.17.1 ACTIVE CLOSURE PERIOD

The majority of the physical decommissioning, demolition and reclamation of the Project site will occur during the active closure period. There will be no effluent discharge from the Project during the active closure period.

Site contact water will be pumped or directed by gravity to enhance filling of the underground mine, LP Central pit and VMF. This will include transferring contact water that is directed to the AEX mine water pond (from the TMF, TMF pond and MWP), and process plant and all stockpiles areas to the underground mine, LP Central pit and VMF. The Project effluent discharge pipeline will be repurposed to pump freshwater from the Chukuni River to further augment filling of the underground mine, LP Central pit and VMF. It is estimated that about 1,330 m^3/hr will be drawn from the Chukuni River. And it is anticipated that the underground mine, LP Central pit and VMF will be filled in about three years (WSP 2025f).

At the start of the closure phase, the use of the CWP will be reviewed. This feature may be contoured and stabilized such that flows are naturalized towards the LP Central pit (including the LGO stockpile contact water). Alternatively, this feature may support transfer of contact water to enhance filling of the LP Central pit. The water management strategy for the active closure period is shown in Figure 9-3.

9.17.2 PASSIVE CLOSURE PERIOD

An additional approximately one year is required to complete enhanced filling of the underground mine, LP Central pit and the VMF. The water-filled underground workings will discharge to the LP Central pit lake in the long term, and will not discharge directly to the environment. Concrete caps and other seals may be installed on vertical voids to manage water flow at closure if needed. After filling with water is complete, the VMF lake will stabilize at the natural groundwater level, approximately 4 m below the lowest elevation of the pit rim and will not overflow to the environment.

Once the LP Central pit is filled to approximately 5 m below the future outflow elevation:

- If the water quality does not meets regulatory needs, the LP Central pit lake will be maintained at that level by pumping and treating water in the WTP for discharge to the Chukuni River
- Once the water quality in the pit lake meets regulatory needs the pit lake will be allowed to continue to fill and will periodically overflow through a spillway to residual channel of Unnamed Watercourse 3 (which flows to Dixie Creek).

A water management flow schematic for the passive closure period is 9-4.

9.17.3 FINAL CLOSURE PERIOD

The final closure period will be initiated once the water quality from the Project is proven to achieve the closure water quality objectives, assumed to occur following three years of active closure and passive closure estimated to be approximately one year, the WTP and remaining site infrastructure will no longer be required. The anticipated water quality in the LP Central pit lake and VMF pit lake post-closure is summarized in Tables 9-4 and Table 9-5 respectively.

Remaining infrastructure will be evaluated for reuse, or scrap, or materials will be transported to an approved landfill facility, and disturbed areas will be regraded to support naturalized gravity runoff. The water level in the LP Central pit will be allowed to rise to a final steady state level, and will eventually overflow through a constructed spillway to Dixie Creek. The annual average passive discharge from LP Central pit is anticipated to be about 4.35 Mm^3 (WSP 2025f).

9.17.4 POST-CLOSURE

There will be no site water management after closure is completed as demonstrated in Figure 9-5.

Post-closure water quality estimates were developed for the Project using a mass based loading model based on the available geochemical data, source terms and the post-closure water balance and receiver water balance information (WSP 2025f,h). Pit lake water quality modelling and results are summarized in Section 9.3. In post-closure (long-term equilibrium), seepage from the closed TMF will continue to influence water quality Dixie Creek, and the LP Central pit lake will passively discharge to Dixie Creek. The VMF pit lake is anticipated to be isolated, an overflow channel to the LP Central pit lake will be created if needed although not expected to be required. Results presented in the Receiver Water Quality Modelling Report (WSP 2025i) and summarized in Table 9-8, indicate that the water quality in Dixie Creek will be better than the WQG PAL, indicating that water quality remains protective of aquatic life and downstream uses, even under conservative mass balance modelling assumptions (WSP 2025g). Additional details on water quality modelling will be provided with the final certified Closure Plan for the Province.

9.18 REVEGETATION

The primary aim of the revegetation is to control erosion and establish self-sustaining vegetation, and accelerate the migration of native vegetation into rehabilitated areas. Seed mixtures used in reclamation will include commercially available native species, and other appropriate species. Revegetation efforts will consider including species that are supportive of local SAR. Planting of wild rice in the Project area, is not a priority for the Project, but may also be considered as part of the revegetation efforts for the Project, if conditions at closure are appropriate, based on current input by Indigenous Nations.

The success of the revegetation program will be monitored as per of the closure monitoring program (Section 10.3). Areas with insufficient revegetation and growth will be augmented with additional seed and / or fertilizer, revision to species composition.

9.19 RECLAMATION SCHEDULE FOR FINAL CLOSURE

Within three years of a decision to commence final closure (i.e., the end of the active closure period), the following activities will be conducted (for those equipment, facilities and areas not needed for subsequent closure periods):

- Continuation of environmental monitoring and compliance reporting required by environmental approvals as applicable
- Fuel, chemicals, waste hydrocarbon products, and any potentially hazardous materials will be removed from the Project and appropriately disposed of at off site facilities

- Equipment, machinery and storage tanks will be removed for reuse or recycle or disposal in an offsite landfill
- Structures will be removed and / or demolished, with those materials that are suitable for reuse or recycling to be salvaged, and those not suitable for such use to be disposed of off site
- Initiate re-filling of the LP Central pit with water if not started during operations
- Pumping of contact water treatment (membrane filtration) reject solution into the underground mine for permanent storage, and re-filling of the underground mine and VMF with water
- Reclamation of affected areas, such as by regrading, placement of an appropriate cover as needed and seeding to support revegetation.

Re-filling of the mine workings will continue for approximately one additional year, after which the water levels will be maintained in the LP Central pit with excess water treated and discharged to the Chukuni River until such time that the water quality is proven to be suitable for passive discharge to the environment.

Once treatment of the Project water is not longer required, remaining site water management infrastructure will be removed and residual reclamation will be complete within approximately one year.

Table 9-1: Inflows to LP Central Pit Lake

Inflow Source	Sulphate (mg/L)	TDS [1] (mg/L)	Inflow Rate	Inflow Configuration
Chukuni River	~5	86	1.0 Mm^3/year during accelerated filling	Point source at surface
			Accelerated filling ceases once the pit fills during passive closure	
Gravity channel	28	117	1.2 to 1.4 Mm^3/year (passive and post-closure)	Point source at surface
Seepage from covered MRS	114	247	0.018 Mm^3/year (passive and post-closure)	Diffuse seepage
				Groundwater modelling indicates that >95% of the seepage enters the upper 5 to 10 m of the lake, over a 700 m lateral distance
Runoff from revegetated areas	~1	81	0.17 Mm^3/year (passive and post-closure)	Diffuse overland flow at surface
Runoff from CWP catchment	~1	81	0.34 Mm^3 (passive closure)	Diffuse overland flow at surface
			0.19 Mm^3 (post-closure)	
Groundwater inflows	~5	86	0.12 Mm^3 (passive and post-closure)	Diffuse seepage through overburden and near-surface fractured bedrock
Overflow from underground vent raises	~5	86	0.18 Mm^3/year (passive and post-closure)	Point source at surface
Pit wall runoff	~25	114	0.006 Mm^3/year (passive and post-closure)	Diffuse overland flow at surface
Direct precipitation	~5	-	0.5 Mm^3/yr (passive and post-closure)	Direct precipitation on lake surface

Notes:
1. TDS calculated based on relationships for sulphate and TDS derived from a mining area in northern Ontario, including background lakes and mining associated features.

Table 9-2: LP Central Pit Lake Water Quality for Passive Closure Period

Parameter	Units	Equilibrated	Mass Balance
pH[(1)]	pH units	7.0	-
SO4	mg/L	58	58
Chloride	mg/L	4.1	4.1
Hg	mg/L	0.0000044	0.0000073
Ag	mg/L	0.000034	0.000035
Al	mg/L	0.0014	0.81
As	mg/L	0.00035	0.010
Be	mg/L	0.000000077	0.000052
B	mg/L	0.015	0.015
Ca	mg/L	17	17
Cd	mg/L	0.00017	0.00020
Co	mg/L	0.0050	0.0052
Cr	mg/L	0.00011	0.0068
Cu	mg/L	0.00066	0.0073
Fe	mg/L	0.011	4.6
K	mg/L	3.0	3.0
Mg	mg/L	2.8	2.8
Mn	mg/L	0.12	0.12
Mo	mg/L	0.0016	0.0016
Na[(2)]	mg/L	10.0	10.0
Ni	mg/L	0.0097	0.012
P	mg/L	0.0050	0.055
Pb	mg/L	0.000011	0.0011
Sb	mg/L	0.0014	0.0014
Se	mg/L	0.00025	0.00065
Tl[(2)]	mg/L	0.000019	0.000019
U	mg/L	0.00082	0.00082
V[(3)]	mg/L	0.0012	0.0012
W[(3)]	mg/L	0.00051	0.00051
Zn	mg/L	0.027	0.049
Zr	mg/L	0.0011	0.0011

Notes:
1. pH estimated based on simulations in PHREEQC and in consideration of the proportion of acidic and neutral inflows to each node. pH values reported to the nearest 0.5 pH units.
2. Charge balance parameter, set equal to mass balance model output.
3. Not in thermochimie database, set equal to mass balance model output.
Equilibrated results represented by the results of PHREEQC simulations, aluminum, arsenic, copper and lead result assumed to be 10x higher than PHREEQC estimate.

Table 9-3: VMF Pit Lake Water Quality Estimate for Passive Closure Period

Parameter	Units	Equilibrated	Mass Balance
pH[1]	pH units	7.5	-
SO4	mg/L	85	85
Chloride[2]	mg/L	29	29
Hg	mg/L	0.000024	0.000024
Ag	mg/L	0.000069	0.000069
Al	mg/L	0.00028	0.073
As	mg/L	0.000080	0.0048
Be	mg/L	0.00000049	0.00011
B	mg/L	0.062	0.062
Ca	mg/L	24	24
Cd	mg/L	0.000050	0.000092
Co	mg/L	0.00074	0.00084
Cr	mg/L	0.00026	0.00096
Cu	mg/L	0.000042	0.0047
Fe	mg/L	0.0097	0.30
K	mg/L	17	17
Mg	mg/L	22	22
Mn	mg/L	0.12	0.12
Mo	mg/L	0.0053	0.0053
Na	mg/L	140	140
Ni	mg/L	0.0082	0.016
P	mg/L	0.014	0.021
Pb	mg/L	0.00000018	0.00093
Sb	mg/L	0.0090	0.0090
Se	mg/L	0.0014	0.0014
Tl[3]	mg/L	0.000052	0.000052
U	mg/L	0.0015	0.0015
V[3]	mg/L	0.0027	0.0027
W[3]	mg/L	0.0010	0.0010
Zn	mg/L	0.0034	0.019
Zr	mg/L	0.0023	0.0023

Notes:
1. pH estimated based on simulations in PHREEQC and in consideration of the proportion of acidic and neutral inflows to each node. pH values reported to the nearest 0.5 pH units.
2. Charge balance parameter, set equal to mass balance model output.
3. Not in thermochimie database, set equal to mass balance model output.

Table 9-4: LP Central Pit Lake Water Quality Estimate - Post-Closure

Parameter	Units	LP Central - Initial Long Term Elevation (348 masl)		LP Central - Long Term Steady State Conditions	
		Equilibrated	Mass Balance	Equilibrated	Mass Balance
pH[1]	pH units	7.5	-	7.5	-
SO4	mg/L	50	50	21	21
Chloride[2]	mg/L	4.0	4.0	3.7	3.7
Hg	mg/L	0.0000054	0.0000085	0.000013	0.000014
Ag	mg/L	0.000041	0.000041	0.000070	0.000070
Al	mg/L	0.0015	0.71	0.0017	0.30
As	mg/L	0.00045	0.010	0.0036	0.0096
Be	mg/L	0.000000085	0.000047	0.00000017	0.000028
B	mg/L	0.014	0.014	0.010	0.010
Ca	mg/L	17	17	19	19
Cd	mg/L	0.00019	0.00022	0.00030	0.00032
Co	mg/L	0.0043	0.0044	0.0014	0.0014
Cr	mg/L	0.00012	0.0059	0.00017	0.0022
Cu	mg/L	0.00063	0.0065	0.00072	0.0036
Fe	mg/L	0.011	4.0	0.013	1.3
K	mg/L	3.0	3.0	3.0	3.0
Mg	mg/L	2.9	2.9	3.4	3.4
Mn	mg/L	0.12	0.12	0.081	0.089
Mo	mg/L	0.0016	0.0017	0.0019	0.0019
Na[3]	mg/L	8.9	8.9	4.3	4.3
Ni	mg/L	0.0084	0.0099	0.0033	0.0036
P	mg/L	0.0056	0.051	0.012	0.035
Pb	mg/L	0.000013	0.0012	0.000051	0.0017
Sb	mg/L	0.0014	0.0014	0.0014	0.0014
Se	mg/L	0.00036	0.00081	0.0013	0.0015
Tl[4]	mg/L	0.000018	0.000018	0.000014	0.000014
U	mg/L	0.00085	0.00085	0.0010	0.0010
V[4]	mg/L	0.0013	0.0013	0.0016	0.0016
W[4]	mg/L	0.00053	0.00053	0.00063	0.00063
Zn	mg/L	0.025	0.043	0.016	0.021
Zr	mg/L	0.0014	0.0014	0.0028	0.0028
Total Cyanide	mg/L	--	--	0.0050	0.0050
WAD Cyanide	mg/L	--	--	0.0021	0.0021
Nitrate-N	mg/L as N	--	--	0.10	0.10
Nitrite-N	mg/L as N	--	--	0.0050	0.0050
Ammonia-N	mg/L as N	--	--	0.030	0.030

Notes:
1. pH estimated based on simulations in PHREEQC and in consideration of the proportion of acidic and neutral inflows to each node. pH values reported to the nearest 0.5 pH units.
2. Charge balance parameter, set equal to mass balance model output.
3. Not in thermochimie database, set equal to mass balance model output.
Equilibrated results represented by the results of PHREEQC simulations, aluminum, arsenic, copper and lead result assumed to be 10x higher than PHREEQC estimate.

Table 9-5: VMF Pit Lake Water Quality Estimate - Post-Closure

Parameter	Units	VMF - Initial Long Term Elevation (355 masl)		VMF - Long Term Steady State Conditions	
		Equilibrated	Mass Balance	Equilibrated	Mass Balance
pH[1]	pH units	7.5	-	7.5	-
SO4	mg/L	80	80	48	48
Chloride[2]	mg/L	27	27	16	16
Hg	mg/L	0.000023	0.000023	0.000014	0.000014
Ag	mg/L	0.000065	0.000066	0.000040	0.000040
Al	mg/L	0.00028	0.071	0.00029	0.044
As	mg/L	0.000078	0.0045	0.000056	0.0028
Be	mg/L	0.00000045	0.00010	0.00000037	0.000062
B	mg/L	0.058	0.058	0.036	0.036
Ca	mg/L	24	24	18	18
Cd	mg/L	0.000045	0.000087	0.000027	0.000051
Co	mg/L	0.00069	0.00080	0.00046	0.00052
Cr	mg/L	0.00025	0.00093	0.00026	0.00074
Cu	mg/L	0.000037	0.0045	0.000027	0.0029
Fe	mg/L	0.0098	0.30	0.0090	0.19
K	mg/L	16	16	10	10
Mg	mg/L	21	21	13	13
Mn	mg/L	0.11	0.11	0.077	0.077
Mo	mg/L	0.0051	0.0051	0.0036	0.0036
Na	mg/L	131	131	76	76
Ni	mg/L	0.0075	0.015	0.0047	0.0090
P	mg/L	0.015	0.022	0.010	0.015
Pb	mg/L	0.00000016	0.00087	0.00000012	0.00051
Sb	mg/L	0.0084	0.0084	0.0049	0.0049
Se	mg/L	0.0013	0.0013	0.00081	0.00081
Tl[3]	mg/L	0.000049	0.000049	0.000029	0.000029
U	mg/L	0.0015	0.0015	0.0011	0.0011
V[3]	mg/L	0.0026	0.0026	0.0020	0.0020
W[3]	mg/L	0.00097	0.00097	0.00074	0.00074
Zn	mg/L	0.0030	0.017	0.0021	0.010
Zr	mg/L	0.0021	0.0021	0.0013	0.0013

Notes:
1. pH estimated based on simulations in PHREEQC and in consideration of the proportion of acidic and neutral inflows to each node. pH values reported to the nearest 0.5 pH units.
2. Charge balance parameter, set equal to mass balance model output.
3. Not in thermochimie database, set equal to mass balance model output

Table 9-6: Estimated Runoff Water Quality from Rehabilitated TMF and MRS Areas, Revegetated Areas and OVB1 for Post-Closure

Parameter	Units	MRS & TMF Covers[1]	Revegetated Areas[2]	Rehabilitated OVB1 Stockpile
pH[3]	pH units	7.5	7.0	-
SO4	mg/L	3.1	1.0	1.0
Chloride	mg/L	3.0	0.74	0.74
Hg	mg/L	0.0000025	0.0000025	0.0000025
Ag	mg/L	0.000015	0.000011	0.000011
Al	mg/L	0.0051	0.052	0.052
As	mg/L	0.00079	0.0018	0.0018
Be	mg/L	0.000015	0.000010	0.000010
B	mg/L	0.010	0.0050	0.0050
Ca	mg/L	6.4	14	14
Cd	mg/L	0.0000035	0.0000025	0.0000025
Co	mg/L	0.000025	0.000079	0.000079
Cr	mg/L	0.0017	0.00026	0.00026
Cu	mg/L	0.0019	0.00095	0.00095
Fe	mg/L	0.0070	0.35	0.35
K	mg/L	2.7	1.3	1.3
Mg	mg/L	0.75	4.2	4.2
Mn	mg/L	0.00025	0.019	0.019
Mo	mg/L	0.0036	0.00028	0.00028
Na	mg/L	1.1	1.9	1.9
Ni	mg/L	0.00037	0.00070	0.00070
P	mg/L	0.0050	0.034	0.034
Pb	mg/L	0.000075	0.000075	0.000075
Sb	mg/L	0.00021	0.00015	0.00015
Se	mg/L	0.00035	0.00011	0.00011
Tl	mg/L	0.0000060	0.0000050	0.0000050
U	mg/L	0.0014	0.00026	0.00026
V	mg/L	0.0041	0.00064	0.00064
W	mg/L	0.00030	0.000050	0.000050
Zn	mg/L	0.0022	0.0010	0.0010
Zr	mg/L	0.000067	0.00064	0.00064

Notes:
1. Overburden Stockpile source term.
2. Natural Ground – Dixie Creek Main Stem.
3. pH based on source term data for rehabilitated areas.

Table 9-7: TMF Seepage Water Quality Estimate Post-closure

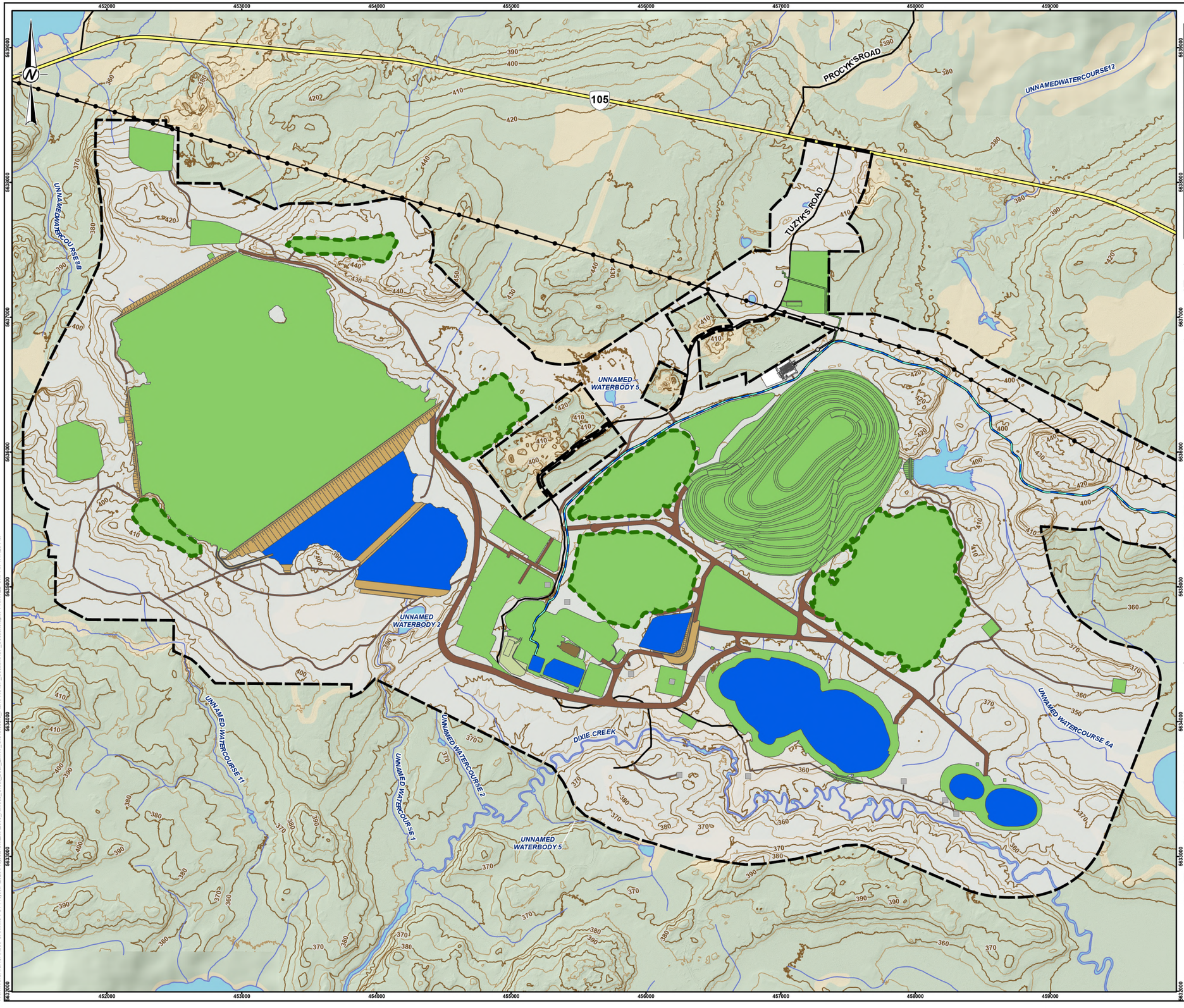
Parameter	Units	Equilibrated	Mass Balance
pH[(1)]	pH units	8.0	-
SO4	mg/L	88	88
Chloride	mg/L	23	23
Hg	mg/L	0.000036	0.000036
Ag	mg/L	0.00020	0.00020
Al	mg/L	0.0081	0.38
As	mg/L	0.00060	0.0091
Be	mg/L	0.000077	0.00018
B	mg/L	0.084	0.084
Ca	mg/L	72	74
Cd	mg/L	0.000036	0.000048
Co	mg/L	0.0032	0.0033
Cr	mg/L	0.0035	0.0035
Cu	mg/L	0.0015	0.011
Fe	mg/L	0.0075	0.17
K	mg/L	21	21
Mg	mg/L	1.5	1.5
Mn	mg/L	0.17	0.17
Mo	mg/L	0.010	0.010
Na[(2)]	mg/L	1.9	1.9
Ni	mg/L	0.0031	0.0040
P	mg/L	0.029	0.030
Pb	mg/L	0.0000041	0.00099
Sb	mg/L	0.0038	0.0038
Se	mg/L	0.0026	0.0026
Tl[(3)]	mg/L	0.000033	0.000033
U	mg/L	0.0047	0.0047
V[(3)]	mg/L	0.0089	0.0089
W[(3)]	mg/L	0.0022	0.0022
Zn	mg/L	0.0090	0.022
Zr	mg/L	0.0070	0.0070
Total Cyanide	mg/L	--	0.0050
WAD Cyanide	mg/L	--	0.0040
Nitrate-N	mg/L as N	--	0.13
Nitrite-N	mg/L as N	--	0.0050
Ammonia-N	mg/L as N	--	1.0

Notes:
1. pH estimated based on simulations in PHREEQC and in consideration of the proportion of acidic and neutral inflows to each node. pH values reported to the nearest 0.5 pH units.
2. Charge balance parameter, set equal to mass balance model output.
3. Not in thermochimie database, set equal to mass balance model output.
Equilibrated results represented by the results of PHREEQC simulations, aluminum result assumed to be 10x higher than PHREEQC estimate (see Section 4.13).

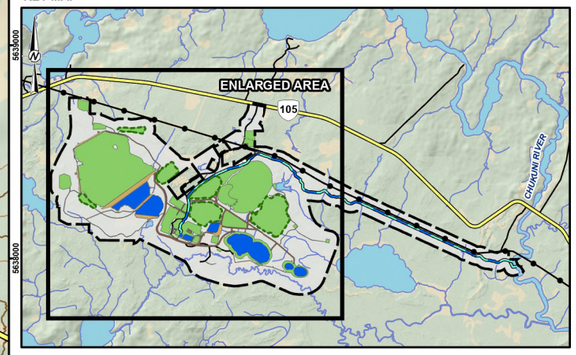
Table 9-8: Water Quality In Dixie Creek Downstream of LP Central Pit Post-closure

Parameter	WQG PAL[1]	Source	Model Baseline Water Quality		Model Results, Median Monthly Water Quality, Post Closure (Long-term Equilibrium)												Predicted Overall Range	
			Median	95th	January	February	March	April	May	June	July	August	September	October	November	December	Median	95th
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sulphate	218	BC WQG	1.0	1.0	2.2	2.3	2.5	3.6	2.3	2.1	1.8	2.2	2.7	2.7	1.5	2.0	2.3	3.6
Chloride	120	CCME	0.5	1.2	1.4	0.8	0.8	1.1	0.7	0.7	0.7	0.8	0.9	0.9	1.3	1.4	0.9	1.4
Aluminum	0.82	FEQG	0.15	0.22	0.12	0.098	0.097	0.087	0.16	0.17	0.13	0.13	0.094	0.094	0.12	0.12	0.12	0.17
Antimony	0.02	iPWQO	0.00038	0.00040	0.00045	0.00046	0.00046	0.00050	0.00031	0.00030	0.00044	0.00045	0.00033	0.00033	0.00041	0.00044	0.00044	0.00050
Arsenic	0.005	iPWQO	0.0021	0.0032	0.0019	0.0023	0.0023	0.0023	0.0019	0.0019	0.0031	0.0031	0.0021	0.0021	0.0019	0.0019	0.0021	0.0031
Beryllium	0.011	PWQO	0.000013	0.000023	0.000023	0.000012	0.000012	0.000011	0.000010	0.000010	0.000012	0.000012	0.0000100	0.0000100	0.000022	0.000023	0.000012	0.000023
Boron	1.5	CCME	0.0058	0.0061	0.0069	0.0068	0.0069	0.0069	0.0061	0.0060	0.0062	0.0064	0.0063	0.0062	0.0064	0.0068	0.0064	0.0069
Cadmium	0.000072	CCME	0.0000066	0.000020	0.000026	0.000013	0.000014	0.000033	0.000022	0.000019	0.000017	0.000021	0.000022	0.000022	0.000024	0.000025	0.000022	0.000033
Calcium	-	-	12	15	12	15	15	15	10	10	11	11	11	11	12	12	12	15
Chromium	0.0089	iPWQO[2]	0.00059	0.00072	0.00045	0.00062	0.00062	0.00059	0.00053	0.00053	0.00067	0.00067	0.00044	0.00043	0.00043	0.00044	0.00053	0.00067
Cobalt	0.0009	iPWQO	0.00015	0.00019	0.00020	0.00021	0.00022	0.00028	0.00020	0.00019	0.00022	0.00023	0.00022	0.00021	0.00017	0.00019	0.00021	0.00028
Copper	0.005	iPWQO	0.0011	0.0012	0.0011	0.0010	0.0010	0.00098	0.00098	0.00099	0.00092	0.00092	0.00080	0.00079	0.0011	0.0011	0.00098	0.0011
Iron	0.8	FEQG	0.50	0.60	0.44	0.45	0.44	0.38	0.40	0.42	0.51	0.50	0.33	0.33	0.43	0.44	0.44	0.51
Lead	0.016	FEQG	0.00017	0.00021	0.00016	0.00015	0.00015	0.00013	0.00014	0.00015	0.00019	0.00018	0.00011	0.00011	0.00015	0.00016	0.00015	0.0002
Magnesium	-	-	3.3	4.2	3.1	4.0	4.0	3.7	2.9	2.9	3.3	3.2	2.9	2.9	3.1	3.1	3.1	4.0
Manganese	-	-	0.022	0.050	0.022	0.045	0.045	0.044	0.023	0.022	0.045	0.045	0.021	0.021	0.021	0.022	0.022	0.045
Mercury	0.000026	CCME	0.0000014	0.0000018	0.0000019	0.0000019	0.0000020	0.0000029	0.0000024	0.0000022	0.0000019	0.0000021	0.0000025	0.0000025	0.0000016	0.0000018	0.0000021	0.0000029
Molybdenum	31	SEQG	0.00025	0.00026	0.00035	0.00038	0.00039	0.00059	0.00041	0.00036	0.00037	0.00043	0.00049	0.00048	0.00029	0.00033	0.00038	0.00059
Nickel	0.025	CCME	0.00073	0.00086	0.0009	0.00074	0.00075	0.0009	0.0008	0.00076	0.00081	0.0008	0.0008	0.0008	0.00085	0.00089	0.00081	0.0009
Phosphorus	0.03	iPWQO	0.031	0.037	0.036	0.024	0.024	0.023	0.033	0.034	0.019	0.019	0.027	0.027	0.035	0.036	0.027	0.036
Potassium	-	-	1.1	1.3	1.4	1.5	1.5	1.6	1.2	1.2	1.1	1.2	1.2	1.2	1.2	1.3	1.2	1.6
Selenium	0.002	BC WQG	0.00011	0.00016	0.00011	0.00020	0.00020	0.00027	0.00019	0.00018	0.00016	0.00018	0.00019	0.00018	0.00009	0.00010	0.00018	0.00027
Silver	0.00025	CCME	0.000022	0.000023	0.000025	0.000026	0.000026	0.000027	0.000018	0.000017	0.000024	0.000025	0.000019	0.000019	0.000023	0.000025	0.000024	0.000027
Thallium	0.008	CCME	0.0000040	0.0000056	0.0000043	0.0000044	0.0000044	0.0000053	0.0000057	0.0000056	0.0000041	0.0000043	0.0000063	0.0000063	0.0000042	0.000004	0.0000044	0.0000063
Tungsten	0.03	iPWQO	0.000024	0.000042	0.000048	0.000061	0.000066	0.00012	0.000089	0.000077	0.000047	0.000062	0.00010	0.00010	0.000035	0.000045	0.000064	0.00012
Uranium	0.015	CCME	0.00022	0.00025	0.00028	0.00025	0.00026	0.00035	0.00029	0.00028	0.00021	0.00024	0.00030	0.00029	0.00024	0.00027	0.00027	0.00035
Vanadium	0.12	FEQG	0.00085	0.0010	0.00087	0.00082	0.00083	0.00098	0.00104	0.00102	0.00086	0.00090	0.00090	0.00089	0.00082	0.00086	0.00088	0.00104
Zinc	0.03	CCME	0.0016	0.0021	0.0015	0.0024	0.0024	0.0033	0.0025	0.0023	0.0024	0.0026	0.0024	0.0024	0.0014	0.0014	0.0024	0.0033
Zirconium	0.004	iPWQO	0.00089	0.00092	0.0010	0.0010	0.0010	0.0011	0.00073	0.00071	0.00095	0.0010	0.00076	0.00075	0.00091	0.0010	0.00096	0.0011
Ammonia (as N)	1.8	CCME	0.047	0.055	0.055	0.056	0.057	0.053	0.032	0.031	0.048	0.049	0.050	0.050	0.047	0.053	0.050	0.057
Ammonia, Unionized (as N)	0.019	CCME	0.00040	0.00047	0.00047	0.00048	0.00049	0.00045	0.00027	0.00026	0.00041	0.00042	0.00043	0.00043	0.00040	0.00046	0.00043	0.00049
Nitrite (as N)	0.06	CCME	0.013	0.014	0.013	0.013	0.013	0.011	0.0065	0.0067	0.013	0.012	0.0068	0.0067	0.012	0.013	0.012	0.013
Nitrate (as N)	3	CCME	0.059	0.20	0.067	0.19	0.19	0.16	0.029	0.026	0.031	0.032	0.054	0.053	0.063	0.066	0.059	0.19
Cyanide, WAD	0.005	PWQO[3]	0.0043	0.0045	0.0044	0.0044	0.0043	0.0037	0.0019	0.0019	0.0020	0.0041	0.0040	0.0039	0.0042	0.0044	0.0040	0.0044

Notes:
- no value available.
All units mg/L.
Grey highlighted values are greater than identified Water Quality Guidelines for the Projection of Aquatic Life.
WQG PAL: Water Quality Guidelines for the Projection of Aquatic Life.
PWQO: Provincial Water Quality Objectives; iPWQO: interim PWQO.
CWQG: Corresponds to the most up-to date Canadian Council of Ministers of the Environment (CCME) of Federal Environmental Quality Guideline for the Protection of Aquatic Life.
FEQG: Federal Environmental Quality Guidelines.
BC WQG: British Columbia Water Quality Guidelines (fresh water, long-term exposure).
SEQG: Saskatchewan Environmental Quality Guidelines.
1) Where applicable, receiving environment guidelines are here calculated using 25th percentile hardness and pH of baseline monitoring station to be conservative (Table 3 4).
2) Guideline corresponds to Cr(III).
3) The PWQO is for free cyanide.



KEY MAP



SCALE: 1:175,000

LEGEND

- CLOSURE PLAN BOUNDARY
- EXISTING TRANSMISSION LINE
- HIGHWAY (INCLUDING ENBRIDGE PIPELINE)
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- MAJOR CONTOURS (10 M INTERVAL)
- MINOR CONTOURS (5 M INTERVAL)

PROPOSED MINE FEATURE

- DAM
- WATER TREATMENT PLANT
- SUBSTATION
- TRANSMISSION LINE
- ROAD
- EFFLUENT / FRESH WATER PIPELINE CORRIDOR

PROPOSED CLOSURE CONDITIONS

- BACKFILLED, REVEGETATED
- CONTOURED, COVERED AS NEEDED, REVEGETATED
- REMOVED / FLATTEDNED MINE FEATURE
- POND / WATER-FILLED OPEN PIT
- ENGINEERING CAP

0 0.25 0.5 1

1:28,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. CONTOURS ACQUIRED FROM 2022 LIDAR SURVEY.
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
PASSIVE CLOSURE PERIOD SITE CONDITIONS

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	9-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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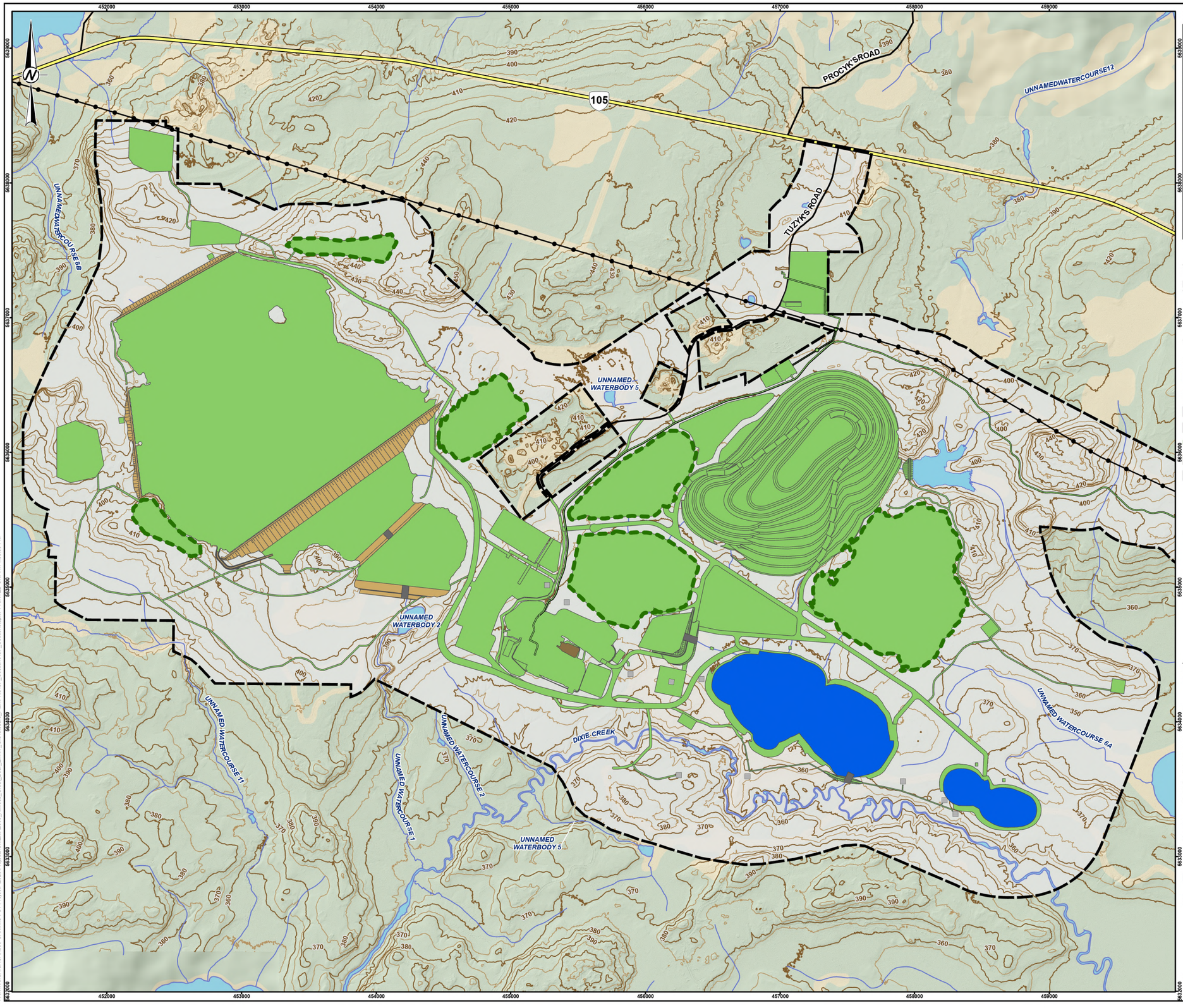

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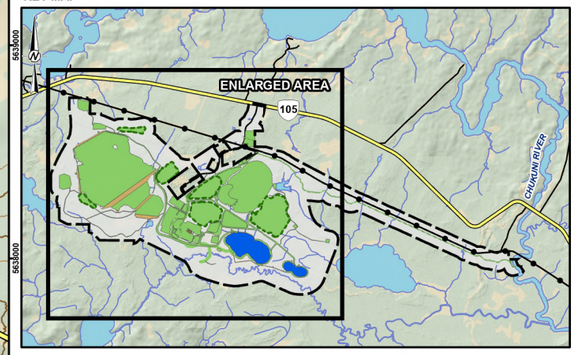


SCALE: 1:175,000

LEGEND

- CLOSURE PLAN BOUNDARY
- EXISTING TRANSMISSION LINE
- HIGHWAY (INCLUDING ENBRIDGE PIPELINE)
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- MAJOR CONTOURS (10 M INTERVAL)
- MINOR CONTOURS (5 M INTERVAL)

PROPOSED MINE FEATURE

- DAM

PROPOSED CLOSURE CONDITIONS

- BACKFILLED, REVEGETATED
- CONTOURED, COVERED AS NEEDED, REVEGETATED
- REMOVED / FLATTEDNED MINE FEATURE
- WATER-FILLED OPEN PIT
- OVERFLOW CHANNEL / SPILLWAY
- ENGINEERING CAP

0 0.25 0.5 1

1:28,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. CONTOURS ACQUIRED FROM 2022 LIDAR SURVEY.
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

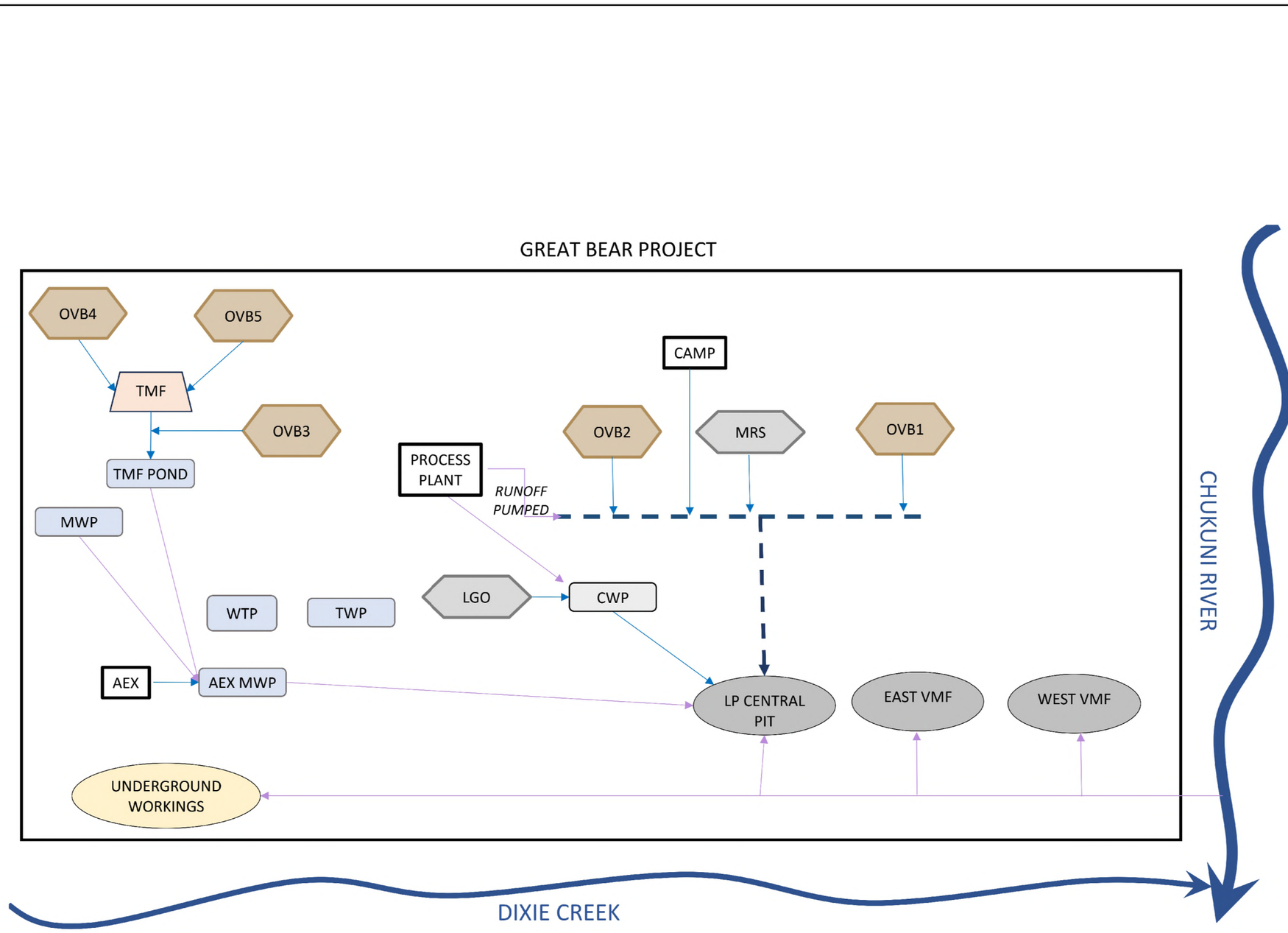
TITLE
POST-CLOSURE PERIOD SITE CONDITIONS

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	9-2



LEGEND

- MINE ROCK STOCKPILE
- WATER MANAGEMENT STRUCTURE OR POND
- OPEN PITS
- PROJECT INFRASTRUCTURE
- UNDERGROUND WORKINGS
- OVERBURDEN STOCKPILE
- TAILINGS MANAGEMENT FACILITY
- BACKFILLLED OR BREACHED POND

NOTE(S)

1. FIGURE IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND IS NOT DRAWN TO SCALE.
2. FIGURE ILLUSTRATES WATER MANAGEMENT SCHEMATIC.
3. BLUE ARROWS REFLECT NATURAL FLOW / GRAVITY DRAINAGE PATTERNS.
4. BLUE DASHED ARROWS REFLECT THE MAIN COLLECTION CHANNEL.
5. PURPLE ARROWS INDICATE PUMPING BY PIPELINE.
6. ONLY FEATURES USED IN THE CLOSURE (ACTIVE, PASSIVE AND POST CLOSURE) WATER MANAGEMENT STRATEGY ARE ILLUSTRATED.

REFERENCE(S)

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
ACTIVE CLOSURE WATER MANAGEMENT SCHEMATIC

CONSULTANT

wsp

YYYY-MM-DD	2026-02-06
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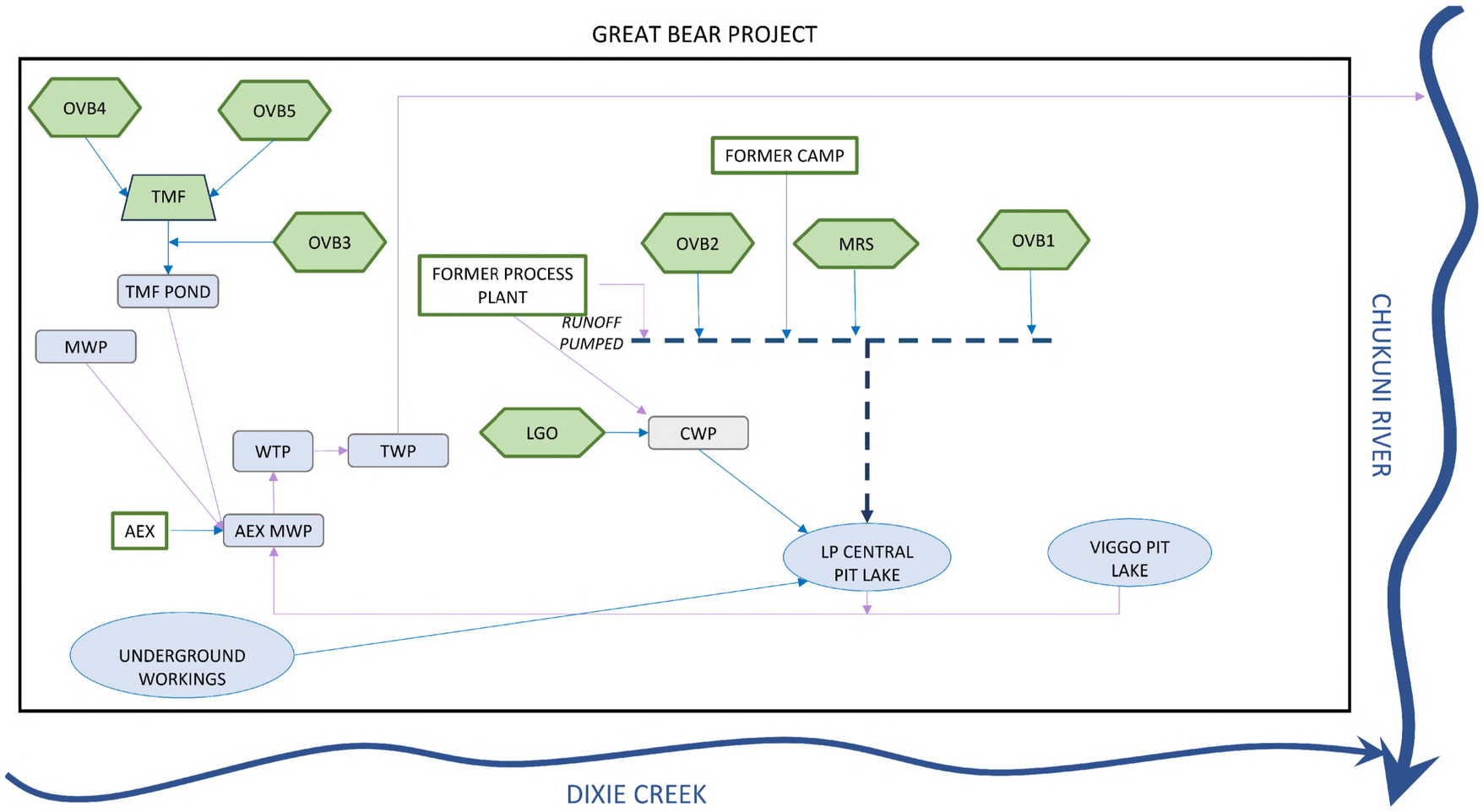
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	9-3



LEGEND

- COVERED AND REVEGETATED MINE ROCK AND ORE STOCKPILE
- WATER MANAGEMENT STRUCTURE OR POND
- FILLED UNDERGROUND WORKINGS / PIT LAKE
- RECLAIMED PROJECT INFRASTRUCTURE AREA
- DEPLETED AND REVEGETATED OVERBURDEN STOCKPILE
- COVERED AND REVEGETATED TAILINGS MANAGEMENT FACILITY
- BACKFILLLED OR BREACHED POND

NOTE(S)

1. FIGURE IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND IS NOT DRAWN TO SCALE.
2. FIGURE ILLUSTRATES WATER MANAGEMENT SCHEMATIC.
3. BLUE ARROWS REFLECT NATURAL FLOW / GRAVITY DRAINAGE PATTERNS.
4. BLUE DASHED ARROWS REFLECT THE MAIN COLLECTION CHANNEL.
5. PURPLE ARROWS INDICATE PUMPING BY PIPELINE.

REFERENCE(S)

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
PASSIVE CLOSURE WATER MANAGEMENT SCHEMATIC

CONSULTANT

YYYY-MM-DD	2026-02-06
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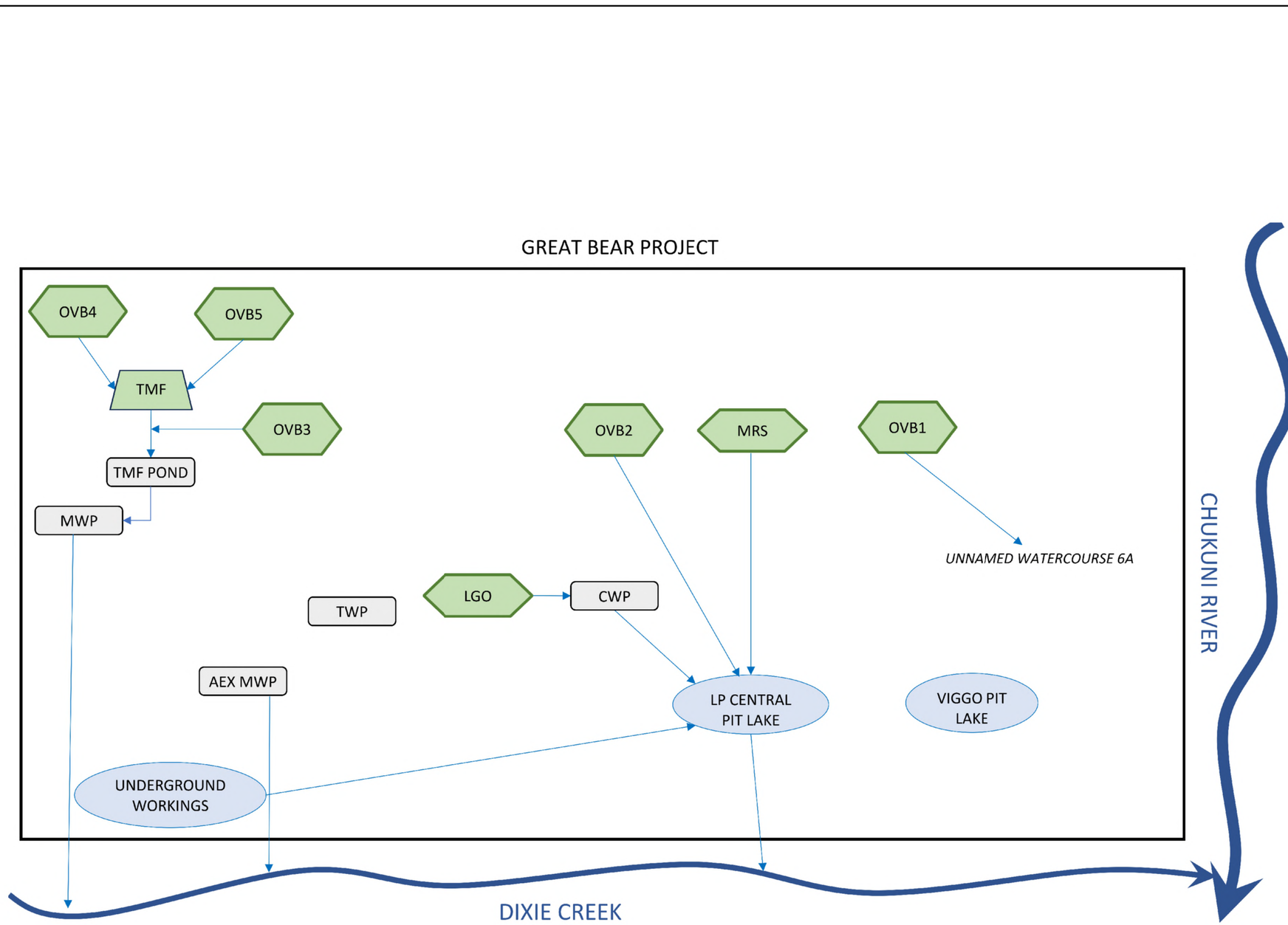
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	9-4



LEGEND

- COVERED AND REVEGETATED MINE ROCK AND ORE STOCKPILE
- BACKFILLED OR BREACHED POND
- FILLED UNDERGROUND WORKINGS / PIT LAKE
- PROJECT INFRASTRUCTURE AREAS
- DEPLETED AND REVEGETATED OVERBURDEN STOCKPILE
- COVERED AND REVEGETATED TAILINGS MANAGEMENT FACILITY

NOTE(S)

1. FIGURE IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND IS NOT DRAWN TO SCALE.
2. FIGURE ILLUSTRATES WATER MANAGEMENT SCHEMATIC.
3. BLUE ARROWS REFLECT NATURAL FLOW / GRAVITY DRAINAGE PATTERNS.

REFERENCE(S)

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
POST-CLOSURE WATER MANAGEMENT SCHEMATIC

CONSULTANT

YYYY-MM-DD	2026-02-06
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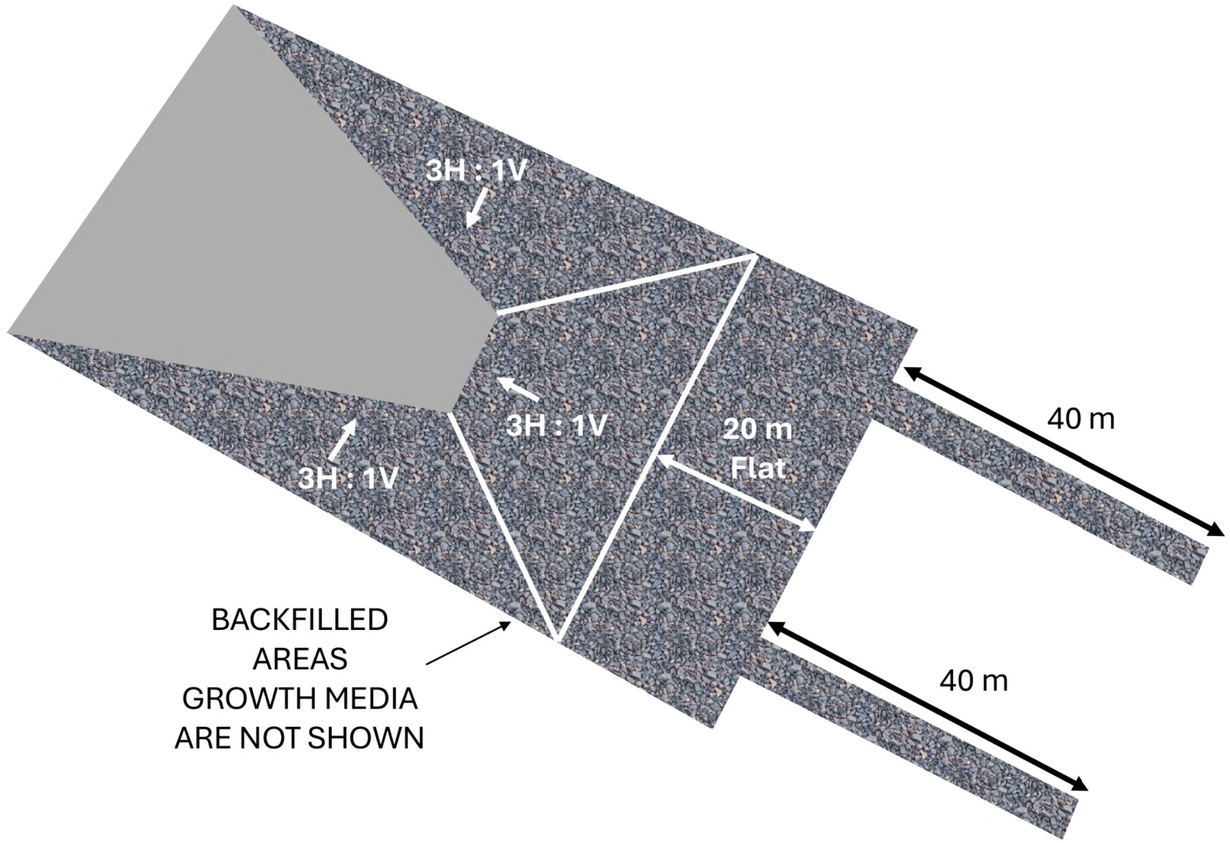
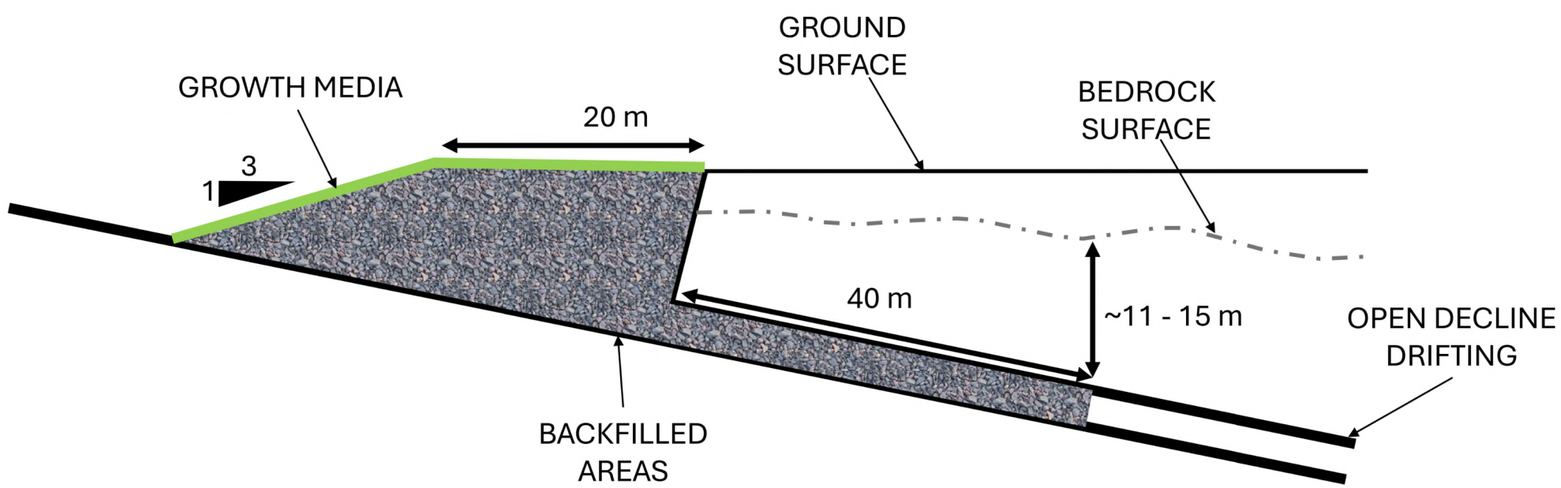
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	9-5





LEGEND

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
PORTAL CLOSURE SCHEMATIC

CONSULTANT

YYYY-MM-DD	2026-01-08
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	9-6

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10 MONITORING

This section presents a preliminary closure monitoring program compliant with the Mine Rehabilitation Code of Ontario as set out in Schedule 1 of O. Reg. 35/24. The program describes monitoring that would occur should the Project enter into Temporary Suspension or a State of Inactivity, as the closure phase and post-closure.

The closure monitoring program will be implemented to evaluate that reclamation measures remain effective and continue to support end land use objectives discussed in Section 11. The closure monitoring programs presented in this document are based on available information from the baseline monitoring programs and modelling efforts completed to support the Great Bear Project Impact Statement. Great Bear Resources is currently developing their Impact Statement and will be preparing and submitting their environmental approvals in tandem with their Impact Statement.

As part of the environmental approvals, monitoring programs will be developed and confirmed during the environmental approval process. Environmental monitoring during the closure phase and potentially post-closure, will also be completed in accordance with environmental approvals and regulatory requirements in place at the time.

A report summarizing the monitoring results will be prepared and submitted to the Director of MEM on an annual basis during mine closure for the proposed monitoring timeline.

10.1 PHYSICAL STABILITY MONITORING

10.1.1 TEMPORARY SUSPENSION

If the Project is placed on Temporary Suspension, all physical monitoring programs in place at that time will continue on their regular schedule as developed prior to entering a Temporary Suspension. Dam safety inspections will be conducted by a qualified professional engineer on an annual basis and dam safety reviews will be developed every five years or as recommended by a qualified professional engineer. Physical monitoring will be carried out as required by a qualified professional engineer on all water and tailings retaining structures (e.g., TMF, TMF pond, MWP, CWP, holding pond, etc.). The following Project structures and components will be visually inspected by security personnel on a daily basis in conjunction with routine site security measures to confirm that they remain physically stable and do not present a potential hazard to the general public or surrounding environment:

- Mine openings: raises and portals
- Underground dewatering systems
- LP Central pit
- VMF
- Stockpiles: MRS, LGO, ROM and OVB
- TMF, TMF pond, MWP, holding pond, CWP and AEX ponds
- Drainage facilities, including the effluent / freshwater pipelines
- Buildings and equipment.

An annual monitoring report, noting any physical stability concerns observed during the calendar year, and detailing any corrective action taken, will be prepared and reported to the Director of MEM.

10.1.2 STATE OF INACTIVITY

If the Project is placed in a State of Inactivity, inspection items and methods will be the same as described above in Section 10.1.1. As such all physical monitoring programs in place at that time will

continue on their regular schedule as developed prior to entering a State of Inactivity. This will include regular inspections, monitoring, dam safety inspections and dam safety reviews as indicated in Section 10.1.1. Additionally, general site inspections will be carried out by a Great Bear Resources representative during a State of Inactivity at least once every month or after a significant storm event or after, to confirm that the Project features listed in Section 10.1.1 do not present a potential safety hazard. During higher precipitation periods, inspection of the water management system may be increased, as required.

An annual monitoring report, noting any physical stability concerns observed during the calendar year, and detailing any corrective action taken, will be prepared and reported to the Director of MEM.

10.1.3 CLOSURE PHASE

After the final closure measures have been completed, the site will be inspection by a geotechnical engineer (or equivalent) to assess physical stability aspects and the potential for hazards from any remaining infrastructure:

- Closure of openings to underground, such as the backfilled box cut / portal and capped raises will be inspected after completion of the closure measures, for confirmation.
- A final inspection of the slopes of stockpiles for long-term stability will be conducted by a qualified engineer. Following this inspection, regular inspections will cease, unless otherwise recommended during the final inspection.
- The required dam safety inspection, dam safety review and instrumentation monitoring will be completed by a qualified professional engineer while the dams continue as impoundments.
- A dam safety review will be completed following in year 5 after operations, on the TMF dams. Requirements for future monitoring will be assessed at that time.
- Exposed pit walls of the LP Central pit and VMF (i.e., at or above the water level) will be inspected regularly for erosion or other potential stability issues until such time as the LP Central pit and VMF are fully filled with water and stabilized. After the final water levels are achieved in the LP Central pit and VMF, exposed slopes will be inspected on an incidental basis.
- While surface water is being actively managed at the Project (during the active closure and passive closure period) regular monitoring will occur of associated physical structures present, on a schedule appropriate for the facility. Spillways, the main collection channel, ditches and culverts and similar, will be visually inspected for potential signs of erosion, blockage from sediment, ice damage, debris accumulation or animal activity and / or deterioration of materials. Should any repair work be deemed necessary, it will be carried out in a reasonable time frame.
- After completion of final closure measures, the remaining passive water management structures (such as the LP Central pit spillway), will be inspected during each post-closure site visit, and repairs identified will be completed in a reasonable time frame.

A monitoring report will be prepared and provided to the Director of MEM to document the inspection at the end of final closure.

As applicable, monitoring report(s) will be prepared post-closure, noting any physical stability concerns observed and detailing corrective actions taken, and a copy provided to the Director of MEM.

10.2 CHEMICAL STABILITY MONITORING

While the WTP is operational, surface water and groundwater monitoring will be completed in accordance with the applicable environmental approvals that will be in place. Thereafter, chemical monitoring will be conducted at a minimum in accordance with Part 5 (surface water monitoring) and Part 6 (groundwater monitoring) of the Mine Rehabilitation Code. The proposed surface water and groundwater monitoring stations after contact water treatment and discharge ceases, are illustrated in Figure 10-1 and Figure 10-2 respectively.

10.2.1 TEMPORARY SUSPENSION

During Temporary Suspension, the integrated water management system will continue to be operated in the manner described in Section 7.4. During a temporary suspension, effluent and surface water quantity and quality will be monitored during discharge periods in accordance with applicable environmental approvals that are in place, and at a minimum will be analyzed for parameters presented in the Code:

pH	Acidity	Arsenic	Lead	Cyanide
Conductivity	Hardness	Cadmium	Mercury	
Total Suspended Solids	Total Ammonia	Calcium	Molybdenum	
Total Dissolved Solids	Sulphate	Copper	Nickel	
Alkalinity	Aluminum	Iron	Zinc	

Groundwater level and groundwater quality sampling will be conducted at locations and frequencies as identified in environmental approvals and permits. Groundwater samples will be analyzed for parameters in the Code:

pH	Cyanide	Arsenic	Lead
Conductivity	Hardness	Cadmium	Mercury
Total Dissolved Solids	Ammonia	Calcium	Molybdenum
Alkalinity	Sulphate	Copper	Nickel
Acidity	Aluminum	Iron	Zinc

10.2.2 STATE OF INACTIVITY

During a State of Inactivity, the integrated water management system will continue to be operated in the manner described in Section 7.4. Water quality monitoring (surface water and groundwater) will continue as summarized in Section 10.2.1.

Following one year of monitoring, the monitoring program will be evaluated and, if water quality warrants, an application may be made to reduce sampling frequencies and / or parameters related to environmental approvals and permits in place, as well as the Code.

10.2.3 CLOSURE PHASE

During the majority of the active closure period and initial passive closure period there will be no discharge to the environment. Monitoring of surface water quantity and quality will continue to be monitored in accordance with applicable environmental approvals that are in place and, at a minimum, samples will be analyzed for parameters presented in the Code:

pH	Acidity	Arsenic	Lead	Cyanide
Conductivity	Hardness	Cadmium	Mercury	
Total Suspended Solids	Total Ammonia	Calcium	Molybdenum	
Total Dissolved Solids	Sulphate	Copper	Nickel	
Alkalinity	Aluminum	Iron	Zinc	

Groundwater level and groundwater quality sampling will be conducted at locations and frequencies as identified in environmental approvals and permits in place. Groundwater samples will be analyzed for parameters in the Code:

pH	Cyanide	Arsenic	Lead
Conductivity	Hardness	Cadmium	Mercury
Total Dissolved Solids	Ammonia	Calcium	Molybdenum
Alkalinity	Sulphate	Copper	Nickel
Acidity	Aluminum	Iron	Zinc

While treated effluent is being discharged to the environment (anticipated to occur early in the passive closure period and while the pit lake water level is being maintained in the LP Central pit pending water quality confirmation), effluent quality will be monitored as per the applicable environmental approvals and Code requirements.

Surface water quality and quantity will be monitored monthly during non-frozen periods for the first five years after operations cease, at approximately the monitoring stations shown in Figure 10-1, pending the issued environmental approvals. The sampling will continue, at a reduced frequency of three times per year (non-winter) for an additional five years post-closure.

Groundwater monitoring including water levels and water quality will be completed at the monitoring locations illustrated in Figure 10-2 for the first five years after operations cease, three times per year. The proposed monitoring locations were selected to monitor for potential impacts from the remaining mine rock stockpile and underground workings. The sampling will continue, potentially at reduced locations for an additional five years post-closure.

Annual monitoring reports will be prepared and provided to MEM that compare the surface water and groundwater monitoring results to the Code. Monitoring of surface water and groundwater is proposed to cease at year ten after operations cease, assuming acceptable results.

10.3 BIOLOGICAL MONITORING

Biological monitoring will be conducted during the closure phase in accordance with applicable environmental approvals or other applicable regulations and any other commitments made by Great Bear Resources. The program described below is intended to confirm the overall success of the closure and rehabilitation efforts as required by the code. The proposed approximate biological monitoring stations for final closure are illustrated in Figure 10-3.

10.3.1 TEMPORARY SUSPENSION

Biological monitoring will be conducted during a Temporary Suspension in accordance with applicable regulatory requirements and / or environmental approvals in place at the time.

10.3.2 STATE OF INACTIVITY

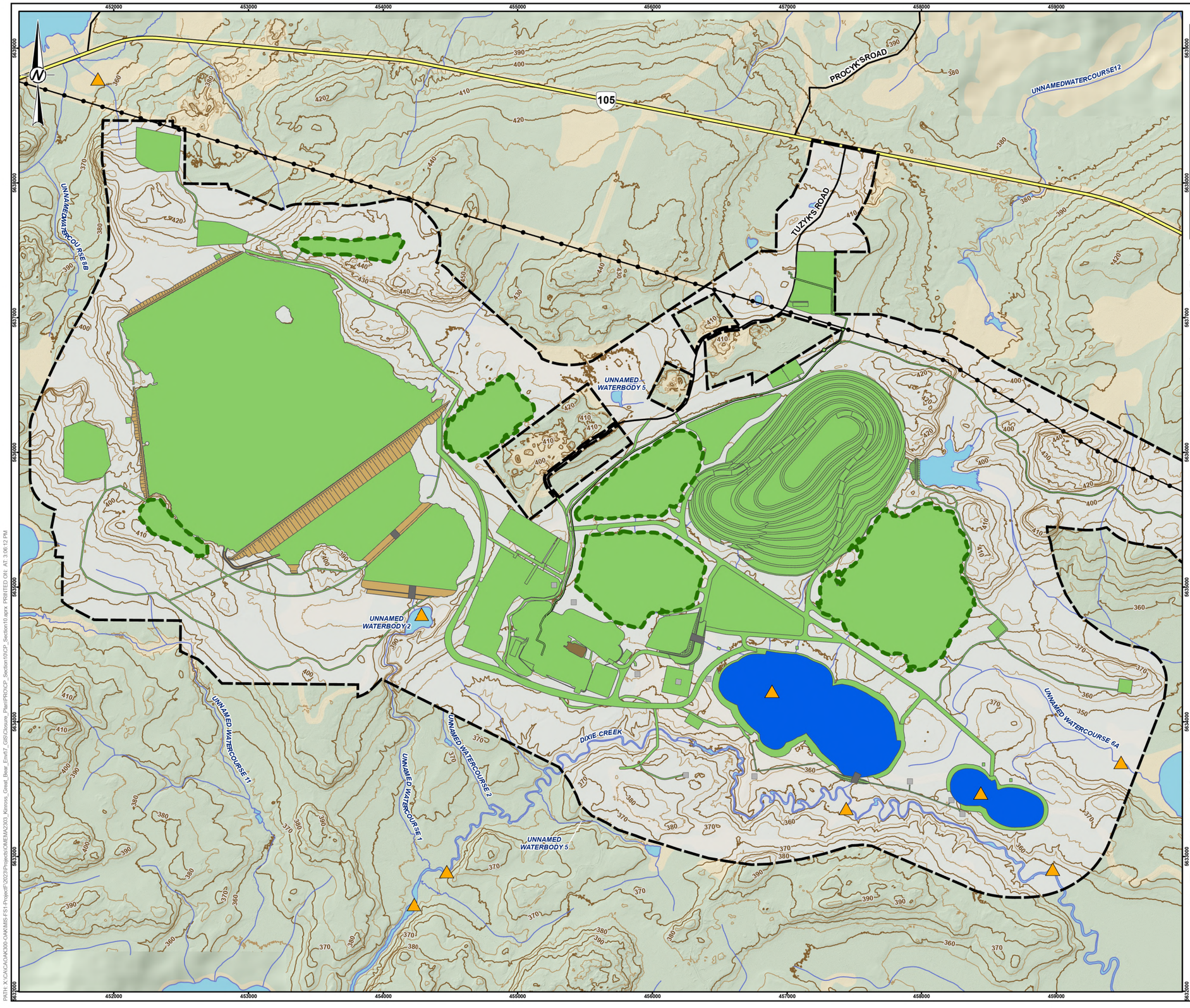
Biological monitoring will be conducted during a State of Inactivity in accordance with applicable regulatory requirements and / or environmental approvals in place at the time.

10.3.3 FINAL CLOSURE

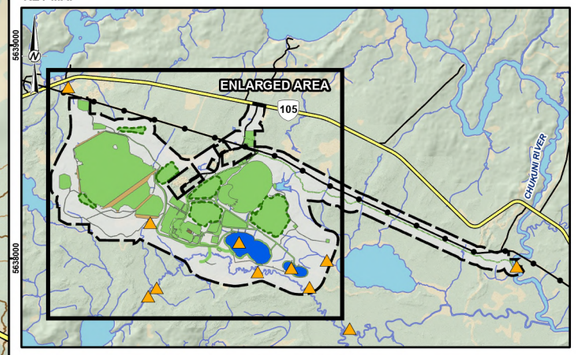
Biological monitoring requirements during the closure will be carried out in accordance with accordance with applicable regulatory requirements including the Metal and Diamond Mining Effluent Regulations, environmental approvals in place at the time and / or other commitments.

Semi-annual inspection and monitoring will be carried out of revegetated areas during each year of the closure phase and five years post-closure to determine revegetation success, and the need for remedial work (e.g., re-fertilizing and / or reseeding), if any. Inspections will include photographic records, standardized as reasonable, to allow year-to-year comparison. Soils sampling in areas showing poor revegetation conditions will be undertaken annually in the spring using in-field soils test kits (for analysis of pH, nitrogen, phosphorus and potassium).

Based on these surveys and soil tests, areas of poor or incomplete vegetation cover will be identified and will be fertilized and / or replanted, as required. Signs of gullying, drilling, and / or slumping will be identified for immediate attention. Once more than 75% of the seeded area has been established with a self-sustaining vegetated cover from year to year, the monitoring and inspection program will be discontinued. It is assumed that the self-sustaining vegetative covers will be established at the Project within five years post-closure.



KEY MAP



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LEGEND

- CLOSURE PLAN BOUNDARY
- SURFACE WATER MONITORING LOCATION
- EXISTING TRANSMISSION LINE
- HIGHWAY (INCLUDING ENBRIDGE PIPELINE)
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- MAJOR CONTOURS (10 M INTERVAL)
- MINOR CONTOURS (5 M INTERVAL)

PROPOSED MINE FEATURE

- DAM

PROPOSED CLOSURE CONDITIONS

- BACKFILLED, REVEGETATED
- CONTOURED, COVERED AS NEEDED, REVEGETATED
- REMOVED / FLATTEDNED MINE FEATURE
- WATER-FILLED OPEN PIT
- OVERFLOW CHANNEL / SPILLWAY
- ENGINEERING CAP

0 0.25 0.5 1

1:28,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. ALL MONITORING STATIONS ARE APPROXIMATE AND MAY CHANGE AS THE MINE PROGRESSES AND IN ALIGNMENT WITH OTHER ENVIRONMENTAL PERMITS AND APPROVALS DURING THE LIFE OF MINE.

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. CONTOURS ACQUIRED FROM 2022 LIDAR SURVEY.
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

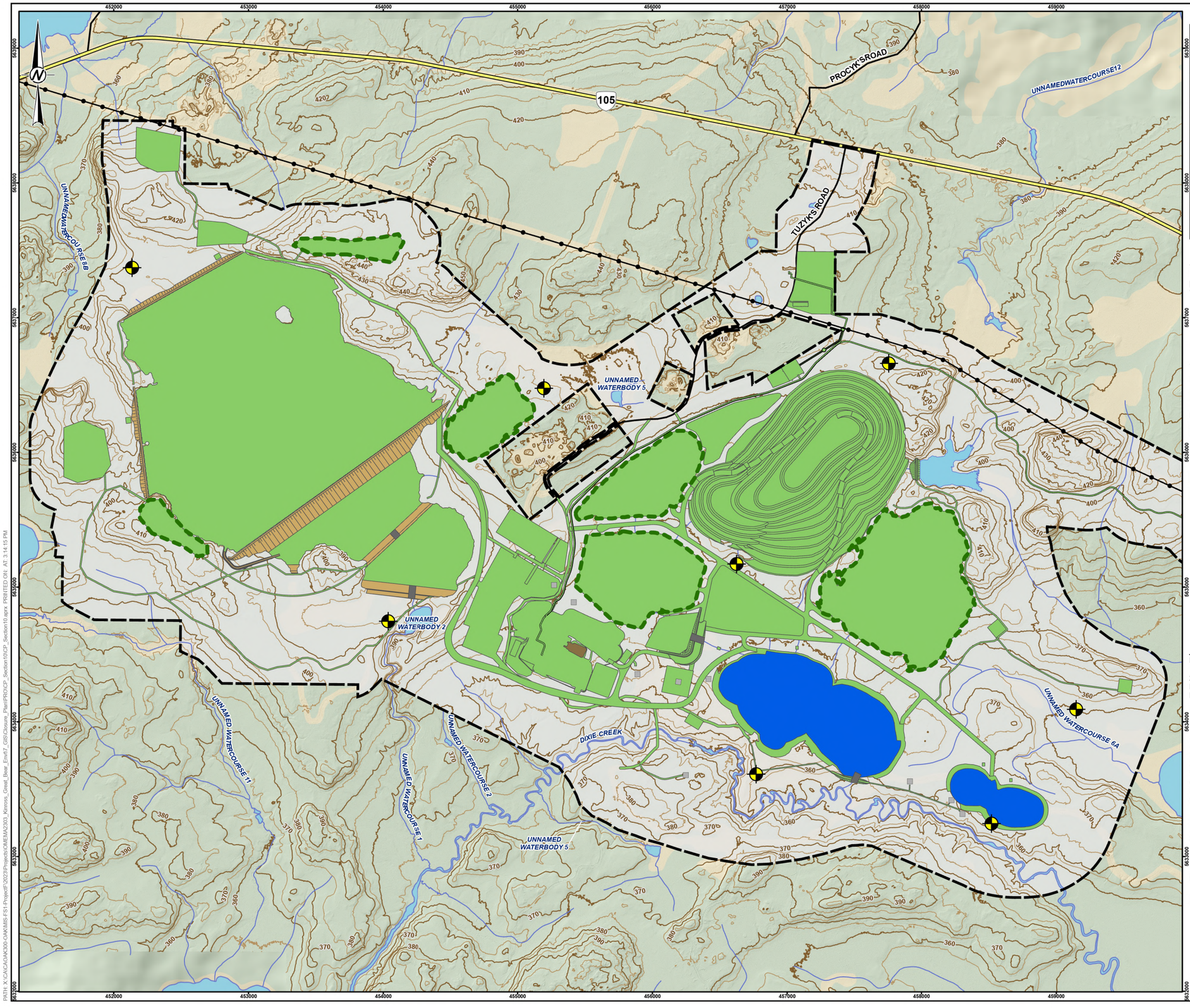
TITLE
POST-CLOSURE SURFACE WATER MONITORING LOCATIONS

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	10-1



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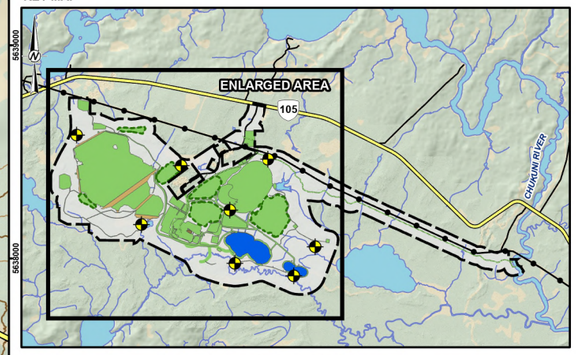

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LEGEND

- CLOSURE PLAN BOUNDARY
- GROUNDWATER MONITORING LOCATION
- EXISTING TRANSMISSION LINE
- HIGHWAY (INCLUDING ENBRIDGE PIPELINE)
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- MAJOR CONTOURS (10 M INTERVAL)
- MINOR CONTOURS (5 M INTERVAL)

PROPOSED MINE FEATURE

- DAM

PROPOSED CLOSURE CONDITIONS

- BACKFILLED, REVEGETATED
- CONTOURED, COVERED AS NEEDED, REVEGETATED
- REMOVED / FLATTEDNED MINE FEATURE
- WATER-FILLED OPEN PIT
- OVERFLOW CHANNEL / SPILLWAY
- ENGINEERING CAP

0 0.25 0.5 1

1:28,000 KILOMETRES

NOTE(S)

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2. ALL MONITORING STATIONS ARE APPROXIMATE AND MAY CHANGE AS THE MINE PROGRESSES AND IN ALIGNMENT WITH OTHER ENVIRONMENTAL PERMITS AND APPROVALS DURING THE LIFE OF MINE.

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3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

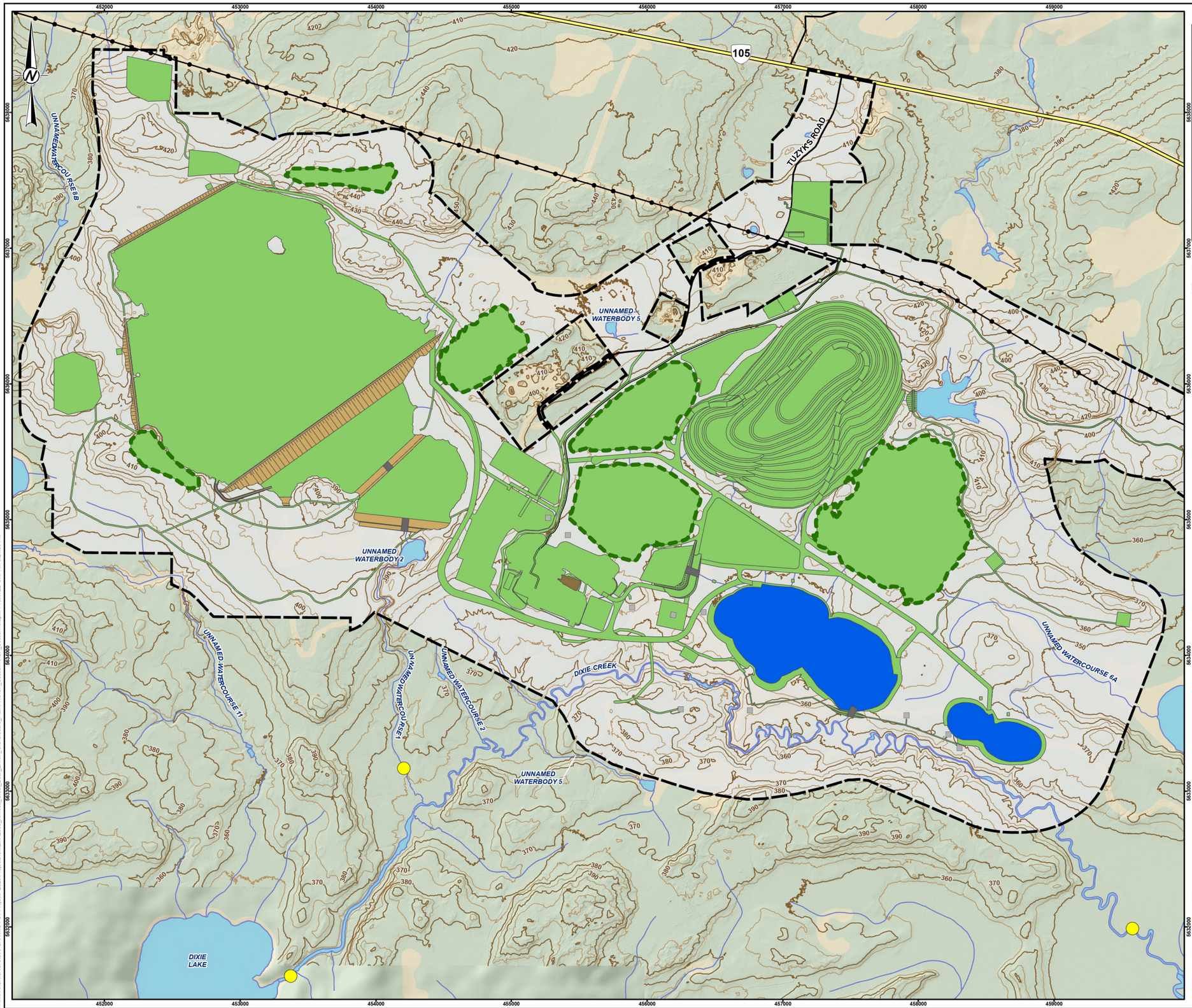
TITLE
POST-CLOSURE GROUNDWATER MONITORING LOCATIONS

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	10-2



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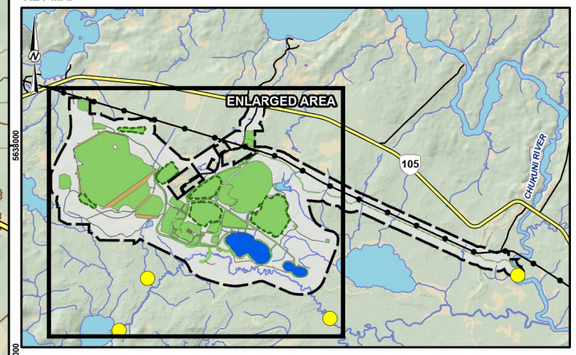

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LEGEND

- CLOSURE PLAN BOUNDARY
- BIOLOGICAL WATER MONITORING LOCATION
- EXISTING TRANSMISSION LINE
- HIGHWAY (INCLUDING ENBRIDGE PIPELINE)
- LOCAL ROAD
- WATERCOURSE
- WATERBODY
- MAJOR CONTOURS (10 M INTERVAL)
- MINOR CONTOURS (5 M INTERVAL)

PROPOSED MINE FEATURE

- DAM

PROPOSED CLOSURE CONDITIONS

- BACKFILLED, REVEGETATED
- CONTOURED, COVERED AS NEEDED, REVEGETATED
- REMOVED / FLATTEDNED MINE FEATURE
- WATER-FILLED OPEN PIT
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0 0.25 0.5 1

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5. SITE PLAN BASED ON INFORMATION PROVIDED BY GREAT BEAR RESOURCES, DECEMBER 2024 / JUNE 2025.
6. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
POST-CLOSURE BIOLOGICAL WATER MONITORING LOCATIONS

CONSULTANT

wsp

YYYY-MM-DD	2026-03-24
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	10-3

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11 EXPECTED SITE CONDITIONS FOLLOWING CLOSURE

11.1 LAND USE

The Project is located in an area in which forestry, and traditional and recreational pursuits (i.e., hunting, fishing and trapping use) are the dominant non-mining land uses. The overall intent of the Closure Plan is to restore the Project to a naturalized condition. In such a condition, the Project footprint would eventually provide wildlife habitat, and the potential for typical open space pursuits. Seed mixtures to be used during revegetation efforts are proposed to include commercially available native plant species, will consider plant species identified as being of interest to Indigenous groups if reasonably available. Studies are proposed to be completed during the operations phase that will promote self sustaining vegetative covers for the Project, and to support the potential for traditional pursuits such as hunting, trapping and fishing.

11.2 SITE TOPOGRAPHY

The terrain within the Property after final closure will be changed from the pre-development rolling terrain, within a few smaller unnamed waterbodies and watercourses. The principal topographic changes after closure from the pre-development landscape are the following:

- Revegetated TMF surface surrounded by rock dams at three locations, having a height of up to approximately 25 m above the surrounding terrain
- Revegetated MRS to a maximum expected height of 120 m above the surrounding landscape, with some exposed rocks in the NPAG MRS area
- Revegetated OVB raised up to approximately 25 m above the landscape
- LP Central pit lake filled with water that will periodically overflow through a spillway to the residual channel of Unnamed Watercourse 3
- Isolated pit lake at the VMF (an overflow channel to the LP Central pit lake will be created if needed although not expected to be required)
- Flattened, revegetated terrain associated with the aggregate extraction areas (BS3, BS3B and Q1)
- Enhanced fish-bearing pond in the upper reaches of Unnamed Watercourse 6B
- Residual revegetated flood protection berm, which except at Unnamed Watercourse 3 where it will be contoured and stabilized, will be a few metres above the surrounding terrain.
- Remnants of other infrastructure at the site, including roads, building and laydown areas, which will be scarified and revegetated at closure, but will remain raised slightly (in the order of a metre or so) above the surrounding terrain.

11.3 LOCAL SURFACE WATERS AND RECEIVING WATERS

Once the underground mine, LP Central pit and VMF are filled with water and the water quality from the Project is suitable for discharge to the environment to Dixie Creek (including the TMF), there will be no ongoing discharges to Chukuni River. Post-closure water quality estimates were developed for the Project using a mass based loading model based on the available geochemical data, source terms and the post-closure water balance and receiver water balance information (WSP 2025f,h). Pit lake water quality modelling and results are summarized in Section 9.3. In post-closure (long-term equilibrium), seepage from the closed TMF will continue to influence water quality Dixie Creek, and the LP Central pit lake will passively discharge to Dixie Creek. Results presented in the Receiver Water Quality Modelling Report (WSP 2025i) indicate that although there will be changes to water quality of Dixie Creek relative to

baseline conditions after closure, the water quality is better than the WQG PAL, indicating that water quality remains protective of aquatic life and downstream uses, even under conservative mass balance modelling assumptions (WSP 2025g). The estimated water quality in Dixie Creek after closure is provided in Table 9-6. Additional details on water quality modelling will be provided with the final certified Closure Plan for the Province.

11.4 LOCAL GROUNDWATER

As a result of mine dewatering, localized groundwater levels in the bedrock and overburden will be lowered during the operations phase of the Project. After dewatering ceases and the underground workings and pit lakes (LP Central and VMF) are filled with water, local groundwater levels will also rise and return to approximately pre-development conditions.

Predicted flow paths and seepage from the TMF, MRS and VMF post-closure, were evaluated as part of the Groundwater Modelling Report (WSP 2025i) that will be provided with the final certified Closure Plan for the Province. These results were incorporated in the post-closure surface water quality assessment summarized in Section 11.3.

11.5 TERRESTRIAL PLANT AND WILDLIFE COMMUNITIES

In the pre-development condition, the Project vegetation communities include upland vegetation such as Black Spruce, Jack Pine, White Spruce, Balsam Fir, Trembling Aspen, Balsam Poplar and White Birch. Black Spruce dominates in peat-filled depressions such as fens and bogs, with Tamarack present in bogs alongside Black Spruce. Balsam Poplar and Black Ash are components of lowland and riparian forests. Large fires have been frequent, and the forests exhibit uneven age distributions due to fire and forestry activities.

The revegetation program for the Project is proposed to use a mix of commercially available, native species combined with natural revegetation and vegetation succession. Revegetation species will be selected to encourage wildlife to re-enter and use the area once vegetation is re-establishing. Over time, the areas disturbed by the Project will become naturalized. It is recognized that changes will persist for several decades, as vegetation recovery to pre-development conditions is a long-term process.

11.6 AQUATIC PLANT AND WILDLIFE COMMUNITIES

Although a compact footprint is proposed for the Project, a number of watercourse and waterbodies will be replaced by terrestrial habitat after closure. There will be an overall increase in fish habitat resulting from the creation of new habitat in the upper reaches of Unnamed Watercourse 3 and Unnamed Watercourse 6B (east pond area), and Dixie Creek floodplain, along with other measures that will be provided for in the approved fisheries offset and compensation plan.

Dixie Creek will receive the majority of the passive runoff from the reclaimed site post-closure. Results presented in the Receiver Water Quality Modelling Report (WSP 2025i) indicate that although there will be changes to water quality of Dixie Creek relative to baseline conditions that remain after closure activities have been completed, the water quality is better than the WQG PAL, and remains protective of aquatic life and downstream uses, even under conservative mass balance modelling assumptions (WSP 2025g). Accordingly, there are no expected changes to aquatic plant or wildlife communities post-closure.

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Appendices

(Appendices to be provided in Certified Closure Plan)