Great Bear Gold Project
Impact Statement

Section 5: Project Description and Activities

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Acronyms and Abbreviations

ABA	Acid base accounting
AEX	Advanced exploration
AEX ETP	Advanced exploration effluent treatment plant
ARD	Acid rock drainage
asl	Above sea level
GHG	Greenhouse gases
Great Bear Resources	Great Bear Resources Limited
H:V	Horizontal to vertical
Kinross	Kinross Gold Corporation
LGO	Low grade ore stockpile
masl	Metres above sea level
ML	Metal leaching
MRS	Mine rock stockpile
NP	Neutralization potential
NPAG	Non-potentially acid generating
OVB	Overburden stockpile
PA	Project Area
PAG	Potentially acid generating
Property	Great Bear Property
ROM	Run of mine ore stockpile
TMF	Tailings management facility
VMF	Viggo management facility
WTP	Water treatment plant

5.0 Project Description and Activities

5.1 Existing Facilities and Infrastructure

5.1.1 Existing Infrastructure

The Great Bear Property (Property) is accessible by Highway 105, which provides year-round access (Figure 1.2-1).

An existing all-weather access road (Tuzyk's Road) from the highway provides access to the Property, including for exploration and forestry activities (Figure 5.1-1). Tuzyk's Road also provides access to existing commercial aggregate operations which the Property surrounds and local forestry roads and trails. There are also a number of well-established forestry trails crossing the Property which have supported forestry operations by the sustainable forest licence holder (currently Dryden Fibre). An existing bridge is present across Dixie Creek which is under the control of Great Bear Resources Ltd. (Great Bear Resources; Figure 5.1-2).

A regional natural gas pipeline (Enbridge Gas) is situated at the highway corridor. A regional 115 kV transmission line (Hydro One Networks) crosses the northern boundary of the Property (Figure 5.1-3).

5.1.2 Surface Exploration

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
- Great Bear Resources, 2017 to present, airborne and surface surveys, trenching and drilling.

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

5.1.3 Advanced Exploration Program

Great Bear Resources initiated an Advanced Exploration (AEX) Program on the Property in 2024. The AEX Program is an underground exploration program that includes extraction of ore totalling up to 60,000 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 ore and surrounding rock to support and confirm engineering designs prior to development of the mine. The AEX Program 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. There will be no mineral processing of the ore on the site. Figure 5.1-4 shows the existing and planned surface facilities associated with the AEX Program.

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 Program 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 constructed pad. This main site has an area of approximately 32 ha. Facilities required to support the AEX Program, and which are, or will be present prior to the development of the proposed mine include:

- Two portals
- 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 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
- Potable water well(s)
- 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 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 kV transmission line connected to the regional electric grid supported by an onsite substation, will provide grid power to supplement the natural gas power generation at the site for the AEX Program.

5.1.4 Other Infrastructure and Equipment Present

Extensive environmental baseline investigations were completed between 2019 and 2025. The following technical equipment was installed to support the investigations and are present on the Property (Figure 5.1-4):

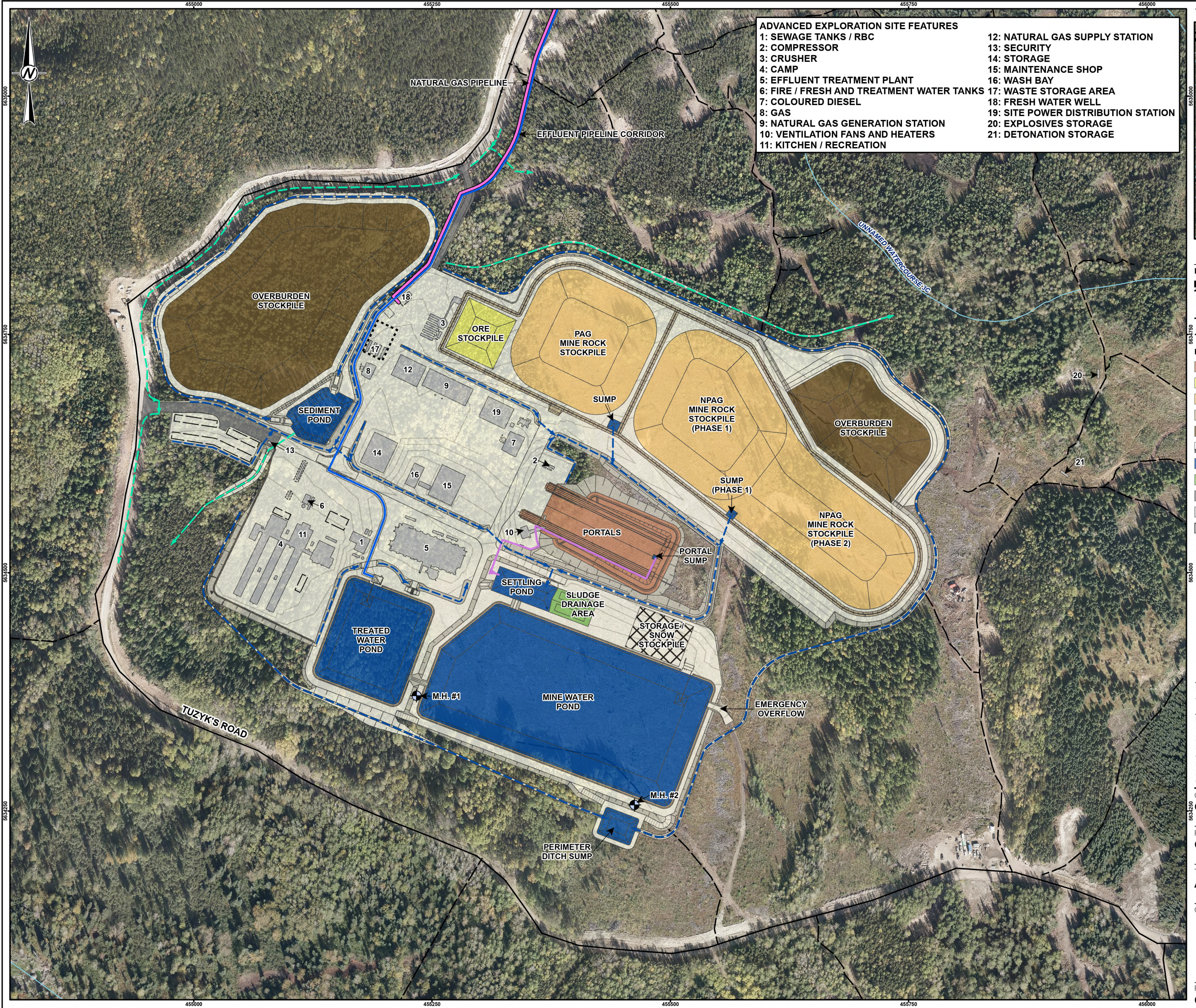
- Meteorological station
- Groundwater investigation wells
- Geochemistry field leach barrels.

Figure 5.1-1: Tuzyk's Road north of Existing Regional Transmission Line

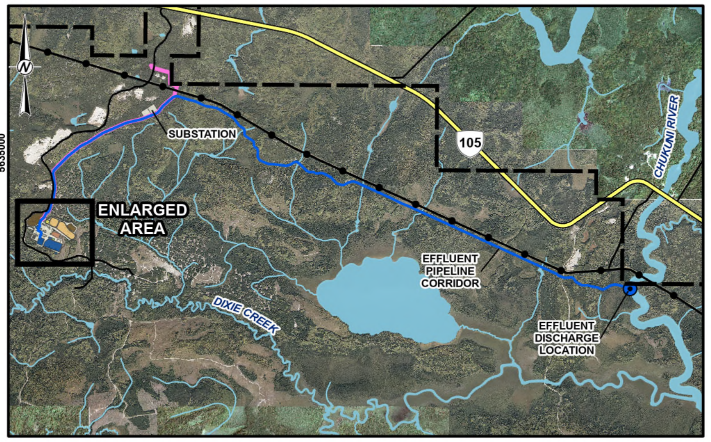
Figure 5.1-2: Existing Bridge over Dixie Creek

Figure 5.1-3: Existing Regional E2R Transmission Line

(Note: View from east of Tuzyk's Road looking east.)



KEY MAP



SCALE: 1:125,000

LEGEND

- PROPERTY 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

YYYY-MM-DD	2026-03-31
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	SD

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	5.1-4

25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

5.2 Summary of Main Project Components

Great Bear Resources is planning to develop, operate and eventually reclaim a new underground and open pit, gold mine and processing facility, the Great Bear Project (Project), on a portion of the Property. The mine and associated surface facilities are situated on lands held by Great Bear Resources.

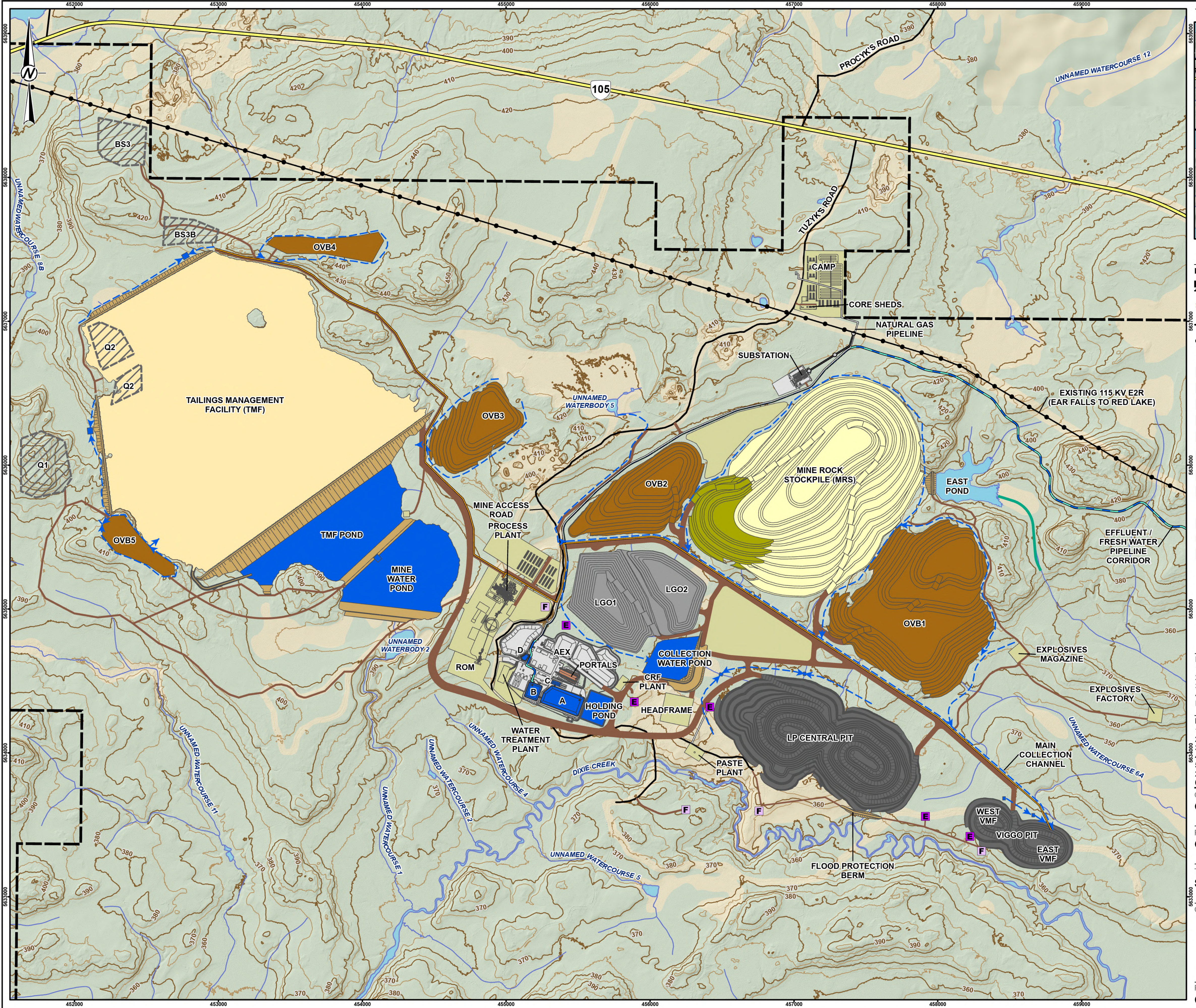
The site is accessible by Tuzyk's Road which connects to Highway 105. Access south of the commercial aggregate operations is proposed to be restricted, for security and safety reasons. A security checkpoint will be established at that location, and the road to the south repurposed as the mine access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

The major components of the Project are:

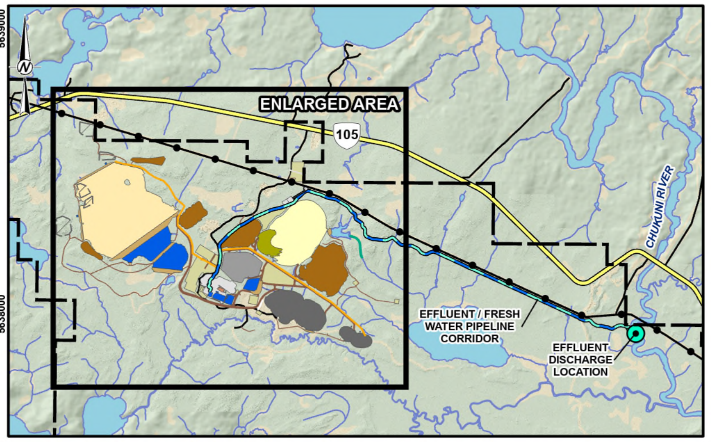
- Underground mine
- Open pits (two): LP Central pit and Viggo pit
- Surface stockpiles: overburden stockpile (OVB), mine rock stockpile (MRS), low grade ore stockpile (LGO) and run of mine ore stockpile (ROM)
- Ore process plant
- Facilities to manage tailings from the processing of ore: tailings management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

The site layout provided in Figure 5.2-1 and Figure 5.2-2 places the required mine-related facilities on Great Bear Resources-held mining leases (or leases in progress), 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 layout is supported by the assessment of feasible alternatives described in Section 4, which itself is guided in part by consultation activities to date.

As engineering studies progress and engagement with government agencies, Indigenous Nations and the public continues, some of the details of the Project described in the following sections may be refined. A Project Area (PA) has been defined in Section 6.4 that includes the area between proposed facilities and provides a buffer around the proposed site footprint to accommodate potential Project optimizations.



KEY MAP



SCALE: 1:175,000

LEGEND

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

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
- 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

1:26,500 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 (TOPOGRAPHY)

CONSULTANT

wsp

YYYY-MM-DD	2026-03-31
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	SD

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	5.2-1

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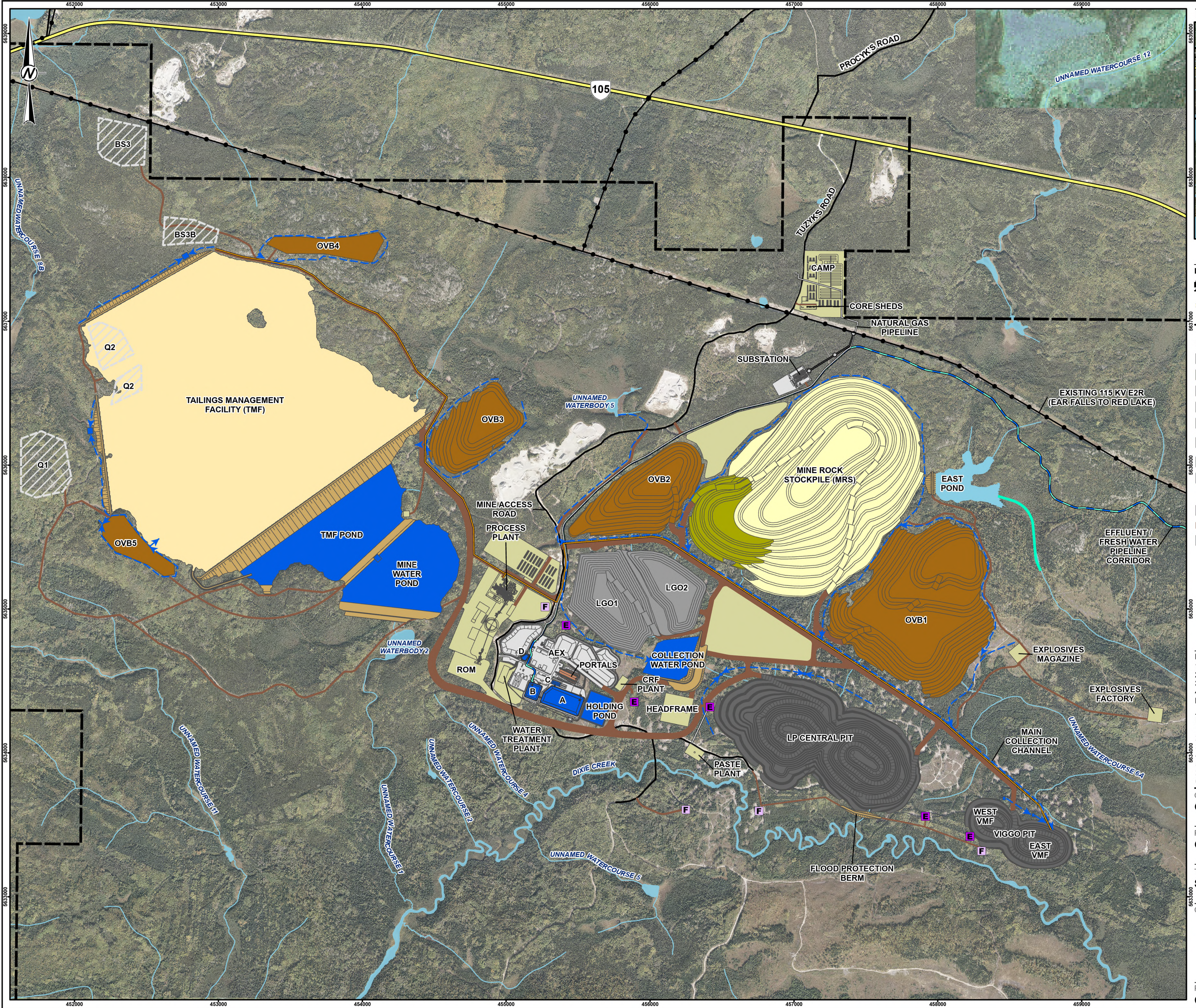
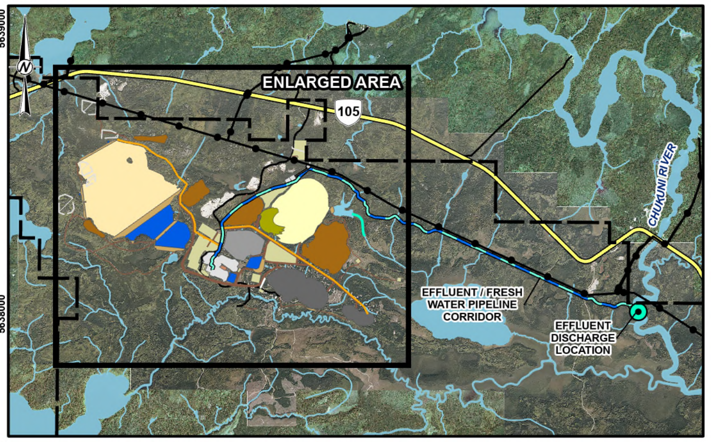


KEY MAP



SCALE: 1:175,000

LEGEND

- PROPERTY BOUNDARY
- HIGHWAY (INCLUDING ENBRIDGE PIPELINE)
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

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

0 0.25 0.5 1

1:26,500 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
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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
SITE PLAN (SATELLITE)

CONSULTANT

wsp

YYYY-MM-DD	2026-03-31
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	SD

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	5.2-2

5.3 Project Phases and 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, less than 1 year in length.

5.3.1 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 Program 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.

5.3.2 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.

5.3.3 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.

Closure of the Project will be governed primarily by the Ontario *Mining 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, 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
- Maintaining the water level below surface in the VMF and LP Central pit until water quality is acceptable for passive discharge to the environment
- 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 treatment system and remaining site facilities will be decommissioned during a final closure period. This work will be completed in less than one year.

5.4 Mining

5.4.1 Development Activities

The underground mine development 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 phase, 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 Property 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 the construction phase to provide an early source of non-potentially acid generating (NPAG) rock for use in construction.

5.4.1.1 Overburden Removal

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 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 mineralized soil for use during reclamation where practical, recognizing that the thickness of organic materials is generally less than 1 m (0.1 to 0.8 m) at the pit locations based on current field investigations. Dedicated stockpiles for surface organic material will be located within the PA, either close to the intended future use or near the source location.

Approximate 23 Mt of overburden will be stripped from the open pit footprints, 21 Mt from the larger LP Central Pit and 2 Mt from Viggo pit. Overburden will be transported by haul truck to OVB1 or OVB2 for storage (Section 5.5.1), or to the onsite construction location if intended for re-use.

Overburden stripping will start at the Viggo pit during the first year of construction and is projected to take approximately six months to complete. Initial stripping at the LP Central pit area is planned to start during the second half of the second year of construction. Periodic stripping will occur during the operations phase at the LP Central pit as the surface footprint needs to be expanded when mining extends deeper over the nine-year open pit mining period.

The open pit overburden slopes have been designed for stability and will vary according to the type and thickness of the material present, between 3 horizontal to 1 vertical (3H:1V) and 8H:1V. Additional support will be provided for the slopes as needed for stability, which could included a catch bench, berm, rockfill buttress and groundwater control. Steeper slopes may be present at times during the pit development. Progressive revegetation and reshaping of the overburden slopes for long term stability is planned once the final open pit extent is achieved (Section 5.19.2).

5.4.1.2 Haul Roads

Haul roads will be established during the construction phase 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.

The internal road network has been designed to limit haul road and light vehicle interactions for safety reasons. A few crossings are needed in order to limit travel distances and associated vehicle emissions. Crossing safety will be managed through training, stop signs and physical barriers where needed, with the heavy traffic having the right of way.

5.4.1.3 Contact Water Management

Water that enters the open pits through direct precipitation, surface runoff and groundwater seepage will need to be removed to maintain a safe working environment. This water will be collected in ditching and sumps at the bottom of the open pits and will be pumped to surface for further management as needed (Section 5.14.3). Special handling of snow within the open pits is not expected to be required, although it may be pushed aside for trafficability. Water management infrastructure including ditches will be installed as needed to collect and divert water around the open pits.

The pumping rate from the open pit sumps will increase as the pits expand deeper and wider. Should an Environmental Design Flood / storm event occur, contact waters will remain temporarily in the open pit(s) until there is sufficient capacity in the integrated water management system on surface for it to be treated and discharged. The water will be pumped out of the open pit in the days following the storm event as capacity becomes available.

Contact water within the underground mine will collected in sumps in low areas, and will be pumped to surface for management. The AEX Program ponds are planned to continue to be used, including to collect underground mine water (Section 5.14).

5.4.1.4 Explosives Manufacturing, Storage and Use

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 locations within the PA. 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 PA on 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 5.2-1).

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 explosive magazines and detonators storages are currently planned at strategic locations distributed throughout the underground mine. 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.

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.

5.4.1.5 Flood Protection Berm

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.

The preliminary design is a berm constructed of local, low permeability till (clay, sand and gravel) keyed into suitable native ground, with a crest elevation of 353 m above sea level (masl) which is sufficient to provide approximately 2 m of freeboard. The berm will have 3H:1V side slopes, with rip rap protection (clean, coarse rock) on the creek side, a 12 m crest width and length of about 300 m.

The light duty site road located south of the LP Central pit that crosses over the berm will also help protect site facilities from creek overflow during a high flow event in the creek.

5.4.2 Open Pit Mining

5.4.2.1 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 5.4-1. 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:

- 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 from the start of operations (Section 5.7.3)

- 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 from the start of operations (Section 5.14.8).

Re-using the Viggo pit supports the Great Bear Resources sustainability-related initiatives for environmental management (Section 18.6.1).

Viggo pit has a surface area of approximately 22.8 ha and a maximum depth of about 120 m. Figure 5.4-1 provides a plan view and cross section of the Viggo pit development. 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. Materials extracted from the Viggo pit will be managed as follows:

- Overburden will be transported by truck to OVB1 or OVB2 for storage if it not needed and transported for immediate construction purposes
- Ore will be transported to the low grade ore stockpile (LGO1 or LGO2) for storage for future processing including when only underground mining is occurring
- NPAG mine rock will be either transported by haul truck to the onsite construction location for re-use, or stored in the NPAG MRS
- PAG mine rock will be transported to the PAG MRS for storage.

Mining of ore from the Viggo pit during the construction phase will occur at a rate of up to 20,000 tpd for short periods of time when only ore is being extracted from the pit. The typical rate of mining of ore from the Viggo pit will be 2,000 to 5,000 tpd. The typical mining rate including all rock (ore and mine rock), from the Viggo pit will be approximately 35,000 tpd.

5.4.2.2 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 and a depth of 255 m. Figure 5.4-1 provides a plan view and cross section of the LP Central pit development. 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.

Materials extracted from the LP Central pit will be managed as follows:

- Overburden will be transported by truck to OVB1 or OVB2 for storage if not needed for other onsite uses, including for construction and progressive reclamation
- Ore will be trucked directly to the process plant, or to a stockpile (ROM, LGO1 or LGO 2) for storage until required for processing
- NPAG mine rock will be either transported by truck to onsite construction locations such as the TMF dams, or will stored in the NPAG MRS
- PAG mine rock will be transported to the PAG MRS for storage.

The typical rate of mining of ore from the LP Central pit will be 7,000 to 20,000 tpd. Ore will be mined at a rate of up to 60,000 tpd for short periods of time when only ore is being extracted from the pit. The typical mining rate including all rock (ore and mine rock) from the LP Central pit will be approximately 75,000 tpd. The combined material movement, including ore and mine rock moved on a day, may peak at 120,000 tpd for short periods.

5.4.3 Underground Mining

5.4.3.1 Underground Mine

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, with a peak mining rate of up to approximately 8,000 tpd. Mining could periodically be fully in the ore zone (i.e., a corresponding ore production rate of up to approximately 10,000 tpd).

Figure 5.4-2 and Figure 5.4-3 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 5.4-4. 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 5.2 m wide and 5.8 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 (Figure 5.4-2 and Figure 5.4-3). 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 6.1 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.

Within the underground mine, there will be various ancillary infrastructure to support the mine production, which will include refuge stations, fuel stations, maintenance facilities and utility infrastructure. The facilities are all completely underground and will be excavated and built as the mine develops.

5.4.3.2 Mine-related Buildings on Surface

A headframe and hoist system will be established on surface while the shaft is being sunk within an area of about 200 m by 300 m to allow space for the headframe, hoist house, office, auxiliary shop, laydown and bin. Surface maintenance and storage facilities related to the AEX Program will be re-used and re-purposed for the mine. Table 5.4-1 provides additional information about these and other mine-related buildings, subject to final design.

5.4.3.3 Ventilation and Emergency Egress

The underground mine ventilation system is configured to provide fresh air to the underground workings, using a push-pull system that will include both forcing (intake) fans and suction (exhaust) fans, connected to the appropriate intake or exhaust raise at surface, and utilizing the ramps as appropriate. The underground ventilation plan is staged throughout the life of mine based on the mine plan. Nine ventilation raises are proposed to be driven over the life of the mine.

Emergency egress has been fully considered in the underground mine, as well a mobile and fixed refuge locations. Both a primary and secondary egress are proposed for locations within the mine. The AEX Program twin portals will provide direct evacuation routes for the entire life of mine. Ventilation raises will also be designed to provide emergency egress where needed from the mine.

5.4.4 Geochemistry of Mined Materials

5.4.4.1 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 area 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 Property 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 Property, 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 Property. 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 Property 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.

Further information regarding the regional and Project geology is provided in Appendix H-1 and Appendix J.

5.4.4.2 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 comprehensive geochemistry technical report provided as Appendix J.

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 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 (Section 5.7.1) and backfill (Section 5.7.4). 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 5.4-2 provides a summary of the testing programs for mined materials, detailed in Appendix J:

- 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 14 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.

5.4.4.3 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 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 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 a 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 (Appendix J). 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.

5.4.4.4 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 as detailed in Appendix J.

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 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.

Table 5.4-1: Preliminary List of Surface Mine-Related Buildings

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 5.4-2: Summary of Geochemistry Testing of Mined Materials

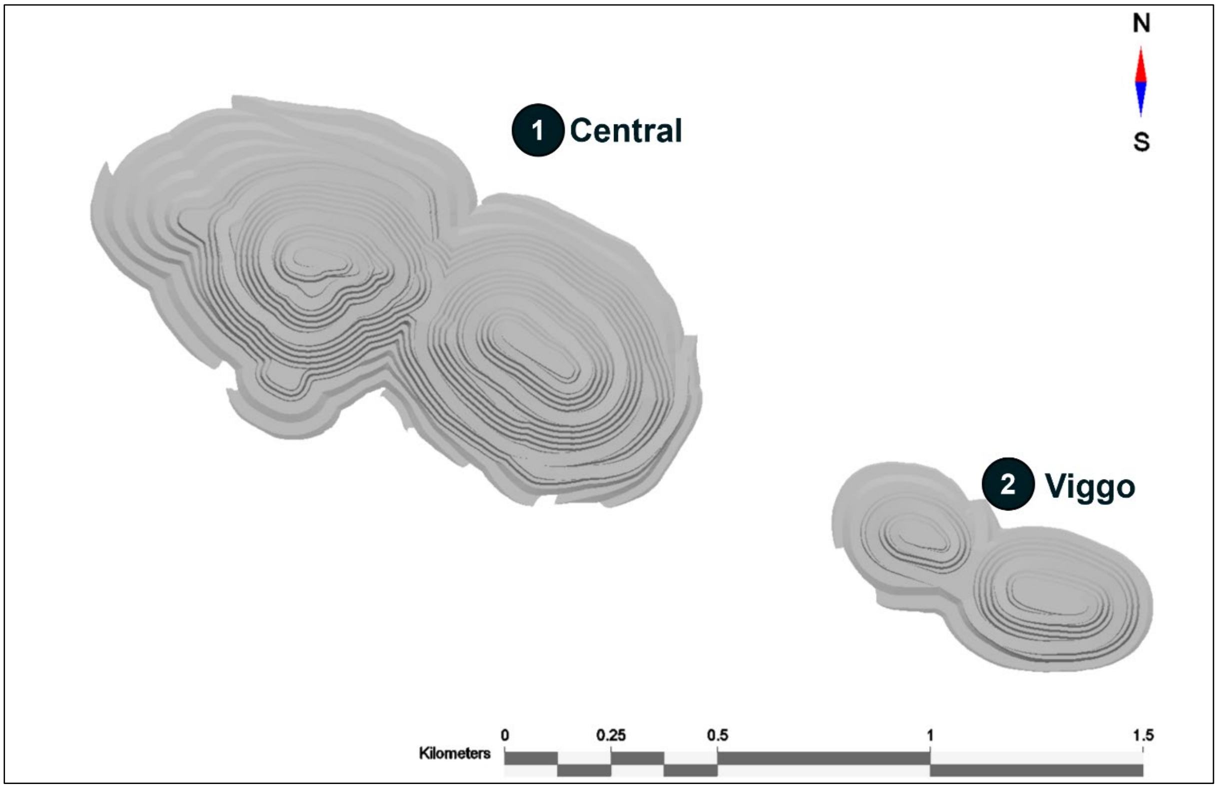
Static Testing	Mineralogical Testing	Kinetic Testing
Drill Core (mine rock and ore-grade materials)		

• ABA parameters (n=3,885)
• Full ABA (n=933)
• Sulphur and total inorganic carbon (n=2,952)
  ○ n= 2,952 samples analyzed by ICP sulphur and inorganic carbon
  ○ n=433 samples also analyzed by total S (Leco), inorganic carbon, modified neutralization potential
  ○ 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=14) • Field kinetic tests (n=6; under construction)

Note:
N: number of samples

Figure 5.4-1: Open Pits (Plans and Cross Sections)



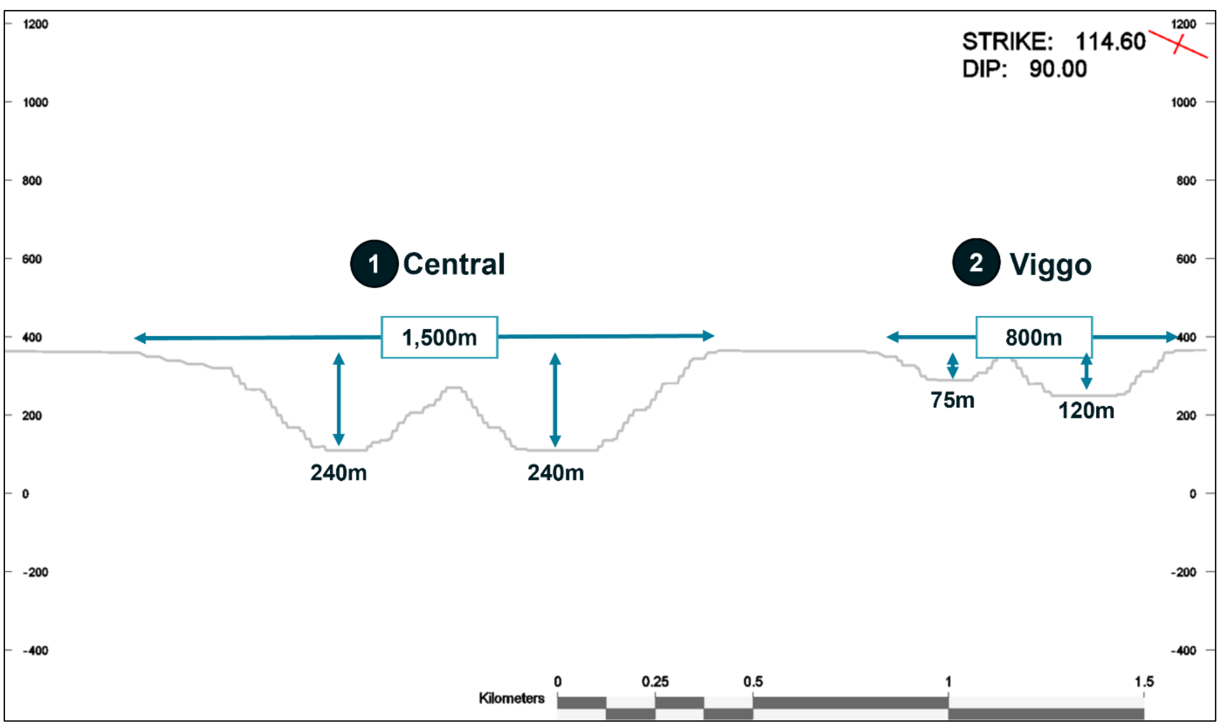
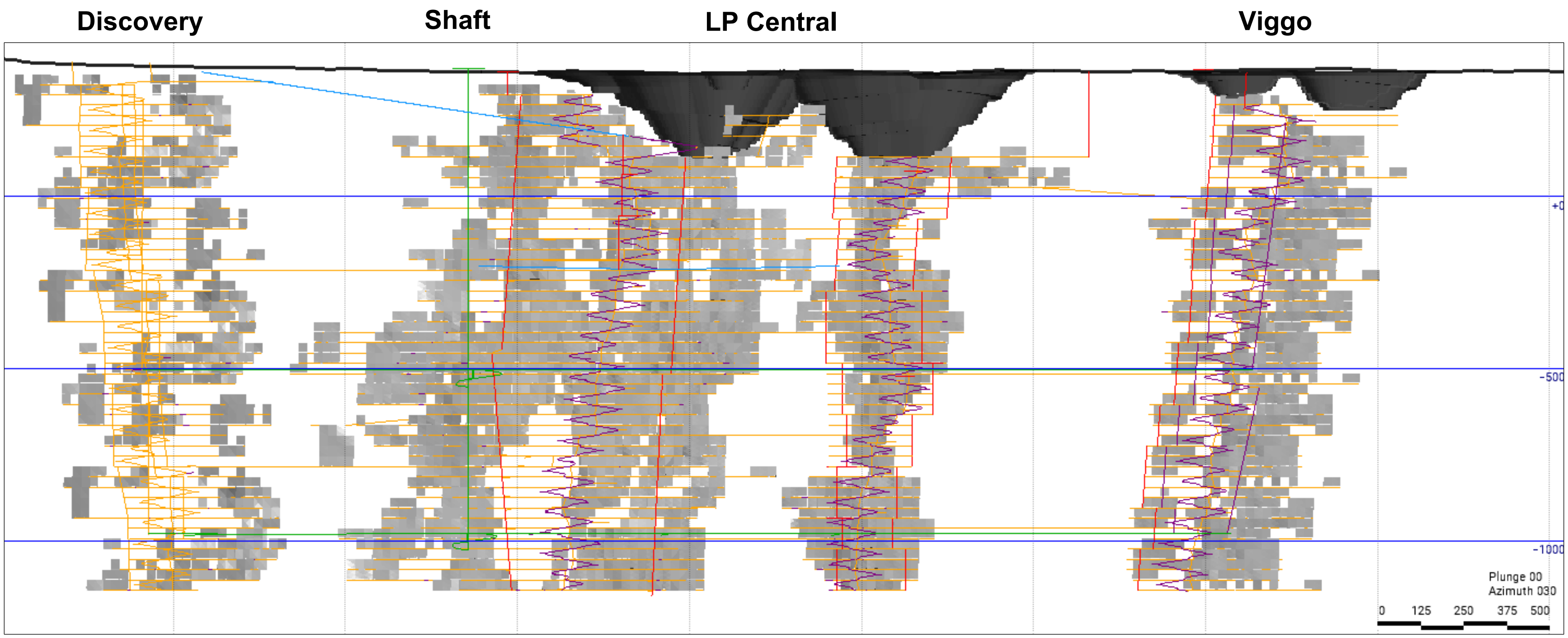
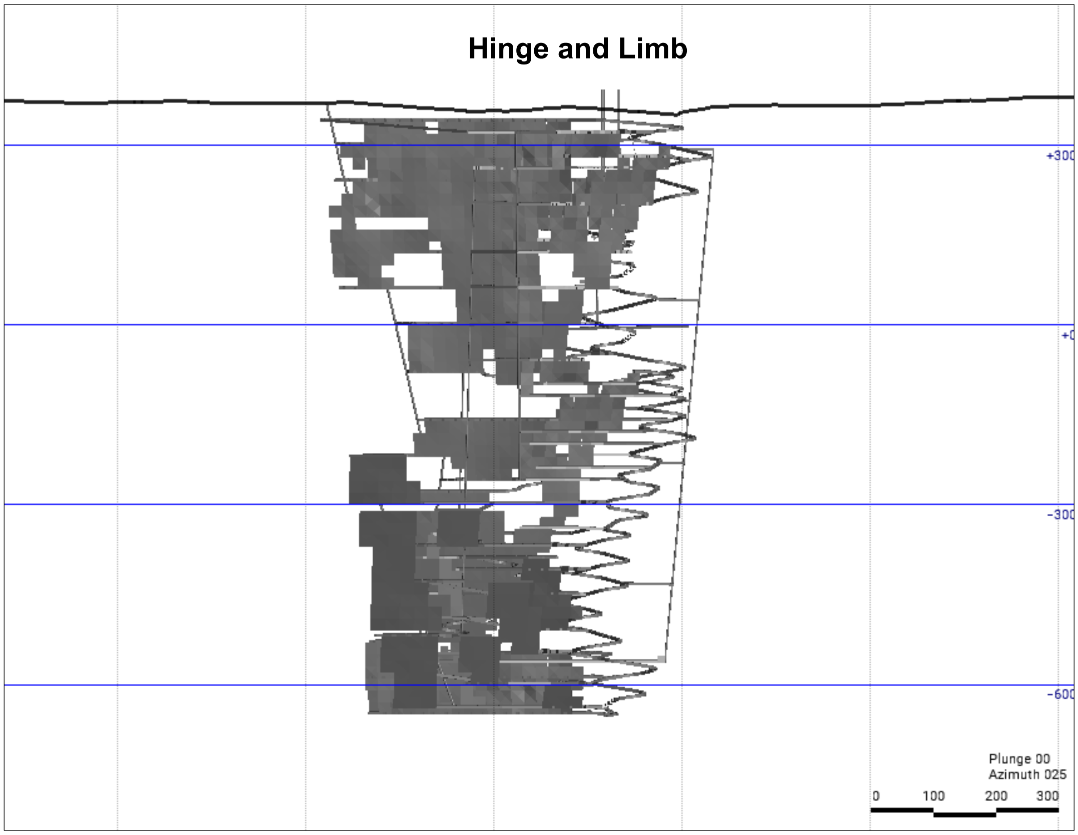


Figure 5.4-2: Underground Mine Cross Section - Discovery to Viggo



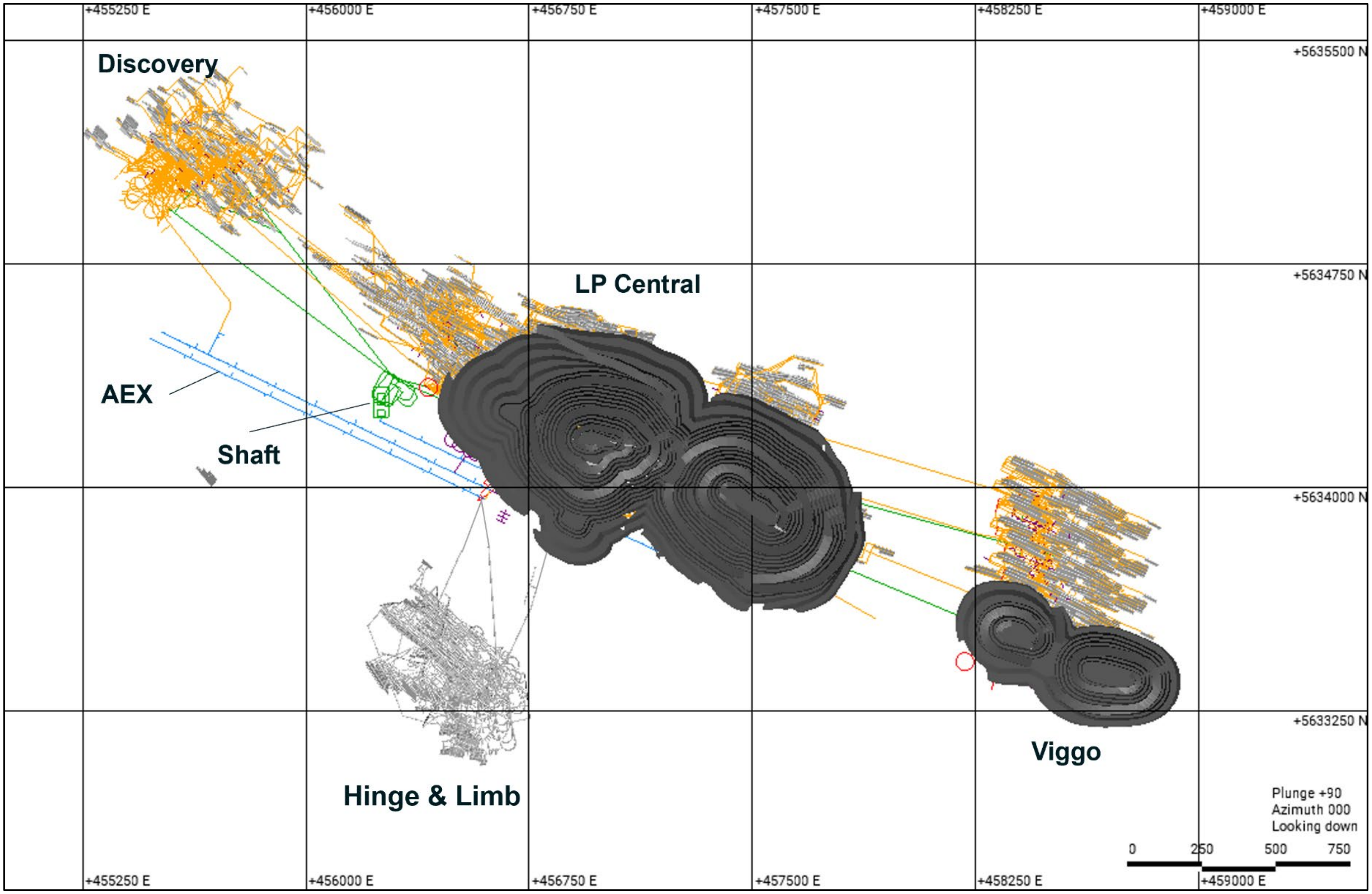
Notes:
Light blue – main ramp
Purple – capital development
Yellow– lateral operating development
Grey – underground stopes
Red – ventilation raises
Green – shaft and main haulage levels

Figure 5.4-3: Underground Mine Cross Section - Hinge and Limb



Notes:
Grey – underground stopes

Figure 5.4-4: Underground Mine Surface Projection



See notes for Figure 5.5-2.

5.5 Stockpiles

Four primary stockpile types are required on the site to store overburden, mine rock, low grade ore and run of mine ore (Table 5.5-1). Where practical, organic materials and topsoil will be stripped and stored separately close to the source, or at the surficial soil stockpile for use in future reclamation activities.

5.5.1 Overburden

Overburden deposits at the Property are reflective of the glaciated history of the area. Local overburden is composed primarily of four units:

- Organic deposits and topsoil, 0 to 4 m thick
- Glaciolacustrine deposits differentiated into:
  - Shallow water and shoreline deposits, sand, gravel and silt generally, 1 to 3 m thick
  - Deep water deposits, either clay, silt and fine sand or varved clay below 380 masl elevation, generally 1 to 13 m thick.
- Glaciofluvial outwash deposits, esker sands with minor gravel, generally 1 m to greater than 40 m thick
- Glacial till deposits, gravelly to bouldery, sand to sandy silt till, generally 1 to 6 m thick.

At the LP Central pit where the largest volume of overburden will be removed, the interpreted overburden stratigraphy is comprised of:

- Topsoil, 0.1 to 0.8 m thick, overlain by fibrous peat at some locations
- Deep water glaciolacustrine deposit, 0.8 to 20 m thick
- Glacial till deposit, 0.2 to 18.6 m thick.

The actual overburden thickness within the pits varies considerably. The total overburden thickness along the perimeter of the LP Central pit varies from 5 to 40 m.

Further details regarding the overburden and overburden stratigraphy are presented in Appendix H-1.

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 source, but also in consideration of subsurface conditions that could potentially affect stockpile stability. Table 5.5-1 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, from 3H:1V when underlain by outwash, to 10H:1V when within the glaciolacustrine deposit area. The 10H:1V applies to OVB1 and OVB2 stockpiles which will 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.

Stockpiled overburden will be re-used for progressive and final reclamation. Material stockpiled with a higher clay content will be used to cap the PAG MRS (Section 5.19.3.5).

5.5.2 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.

A mine rock plan will be developed for the mine to support the regulatory Closure Plan required under the *Mining Act*. This section provides the proposed approach to mine rock management which is supported by the geochemistry investigations provided in Appendix J. 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 rock will be subdivided into two subclasses: ML and non-metal leaching. 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.

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. Material stockpiling of NPAG will primarily occur starting in Year 3 of open pit operations.

A single storage area has been identified for combined mine rock northwest of the open pits. The primary benefits of the location identified are:

- Proximity to the mine rock sources (LP Central pit, Viggo pit and underground portals).

- Consideration of subsurface conditions for efficient use of landscape area, including minimizing storage on top of the band of natural clays found in the central Property area including near the LP Central pit (Figure 2-2 in Appendix H-1). If the mine rock were stored on clay, a greater surface footprint would be required to accommodate the same volume of rock (lower slope angles and stockpile height would be needed).
- Allow management of PAG, NPAG-ML and NPAG mine rock in one location to minimize infrastructure needs and allow for more efficient rock transport.
- Ability to capture and manage drainage from the stockpile by gravity with the opportunity to direct drainage at closure to the LP Central pit.

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. 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.

The MRS will be covered with a low permeability overburden cover progressively and at closure to mitigate for ARD and improve site-wide water quality. Pending field trials and further design, the overburden cover using material from OVB1 and OVB2, will be placed over the entire MRS and compacted. Optimization continues to look to implement progressive closure earlier into the mine plan to progressively cover the MRS.

5.5.3 Low Grade Ore

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 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.

Additional ore grade or low grade ore stockpiles may be established on Project laydown areas in the main site during the operations phase. The stockpiles could be 1 to 2 Mm^3 in size, if developed pending increased gold prices. The stockpiles will not cover watercourses or waterbodies, and will be depleted during the operations phase.

5.5.4 Run of Mine Ore

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.

Table 5.5-1: Stockpile Summary

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.

5.6 Ore Processing

5.6.1 Processing Flow Sheet

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. A simplified ore processing circuit is shown in Figure 5.6-1. 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 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 estimated as about 80%. In addition, most of the activated carbon used in the process will be reactivated for re-use in the carbon-in-pulp circuit. The Project continues to look for other opportunities to increase site-wide water recycling.

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.

5.6.2 Cyanide Use and Destruction

Cyanidation is the only technically and cost-effective means of gold recovery from gold-bearing ore at a commercial scale for this ore type. The use of cyanide as a reagent to leach gold from ore is the standard practice throughout the industry, including at other active gold mines in Ontario. Industry best practices are well-established and will be used. This includes transportation and storage of sodium cyanide to the site, expected to be transported in a solid brickettes in sealed ISOtainers, as well as best practices during the mixing and use in the process plant, and in the destruction of cyanide components in tailings prior to pumping to the TMF or east VMF.

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.

Test work on representative composite tailings slurry samples showed that the SO_2/air treatment process is expected to be very effective for the destruction of cyanide and the precipitation of heavy metals. Test results show that total cyanide can be reduced effectively in the tailings supernatant. The target concentration of total cyanide in the tailings after the cyanide destruction circuit in the process plant will be compliant with the International Cyanide Management Code (ICMI 2021) which sets a limit that is protective of wildlife and birds. The residual cyanide concentrations will naturally degrade when exposed to sunlight within the TMF and east VMF.

5.6.3 Tailings Desulphurization

Engineering optimization studies determined that production of two segregated tailings streams provides the best means to manage 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. Approximately 52 Mt of desulphurized (NPAG) tailings will be produced which will represent about 94% of the tailings stored on surface.

The concentrate tailings will be pumped as a slurry at approximately 35% solids to the east VMF for permanent sub-aqueous storage (Section 5.7.3). About 3.3 Mt of concentrate tailings will result from the processing to produce a segregated tailings, which represent approximately 6% of the tailings stored on surface.

5.6.4 Process Buildings and Related Facilities

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 5.6-1 provides a summary of the buildings and covered areas associated with ore processing. The primary processing-related facilities are shown in Figure 5.6-2:

- Primary jaw crusher
- Crushed ore dome
- Pebble crusher
- Conveyor systems and transfer tower for crushed ore
- Process plant (mills and circuits)
- Tailings thickener
- Reagent storage
- Tanks
- Assay laboratory.

Excluding the primary crushing facilities, these circuits are contained within or immediately adjacent to the process plant.

Table 5.6-2 summarizes the approximate dimensions of the onsite buildings associated with ore processing.

5.6.5 Reagent Transport, Storage and Use

Reagents that will be used in ore processing and for water treatment at the site 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 5.6 2. 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.

Table 5.6-1: Preliminary List of Process-related Buildings

Item [(1)]	Description [(1)]

Primary crusher building	• Pre-engineered, enclosed steel frame metal cladded building
	• Approximate dimensions:
	  • 30 m x 15 m
	  • 32 m height

Crushed ore dome	• Steel frame with galvanized metal cladding in a geodesic shape, and including conveyors and reclaim tunnels to feed material
	• Approximate dimensions:
	  • 62 m (diameter)
	  • 22 m height

Pebble crusher building	• Pre-engineered, enclosed steel frame metal cladded building
	• Approximate dimensions:
	  • 10 m x 12 m
	  • 14 m height

Transfer building	• Pre-engineered, enclosed steel frame metal cladded building
	• Approximate dimensions:
	  • 10 m x 12 m
	  • 12 m height

Process building	• Pre-engineered, enclosed steel frame metal cladded building containing most of the processing equipment
	• Approximate dimensions:
	  • 164 m x 59 m
	  • 33 m height

Reagent building	• Pre-engineered, enclosed steel frame metal cladded building
	• Approximate dimensions:
	  • 22 m x 13 m
	  • 9 m height

Tailings thickener	• Pre-engineered, raised steel frame structure with external tank thickener tanks
	• Approximate dimensions:
	  • 50 m x 40 m
	  • 16 m height

Assay laboratory	• Pre-engineered, modular building
	• Approximate dimensions:
	  • 22 m x 22 m
	  • 6 m height

Processing office	• Pre-engineering, modular building
	  • 25 m x 8 m
	  • 12 m height

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

Table 5.6-2: Anticipated Reagent Use and Handling

Reagent [(1)]	Use	Anticipated Form and Delivery [(1)]	Consumption (t/d) [(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	13	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	8.2	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	0.2	Bulk bags stored outdoors; inert material handled for dust control.
Flocculant(s)	Slurry thickening (various)	Solid powder, bulk (up to 1 t) super bags	0.5	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	0.74	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	0.43	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	1.9	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	6.7	Bulk bags stored with secondary containment; handled in accordance with industry standards for the protection of worker safety and the environment

Reagent [1]	Use	Anticipated Form and Delivery [1]	Consumption (t/d) [1]	Storage and Handling [1]
Calcium chloride	Anti-freezing within the crushed ore dome	Liquid (various % solution) in approximately 30 t tanker trucks	0.8	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	As needed (0.07 estimated)	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	Various; approximately eight total	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	As needed, in small quantities	Handled in accordance with industry standards for the protection of worker safety and the environment

Note:
1. Reagents, form, storage and consumption are approximate and subject to change or replacement during detailed design but are considered representative.

Figure 5.6-1: Preliminary Processing Flow Sheet

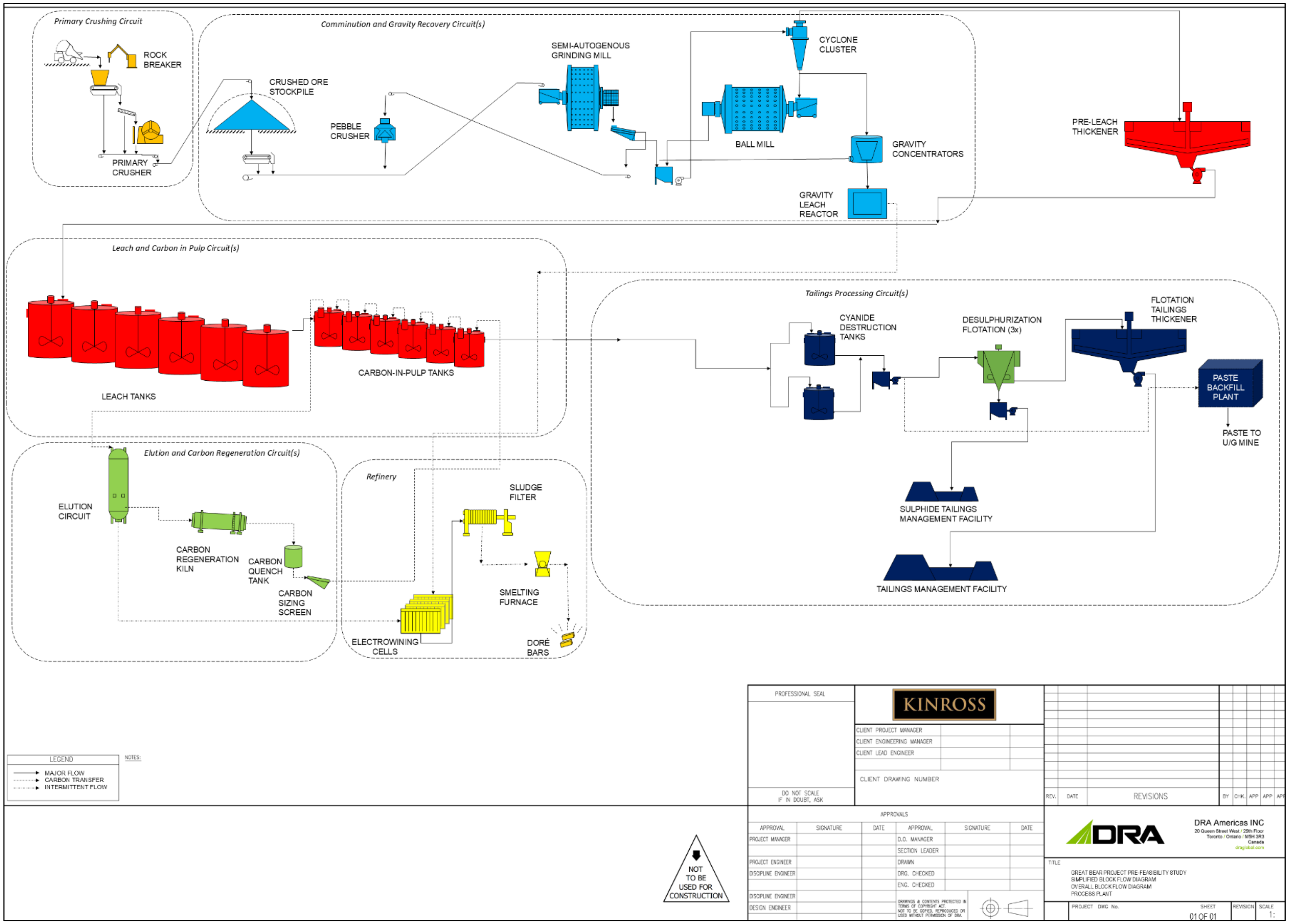
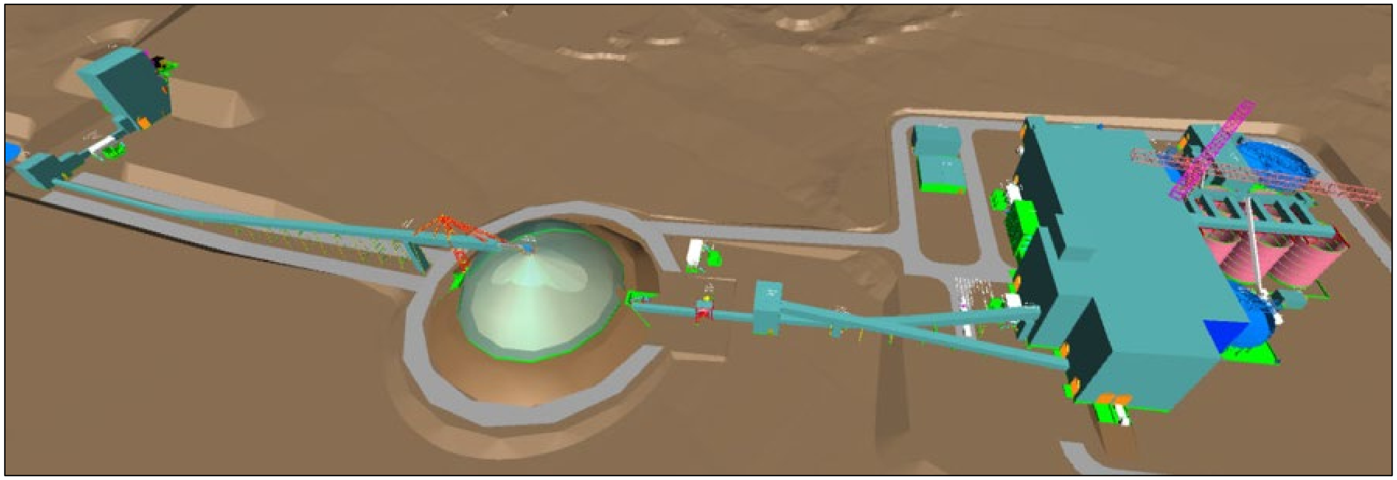
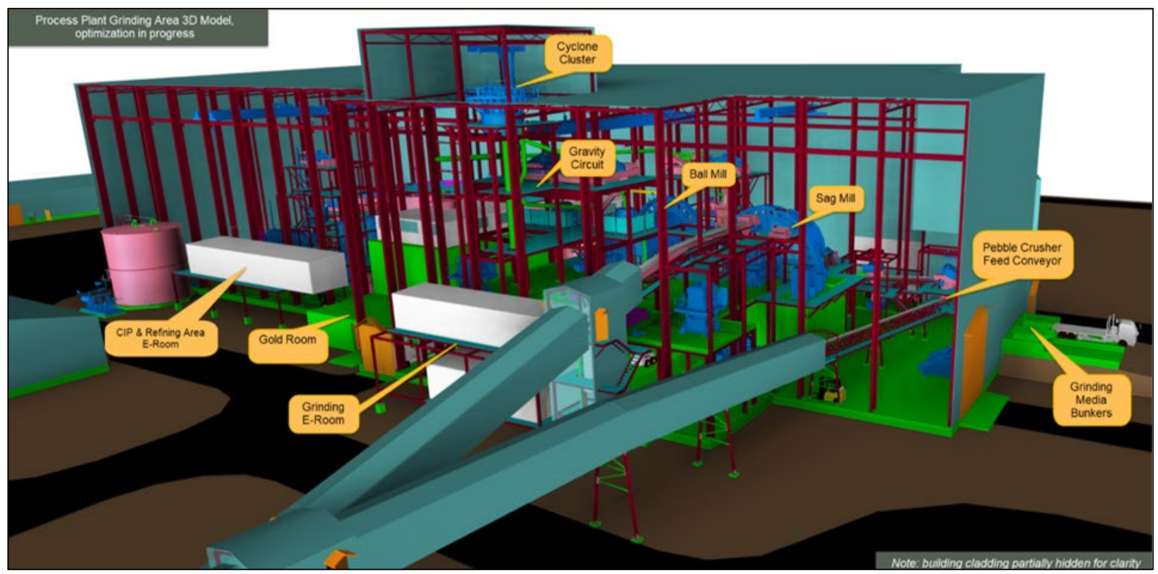


Figure 5.6-2: Preliminary Process Plant Schematic





5.7 Tailings Management

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. Various alternative for tailings management were considered including as described in Section 4.6 and Section 4.7, and supported by Appendix R.

Two primary tailings streams are proposed to be produced as part of the precautionary approach to managing ML / ARD at the Project site:

- 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.

5.7.1 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 5.7-1 provides a summary of the testing programs for tailings. Details of these investigations and the results of ongoing testing is provided in Appendix J.

As the tailings are a by-product of processing of Project ore to recover gold in the process plant (Section 5.6.1), reference may also be made to Section 5.4.4 which described the extensive testing of Project rock, detailed further in Appendix J. As described in Section 5.6.3, 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.

5.7.1.1 Desulphurized Tailings

Desulphurized tailings samples have a low total sulphur content (median 0.18%), 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.

5.7.1.2 Concentrate Tailings

The lower volume of sulphide-containing concentrate tailings purposefully produced in the process plant through the desulphurization flotation circuit (Section 5.6.3) 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.

5.7.1.3 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.

5.7.2 Tailings Management Facility

The proposed TMF that will provide permanent storage for the desulphurized tailings will cover an area of approximately 345 ha excluding associated external ponds and infrastructure. The facility will have capacity to store up to approximately 52 Mt of tailings, which is sufficient for the volume anticipated to be produced over the projected mine life. The tailings will be contained by natural high ground within an existing valley and three perimeter containment dams (north, south and west dams) located along the remaining perimeter (Figure 5.7-1 to Figure 5.7-5).

The TMF design (WSP 2024) is supported by geotechnical investigations of sub-surface conditions conducted by WSP from 2022 to 2024, as well as related hydrogeology, hydrology and rock mechanic studies. The TMF dams are designed with a rockfill shell with vertical sand and gravel filters to retain tailings solids within the facility but water to pass through. The dams will be raised along centerline with the continuation of the vertical sand and gravel filters. Rockfill will support the dam in the downstream direction. The design limits the overall height of the TMF dam and provides for collection of water outside of the dam structure via an external pond. Seepage collection systems will also be installed as needed to collect seepage for management. Typical cross sections for each dam are shown on Figure 5.7-3, Figure 5.7-4 and Figure 5.7-5).

The key zones of the TMF dams are:

- Zone 2 is a clean sand filter between the tailings and transition zones that provides drainage and supports filter compatibility between the fine tailings and the coarser dam fills
- Zone 3 is a transition zone produced from processed clean mine rock that provides internal drainage and filter compatibility between the sand filter and the downstream rockfill shell
- Zone 5 is constructed of NPAG mine rock, compacted in lifts, and functions as a downstream shell to support the filters and provide the overall slope required for stability.

Fill materials will be sourced on site, including from the Viggo pit, quarries, and sand and gravel pits near the TMF, as well as from pre-stripping overburden including from the LP Central pit and Viggo pit.

The TMF dams have been designed to meet the design criteria requirements for the associated hazard potential classification (following the Ontario *Lake and Rivers Improvement Act*). Emergency spillways will be provided as needed to provide safe discharge to the environment for events exceeding the Environmental Design Flood. The Inflow Design Flood was used to size the TMF spillways.

The maximum dam heights at the end of mine life are low when compared to many other Ontario mines:

- North dam: approximately 18 m
- West dam: approximately 13 m
- South dam: approximately 15 m.

Slope stability analyses (two-dimensional limit equilibrium analyses) were carried out using the SLOPE/W software (Version 23.1.0.520) developed by Bentley Systems Incorporated using the Morgenstern-Price method of slices with a half-sine function. The analyses were conducted to locate the most critical failure surfaces and to determine the lowest factors of safety using both circular and non-circular failure surfaces. Based on the stability analyses, the proposed ultimate TMF dam configurations are as follows:

- North dam: 2H:1V upstream slope, 2H:1V downstream slope
- West dam: 2.5H:1 upstream slope, 3H:1V downstream slope
- South dam: 10H:1V upstream slope (starter dam, subsequent raises constructed with controlled compaction using the tailings with 2 m raise interval at 2.5H:1V slope), 10H:1V downstream slope.

The NPAG tailings thickened to approximately 60% solids by mass will be pumped approximately 4 km through a high density polyethylene pipeline from the process plant to the TMF. The pipeline will be situated within a ditch to provide secondary containment. Emergency retention ponds will be located along the route as needed, to allow the slurry to be temporarily flushed from the pipeline in the event of an extended power outage.

Starter dams will be constructed prior to commissioning of the process plant which will contain approximately 24 months of tailings production. The tailings will be hydraulically discharged along the TMF north dam at multiple locations in order to develop a tailings beach in front of the dam. The containment dam and related pipeline will be progressively raised as needed to provide additional containment over the life of mine. Reclaimed water will be recycled to the process plant as needed from the TMF by means of a pipeline.

There will be limited to no ponding within the TMF, with runoff from the TMF being managed in the TMF pond located south of the TMF. The TMF pond will contain the Environmental Design Flood corresponding to a 100 year 24-hour storm event and 1 in 1,000 year wind wave at the maximum operating water level for both the TMF and TMF pond facilities. Emergency spillways will be provided as required, for each stage of the TMF dams that will be able to pass the Inflow Design Flood. All spillways will be suitably armoured to withstand potential erosional effects of the flows (WSP 2024).

5.7.3 East Viggo Management Facility

During optimization of the initial engineering design, a decision was made to mine the Viggo pit during the construction phase to provide materials for Project construction. This development approach also allows this well-contained area to be repurposed for permanent concentrate tailings storage, and water management during operations. No dams are required for tailings and water containment within the east VMF.

Once mining ceases at the Viggo pit and appropriate infrastructure is in place, concentrate tailings will be pumped as a slurry from the process plant through a high density polyethylene pipeline to the bottom of the east VMF. The tailings will be sub-aqueously discharged and permanently stored under a water cover to mitigate the development of ML / ARD. A minimum of 1 m of water cover will be continuously maintained during operations over the tailings to inhibit ML / ARD. Further detail regarding water management, including at the east VMF, is provided in Section 5.14.

The Viggo pit will be approximately 120 m deep when mining ceases and there is sufficient space in the east VMF for all of the concentrate tailings produced over the life of the mine, while remaining well below the surface. At the projected end of mine life, the concentrate tailings will reach about 320 masl which remains more than 40 m below the ground surface (Figure 5.7-6).

5.7.4 Mine Backfill

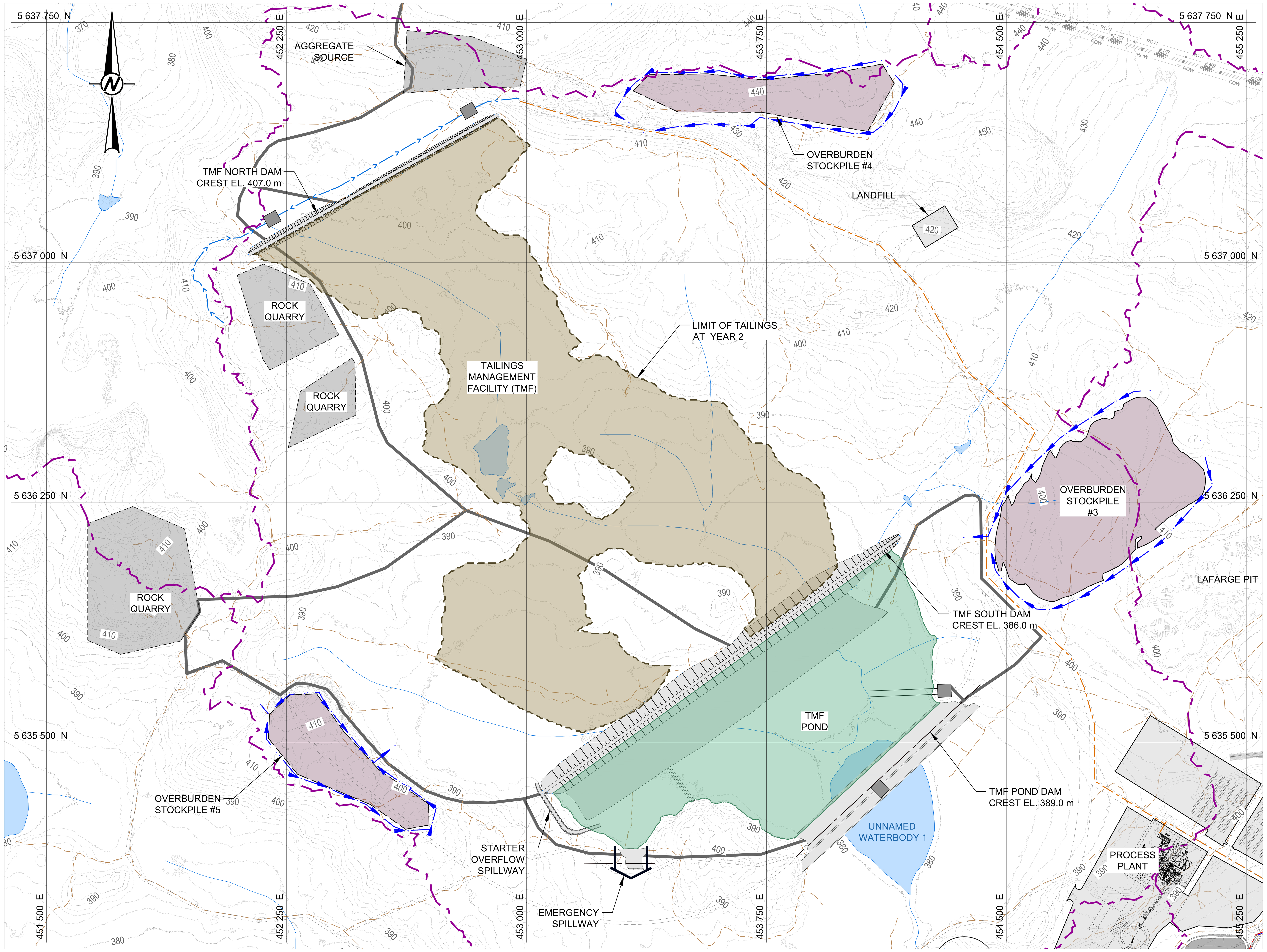
Approximately 25.9 Mt of the tailings from the process plant will be pumped to a paste backfill plant to create backfill for use in the underground mine. Paste backfill accounts for the majority of the backfill used underground (approximately 80%), supplemented by mine rock retained underground or CRF produced from surface stockpiles.

Tailings from the process plant will be mixed with the cement binder in the paste backfill plant to create a paste of about 73% solids by wet weight. The backfill paste will be delivered by gravity or pumping to the underground workings as needed to fill voids created by mining. When the backfill hardens, it will help support the underground mine geotechnically, while allowing for greater ore extraction, such as pillars of rock that would otherwise be required to be left in place.

Table 5.7-1: Summary of Geochemistry Testing of 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=1)	• Rietveld X-ray diffraction (n=1)	• Kinetic tests (n=2)

Note:
n: number of samples



LEGEND

- CONTOURS (2 m INTERVAL)
- RIVER / CREEK
- PROPERTY LINE
- WATERSHED
- EXISTING ROAD / TRAIL
- PROPOSED HAUL ROAD
- TEMPORARY ACCESS ROAD
- EXISTING OVERHEAD POWERLINES AND POLES
- SEEPAGE COLLECTION DITCH
- CONTACT WATER DITCH
- PUMP STATION / RECLAIM STRUCTURE
- TAILINGS DEPOSITION LIMIT
- DEPOSITED TAILINGS
- TAILINGS MANAGEMENT FACILITY POND

0 250 500
1:7,500 METRES

CLIENT
KINROSS Great Bear

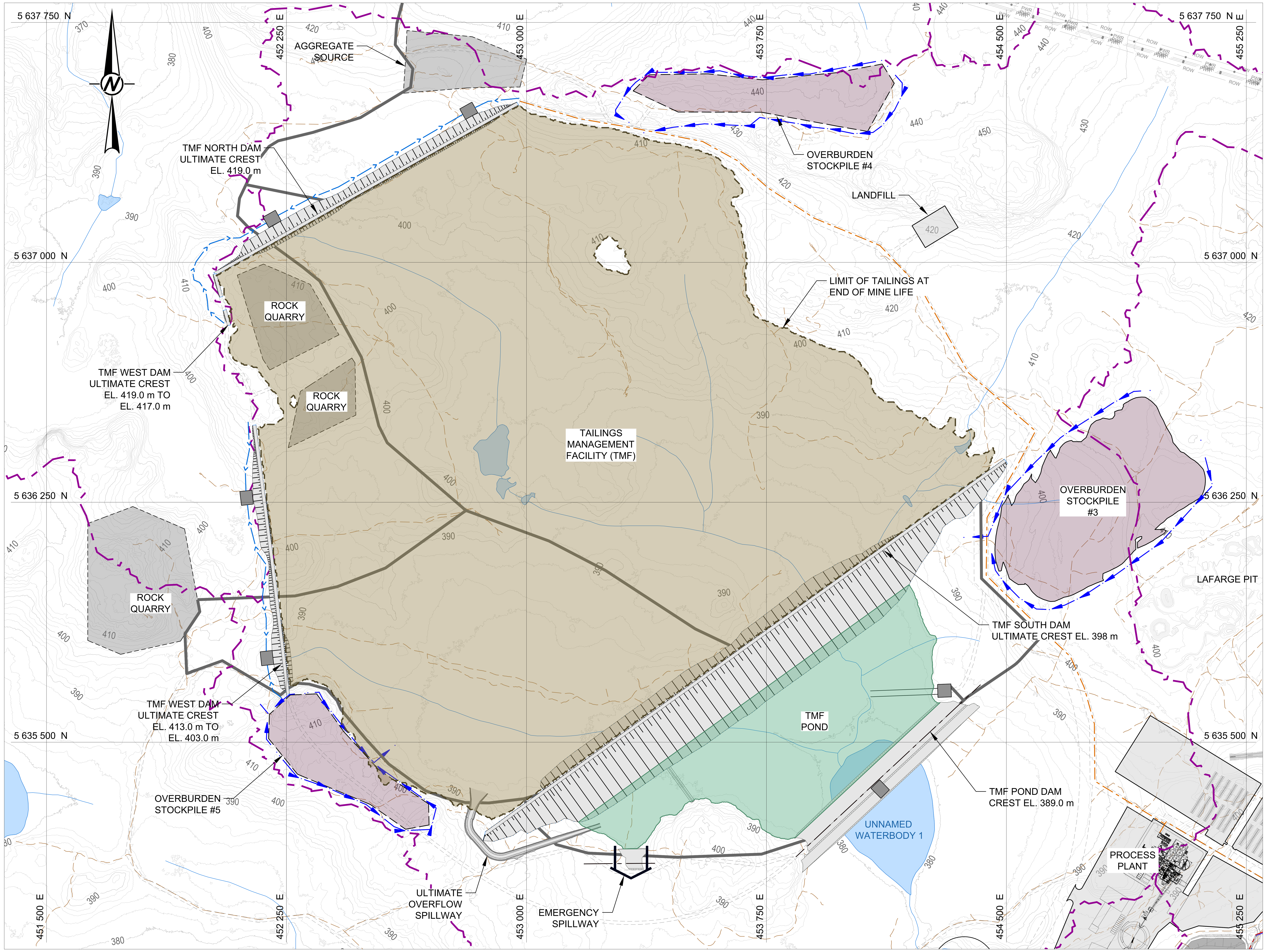
CONSULTANT
wsp

YYYY-MM-DD	2025-08-29
DESIGNED	DR
PREPARED	NK
REVIEWED	KB
APPROVED	DR

PROJECT
GREAT BEAR PROJECT

TITLE
TAILINGS MANAGEMENT FACILITY *START UP CONFIGURATION*

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271_9255	0003	A	5.7-1



LEGEND

- CONTOURS (2 m INTERVAL)
- RIVER / CREEK
- PROPERTY LINE
- WATERSHED
- EXISTING ROAD / TRAIL
- PROPOSED HAUL ROAD
- TEMPORARY ACCESS ROAD
- EXISTING OVERHEAD POWERLINES AND POLES
- SEEPAGE COLLECTION DITCH
- CONTACT WATER DITCH
- PUMP STATION / RECLAIM STRUCTURE
- TAILINGS DEPOSITION LIMIT
- DEPOSITED TAILINGS
- TAILINGS MANAGEMENT FACILITY POND

0 250 500
1:7,500 METRES

CLIENT
KINROSS Great Bear

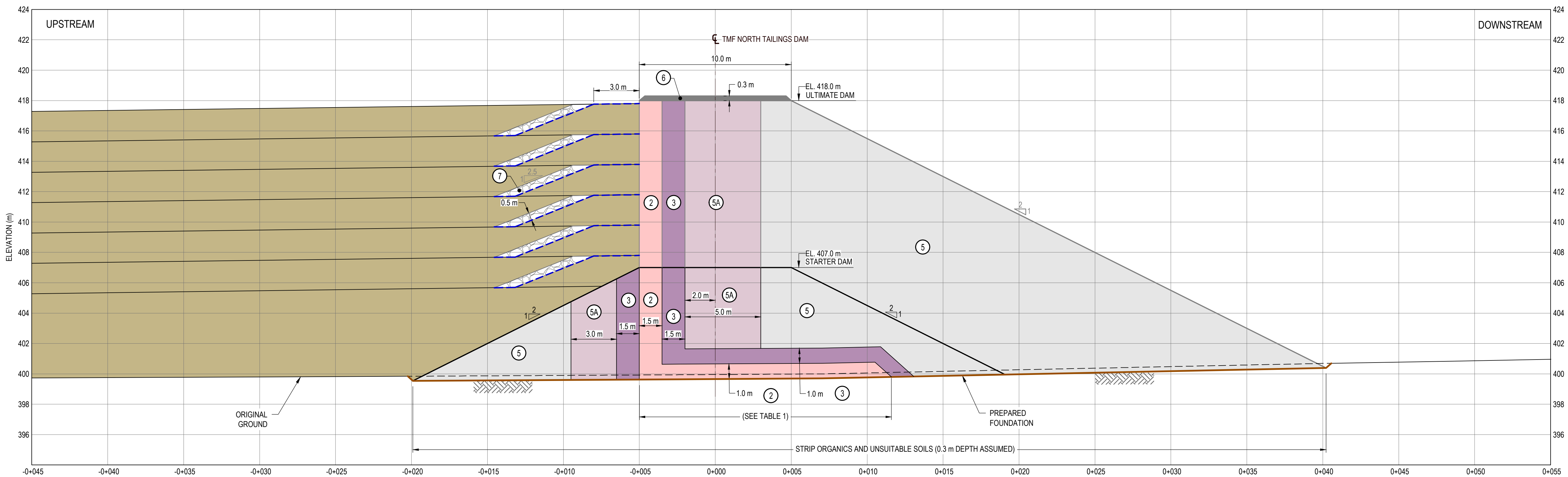
CONSULTANT
wsp

YYYY-MM-DD	2025-08-29
DESIGNED	DR
PREPARED	NK
REVIEWED	KB
APPROVED	DR

PROJECT
GREAT BEAR PROJECT

TITLE
TAILINGS MANAGEMENT FACILITY *ULTIMATE CONFIGURATION*

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271_9255	0003	A	5.7-2



A-A 005 TMF NORTH DAM – TYPICAL CROSS SECTION
SCALE 1:150

CONSTRUCTION MATERIALS

1	CORE - SELECT CLAY
2	FILTER
3	TRANSITION - PROCESSED ROCK (MINUS 75 mm)
4	UPSTREAM SHELL - RANDOM GRANULAR FILL (MINUS 600 mm)
4A	UPSTREAM SHELL - SELECT RANDOM GRANULAR FILL (MINUS 450 mm)
4B	UPSTREAM SHELL - CLEAN RANDOM GRANULAR FILL (MINUS 450 mm)
5	DOWNSTREAM SHELL - CLEAN MINE ROCK (MINUS 600 mm)
5A	DOWNSTREAM SHELL - SELECT CLEAN MINE ROCK (MINUS 450 mm)
6	ROAD SURFACING
7	ARMOUR STONE
	NON-WOVEN GEOTEXTILE (TERRAFIX 1200R OR EQUIVALENT)

NOTES:

1. ALL ELEVATION AND GRID COORDINATES SHOWN ON THIS FIGURE ARE IN METRES. GRID COORDINATES AND ELEVATIONS ARE REFERENCED TO NAD83 ZONE 15
2. GROUND SURFACE CONTOURS OBTAINED BY LiDAR SURVEY PROVIDED BY KINROSS GOLD CORPORATION ON JULY 18 2023.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

LEGEND:

PREPARED FOUNDATION
HIGH DENSITY THICKENED TAILINGS

TABLE 1
ASSUMED MINIMUM FILTER BLANKET LENGTH

DAM HEIGHT (m)	FILTER LENGTH (m)
< 3	1.5
3 - 5	6.5
5 - 7.5	11.5
> 7.5	16.5

0m 1.5 3 4.5 6 7.5
1:150

Figure 5.7-3

CLIENT DRAWING NO.: GT0095-52010-12-DWG-0007

NOT FOR CONSTRUCTION

REV	D	M	Y	ISSUE/REVISION DESCRIPTION	ENG.	APPR.
-						
-						
-						
0	30	04	2024	ISSUED WITH PREFEASIBILITY STUDY	DR	DR
C	05	04	2024	ISSUED FOR REVIEW	DR	DR
B	07	02	2024	ISSUED FOR REVIEW	DR	DR
A	26	01	2024	ISSUED FOR INTERNAL REVIEW	DR	DR

Client Logo: KINROSS

Client: KINROSS GOLD CORPORATION

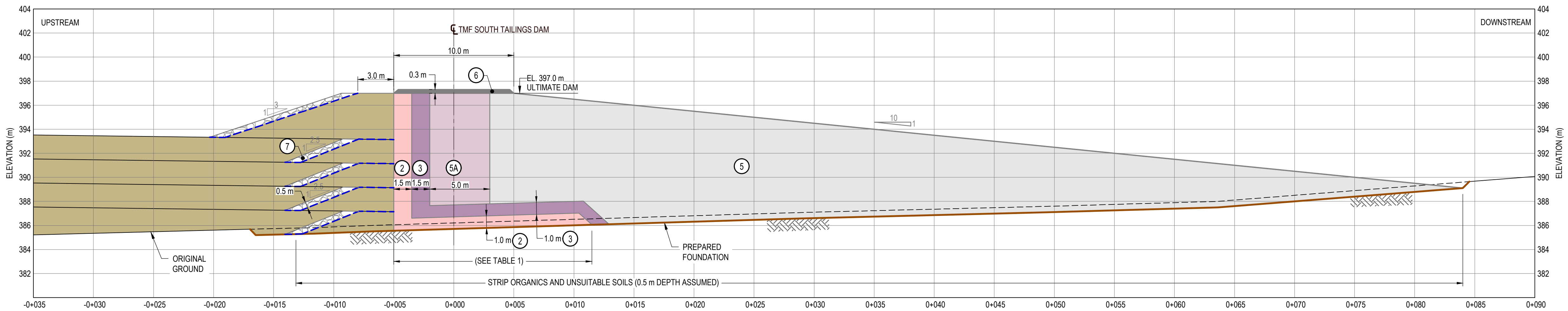
WSP CANADA INC.
6925 Century Avenue
Mississauga, Ontario, Canada L5N 7K2

DRAWN BY: NK
DESIGNED BY: DR
CHECKED BY: DR
REVIEWED BY: KB
APPROVED BY: DR

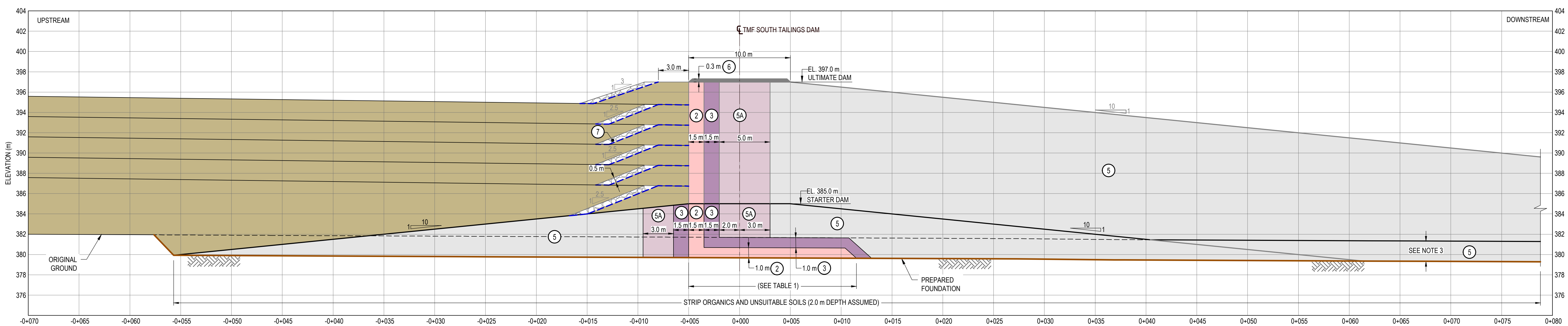
PROJECT: GREAT BEAR PROJECT PREFEASIBILITY STUDY

TITLE: TAILINGS MANAGEMENT FACILITY NORTH DAM TYPICAL CROSS SECTIONS

PROJECT NO.: OMGM2313
REVISION NO.: 0
DATE: APRIL 2024
SCALE: AS SHOWN
WSP DRAWING NO.: 007



C-C / 005 TMF SOUTH DAM – TYPICAL CROSS SECTION
SCALE 1:200



D-D / 005 TMF SOUTH DAM – TYPICAL CROSS SECTION
SCALE 1:200

NOTES:

1. ALL ELEVATION AND GRID COORDINATES SHOWN ON THIS FIGURE ARE IN METRES. GRID COORDINATES AND ELEVATIONS ARE REFERENCED TO NAD83 ZONE 15.
2. GROUND SURFACE CONTOURS OBTAINED BY LiDAR SURVEY PROVIDED BY KINROSS GOLD CORPORATION ON JULY 18 2023.
3. FOUNDATION PREPARATION AND PLACEMENT OF ZONE 5 (2 LIFTS) OR TO A MAXIMUM ELEVATION OF 385 m.
4. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

LEGEND:

- PREPARED FOUNDATION
- HIGH DENSITY THICKENED TAILINGS

CONSTRUCTION MATERIALS

1. CORE - SELECT CLAY
2. FILTER
3. TRANSITION - PROCESSED ROCK (MINUS 75 mm)
4. UPSTREAM SHELL - RANDOM GRANULAR FILL (MINUS 600 mm)
- 4A UPSTREAM SHELL - SELECT RANDOM GRANULAR FILL (MINUS 450 mm)
- 4B UPSTREAM SHELL - CLEAN RANDOM GRANULAR FILL (MINUS 450 mm)
5. DOWNSTREAM SHELL - CLEAN MINE ROCK (MINUS 600 mm)
- 5A DOWNSTREAM SHELL - SELECT CLEAN MINE ROCK (MINUS 450 mm)
6. ROAD SURFACING
7. ARMOUR STONE

- NON-WOVEN GEOTEXTILE (TERRAFIX 1200R OR EQUIVALENT)

TABLE 1
ASSUMED MINIMUM FILTER BLANKET LENGTH

DAM HEIGHT (m)	FILTER LENGTH (m)
< 3	1.5
3 - 5	6.5
5 - 7.5	11.5
> 7.5	16.5

0m 2 4 6 8 10
1:200

Figure 5.7-4

CLIENT DRAWING NO.: GT0095-52010-12-DWG-0008

NOT FOR CONSTRUCTION

REV	D	M	Y	ISSUE/REVISION DESCRIPTION	ENG.	APPR.
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C	05	04	2024	ISSUED FOR REVIEW	DR	DR
B	07	02	2024	ISSUED FOR REVIEW	DR	DR
A	26	01	2024	ISSUED FOR INTERNAL REVIEW	DR	DR

Client Logo: KINROSS

Client: KINROSS GOLD CORPORATION

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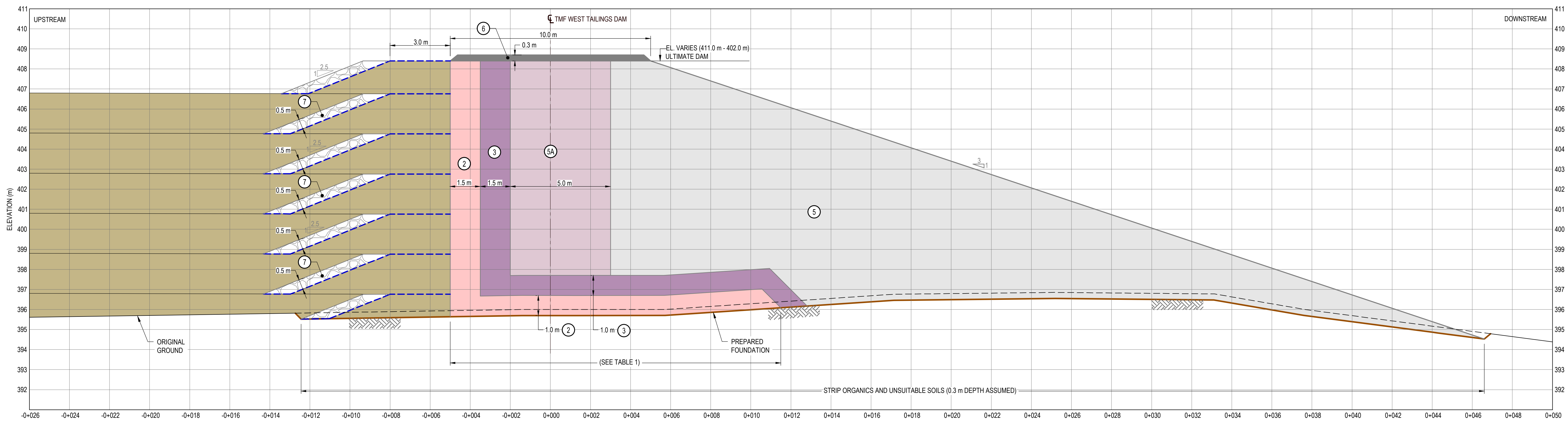
DRAWN BY: NK
DESIGNED BY: DR
CHECKED BY: DR
REVIEWED BY: KB
APPROVED BY: DR

PROJECT: GREAT BEAR PROJECT PREFEASIBILITY STUDY

TITLE: TAILINGS MANAGEMENT FACILITY SOUTH DAM TYPICAL CROSS SECTIONS

PROJECT NO.: OMGM2313
REVISION NO.: 0
DATE: APRIL 2024
SCALE: AS SHOWN
WSP DRAWING NO.: 008



B-B / 005 TMF WEST DAM – TYPICAL CROSS SECTION

SCALE 1:100

CONSTRUCTION MATERIALS

- (1) CORE - SELECT CLAY
- (2) FILTER
- (3) TRANSITION - PROCESSED ROCK (MINUS 75 mm)
- (4) UPSTREAM SHELL - RANDOM GRANULAR FILL (MINUS 600 mm)
- (4A) UPSTREAM SHELL - SELECT RANDOM GRANULAR FILL (MINUS 450 mm)
- (4B) UPSTREAM SHELL - CLEAN RANDOM GRANULAR FILL (MINUS 450 mm)
- (5) DOWNSTREAM SHELL - CLEAN MINE ROCK (MINUS 600 mm)
- (5A) DOWNSTREAM SHELL - SELECT CLEAN MINE ROCK (MINUS 450 mm)
- (6) ROAD SURFACING
- (7) ARMOUR STONE
- NON-WOVEN GEOTEXTILE (TERRAFIX 1200R OR EQUIVALENT)

NOTES:

1. ALL ELEVATION AND GRID COORDINATES SHOWN ON THIS FIGURE ARE IN METRES. GRID COORDINATES AND ELEVATIONS ARE REFERENCED TO NAD83 ZONE 15.
2. GROUND SURFACE CONTOURS OBTAINED BY LiDAR SURVEY PROVIDED BY KINROSS GOLD CORPORATION ON JULY 18 2023.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

LEGEND:

- PREPARED FOUNDATION
- DEPOSITED TAILINGS

TABLE 1

ASSUMED MINIMUM FILTER BLANKET LENGTH

DAM HEIGHT (m)	FILTER LENGTH (m)
< 3	1.5
3 - 5	6.5
5 - 7.5	11.5
> 7.5	16.5

0m 1 2 3 4 5

1:100

Figure 5.7-5

CLIENT DRAWING NO.: GT0095-52010-12-DWG-0009

NOT FOR CONSTRUCTION

REV	D	M	Y	ISSUE/REVISION DESCRIPTION	ENG.	APPR.
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3	05	04	2024	ISSUED FOR REVIEW	DR	DR
2	07	02	2024	ISSUED FOR REVIEW	DR	DR
1	26	01	2024	ISSUED FOR INTERNAL REVIEW	DR	DR

Client Logo: KINROSS

Client: KINROSS GOLD CORPORATION

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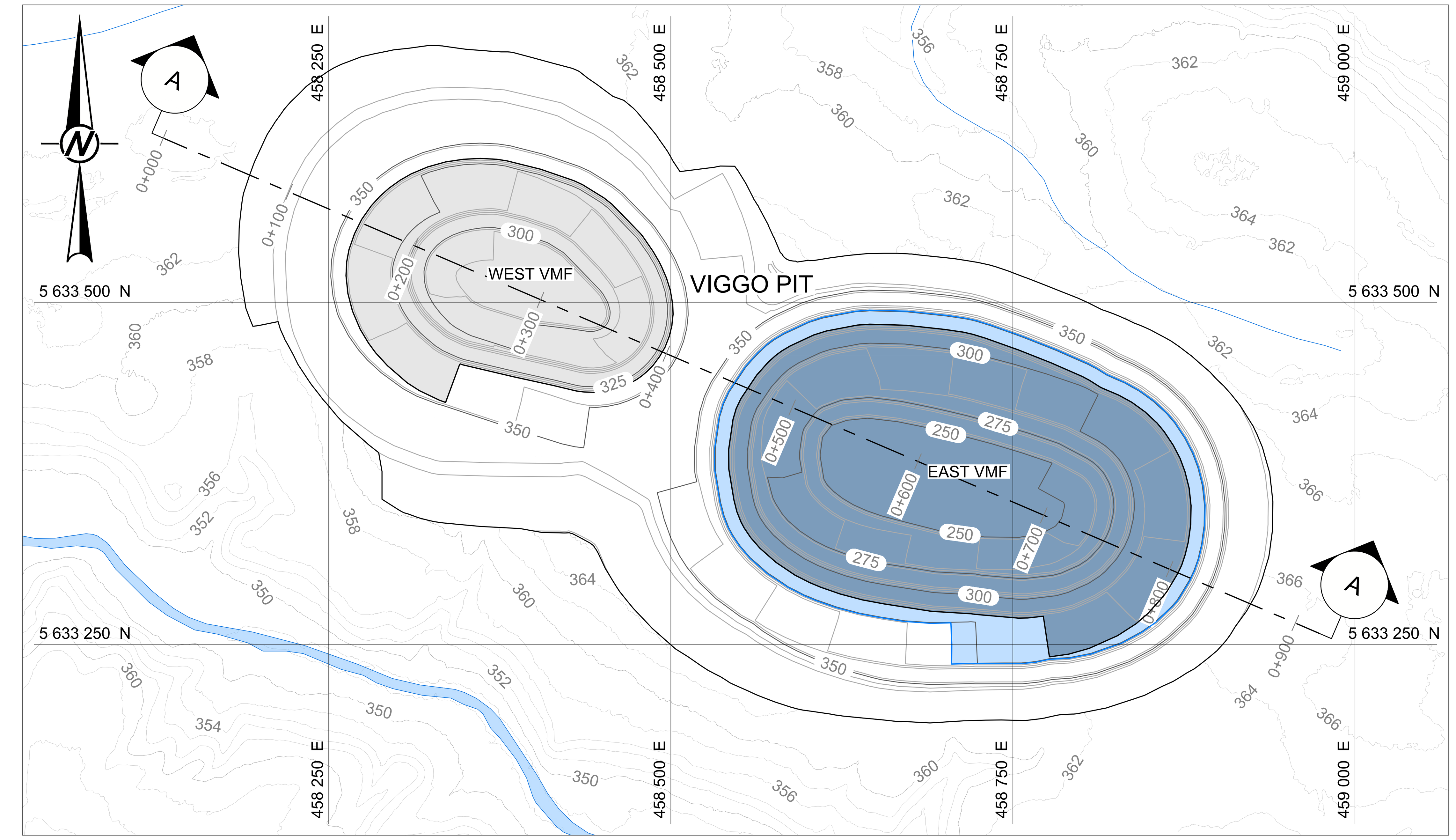
DRAWN BY: NK
DESIGNED BY: DR
CHECKED BY: DR
REVIEWED BY: KB
APPROVED BY: DR

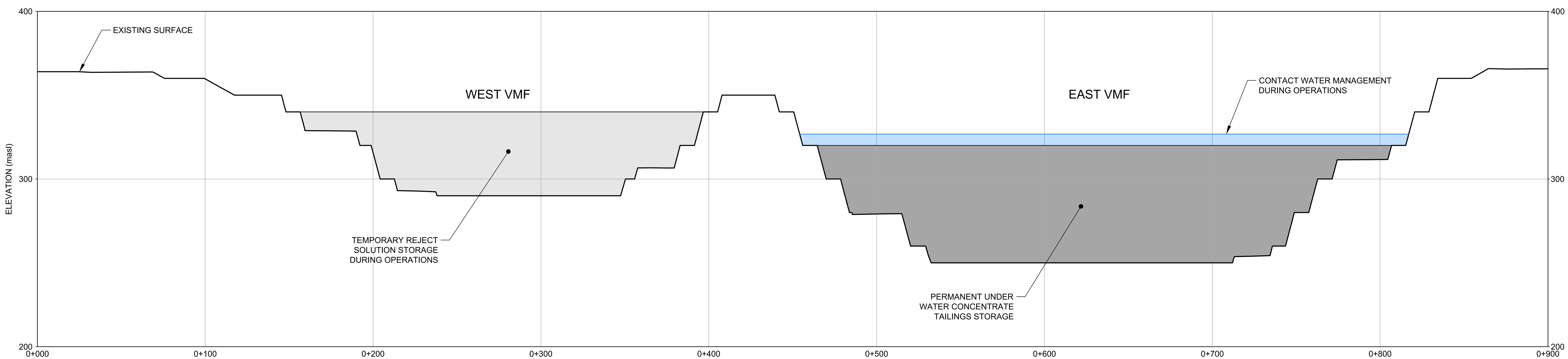
PROJECT: GREAT BEAR PROJECT PREFEASIBILITY STUDY

TITLE: TAILINGS MANAGEMENT FACILITY WEST DAM TYPICAL CROSS SECTIONS

PROJECT NO.: OMGM2313
REVISION NO.: 0
DATE: APRIL 2024
SCALE: AS SHOWN
WSP DRAWING NO.: 009



KEY MAP



SCALE 1:1,250 m (A) VMF CROSS SECTION

REDUCED SIZE

0 50 100
1:1,250 METRES

CLIENT
KINROSS Great Bear

PROJECT
GREAT BEAR PROJECT

CONSULTANT
wsp

YYYY-MM-DD	2025-08-29
DESIGNED	XXX
PREPARED	NK
REVIEWED	XXX
APPROVED	XXX

TITLE
VIGGO MANAGEMENT FACILITY CROSS SECTION

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271_9255	0003	A	5.7-6

5.8 Buildings and General Infrastructure

5.8.1 Site Access

The Project site is readily accessible from the provincial road network by means of a local unpaved road (Tuzyk's Road) which is connected to Highway 105. Highway 105 connects Red Lake and Ear Falls to the Trans-Canada highway at Vermillion Bay.

The nearest airport to the site is the Red Lake Municipal Airport located approximately 25 km from the Project site, which provides all-year, all-weather air transport service to connecting airports. A dedicated airstrip is not proposed for the Project. A helipad will be maintained near the services and administration area to support medical evacuations and field investigations.

As the Project progresses, public access on Tuzyk's Road south of the commercial aggregate operations will be restricted for public and operations safety. This southern section will be renamed the main access road. Great Bear Resources are committed to working with the forestry management company, in collaboration with local Indigenous Nations, to maintain access to the south of the Property

Site security will be maintained consistent with other Ontario mining operations, to ensure both worker and public safety. Access to the mine site will be limited to Great Bear Resources workers and contractors, and approved visitors. Site access will be managed via a site access control system. Security guardhouses will be positioned where appropriate, and primarily at the main access road and main entrance to site. Fencing will be used primarily around the process plant, gold room and main entrance, and potentially other locations where appropriate. Cameras, routine patrols and other methods will be utilized to monitor and ensure site security.

5.8.2 Accommodations

A camp complex will be established on the Property along Tuzyk's Road, north of the E2R 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.

A camp is required to attract and retain workers given the size of local communities. GBR will also continue discussions with local municipalities to support considerations for potential housing improvement or infrastructure initiatives in the region. The operations phase accommodations is proposed to be comprised of nine, 36 person interlinked, pre-engineered (ATCO style) dorms (total 324 permanent accommodations), which will be supplemented by 19 (ATCO style), 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.

5.8.3 Other Buildings and Yard Areas

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. Communications infrastructure including tower(s) will be placed as needed within the PA.

The majority of other site buildings will be located near mine access road in the service and administration area near the centre of the PA. Approximate locations are shown on Figure 5.8-1, or Figure 5.2-1 and Figure 5.2-2. Table 5.8-1 provides a summary of the buildings currently proposed for the Project not addressed in other sections. 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. For the purposes of the Impact Statement, the entire PA is assumed to be developed.

5.8.4 Internal Roads

As indicated in Section 5.1.1 the main access to the PA is via Tuzyk's Road, an existing forestry road with free access. The routing of Tuzyk's Road on Figure 5.2-1 and Figure 5.2-2 reflects the proposed future rerouting around the existing Lafarge pit to accommodate expansion of that commercial operation if needed. The realigned portion will be approximately 30 m wide to incorporate side ditching. South of the Lafarge property, access will be restricted for safety and security reasons, and the road will be part of the Project (main access road). Controlled access will be provided by means of a security checkpoint on the mine access road for public and worker safety, and Project security.

The road network within the PA has been designed to avoid haul road and lighter vehicle road crossings as practical or safety reasons. Attention will be given to separating large haul truck / heavy equipment traffic from other site vehicular traffic during ongoing design. Roads intended for heavy equipment use will be 35 m wide and may have side safety berms as appropriate.

Secondary access roads will be provided off the main access road for access to the remainder of the PA, either directly or indirectly. Lighter vehicle roads will typically have a road surface of 6 to 10 m wide. Ditching and placement of tailings / 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 / 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-ML will not be used in road construction or maintenance.

Limited minor watercourse crossings are required for the Project (Table 5.8-2), with most required only during the construction phase. The crossings are anticipated to be corrugated steel culverts, 0.3 to 2 m in diameter. Crossings will be designed as needed to provide for free fish passage as appropriate. The existing bridge across Dixie Creek (Figure 5.1-2) may require upgrading to support heavier equipment and vehicles. The bridge will remain a bank to bank construction with no inwater structures or works.

Great Bear Resources provided information to Transport Canada regarding the local area watercourses and waterbodies in 2024 and 2025 (Appendix V). Transport Canada has identified that the following unnamed watercourses and waterbodies within the PA do not meet the requirement of navigable water as defined under the *Canadian Navigable Waters Act*: Unnamed Waterbody 1, Unnamed Waterbody 2, Unnamed Waterbody 5, Unnamed Watercourse 1, Unnamed Watercourse 2, Unnamed Watercourse 3, Unnamed Watercourse 4 and Unnamed Watercourse 6.

Table 5.8-1: Preliminary List of Other Site Buildings

Item [1,2]	Description [1]
Administration / mine dry building	Two-storey, heated, modular structure founded on Sono tubes, measuring 40 m x 36 m x 9 m; will accommodate mine change room (dry) facilities, offices, conference rooms, first aid, and health and safety
Emergency services	Heated, modular structure, founded on Sono tubes, measuring 12 m x 8 m x 3 m and is used as an emergency medical facility.
Emergency vehicles storage (fire and ambulance)	Single storey, heated, pre-engineered structure on concreate slab, measuring 18 m x 12 m x 5.5 m for storage of fire and ambulance vehicles, and equipment
Truck shop	Heated, pre-engineered building on concrete slab on grade, designed to accommodate bays for heavy haul trucks repair and wash, bays for light vehicles repair and wash, concrete trench, offices, lubricant storage and sediment pond, and auxiliary areas such as for carpentry, welding and machine shops; measures 135 m x 22 m x 25 m
Truck wash bay	Heated, pre-engineered building on concrete slab on grade, designed to accommodate bays for heavy haul trucks repair and wash, with a sediment pond; measures 32 m x 16 m x 25 m
Tire repair shed	Quonset type structure measuring 28 m x 20 m x 9 m placed on a 30 m x 30 m concrete pad, with an adjacent gravel pad for tire storage measuring approximately 100 m x 50 m
Fuel Bay Area	Two to three steel double-walled tanks that will hold diesel and small amounts of gasoline. Will include a small fuel station to fill heavy equipment light vehicles
Warm storage	Heated, sprung fabric building measures 92 m x 36 m x 14 m on a concrete slab
Cold storage	Unheated, sprung fabric building measures 74 m x 24 m x 11 m on a concrete slab
Core shed	Sprung fabric structure, slab on grade for storing geological core and exploration equipment; measures 30 m x 15 m x 14 m (in addition to the pre-existing core laydown facility)
Security gatehouses	Up to four, 12 m x 4 m x 3 m heated, modular structures, located as needed on the Property
Water treatment plant (WTP)	Heated, pre-engineered building on concreate slab measuring 100 m x 50 m x 12 m; building houses smaller process equipment with larger equipment like the clarifier, certain tanks and lime silo located outside the building
Potable Water Treatment Plant	Package plant comprised of up to three, 2.4 m x 12.2 m x 3 m shipping containers with one or two holding tanks
Sewage treatment plant	Membrane bioreactor package plant comprised of five, 2.4 m x 12.2 m x 3 m shipping containers
Pump sheds	Eight or more, unheated, modular structures, founded on Sono tubes measuring 6 m x 6 m x 4 m with associated water pipelines throughout the site
Chukuni River intake pumphouse	One, unheated, modular structure, measuring 12 m x 4 m x 4 m to support pumping water from the Chukuni River

Item [1,2]	Description [1]
Pressure reducing station	One, unheated, modular structure, measuring 12 m x 4 x 4 to support the pressure reduction needed in the pipeline to discharge treated effluent into the Chukuni River
Refuge stations	Shelters may be provided at more remote locations for staff safety in inclement weather

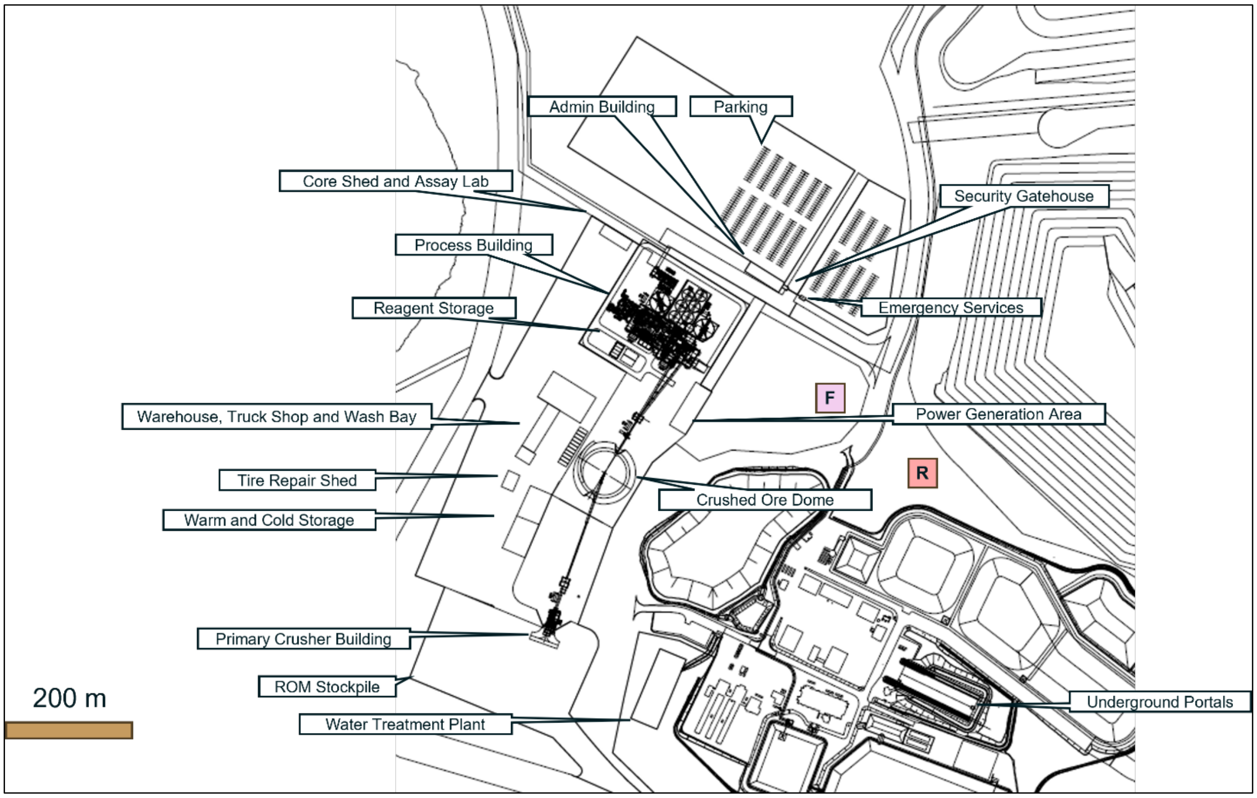
Notes:
1. Buildings and descriptions are approximate and subject to change or replacement including during detailed design.
2. Existing AEX Program buildings and facilities may continue to be used.

Table 5.8-2: Preliminary List of Additional Watercourse Crossings

Watercourse	Existing (1) / Proposed	Description
Dixie Creek	Existing	Existing bridge may be upgraded to allow safe passage of vehicle and equipment to the proposed exhaust raise location south of Dixie Creek
Unnamed Watercourse 1	Existing	Existing watercourse crossing upstream of Unnamed Waterbody 2 may need upgraded or maintained over the life of the mine
Unnamed Watercourse 6A	Existing	Existing watercourse crossing required for the road to the explosives facilities, may need upgraded or maintained over the life of the mine
Unnamed Watercourse 11	Existing	Existing culvert watercourse crossing south of TMF may need upgraded or maintained over the life of the mine
Unnamed Watercourse 1B-03	Proposed	Crossing required for the tailings pipeline corridor and tailings road
Unnamed Watercourse 3 (2)	Proposed	Crossing required for construction access to Viggo pit and stockpiles
Unnamed Watercourse 3A (2)	Proposed	Crossing required for construction access to stockpiles
Unnamed Watercourse 3C (2)	Proposed	Crossing required for construction access to stockpiles
Unnamed Watercourse 3B (2)	Proposed	Crossing required for construction access to stockpiles
Unnamed Watercourse 3D (2)	Proposed	Crossing required for construction access to stockpiles
Unnamed Watercourse 3F (2)	Proposed	Crossing required for construction access to stockpiles
Unnamed Watercourse 6A	Proposed	Crossing required for the road to the Viggo pit / VMF

Notes:
1. In addition to the components listed above, the Project will also include temporary activities associated with their construction including temporary flow isolation and creek crossings.
2. These minor watercourse sections will not retain viability as a result of the Project development, and are mitigated through the *Fisheries Act* Offset Plan and MDMER Schedule 2 Fish Habitat Compensation Plan (Appendix L-2).

Figure 5.8-1: Service and Administration Area



5.9 Fisheries Offset and Compensation Components

The Project has been designed to avoid and minimize encroaching on fish habitat as practical; however, avoidance of fish habitat is not entirely feasible, given the location of the ore body and the number of minor watercourses and waterbodies in the area. The combined area of the residual effects to fish and impacts to waterbodies frequented by fish requiring offsetting or compensation has been calculated as approximately 21.7 ha for the Project. The majority of this area is comprised of the overprinting of Unnamed Waterbody 1 (10.4 ha), Unnamed Waterbody 2 (2.8 ha) and associated minor tributaries.

A draft Fish Habitat Offset and Compensation Plan has been prepared (Appendix L-2) that includes offset and compensation measures that can be implemented to counterbalance and mitigate the potential direct and indirect effects of the Project on fish and fish habitat, including from mine waste storage.

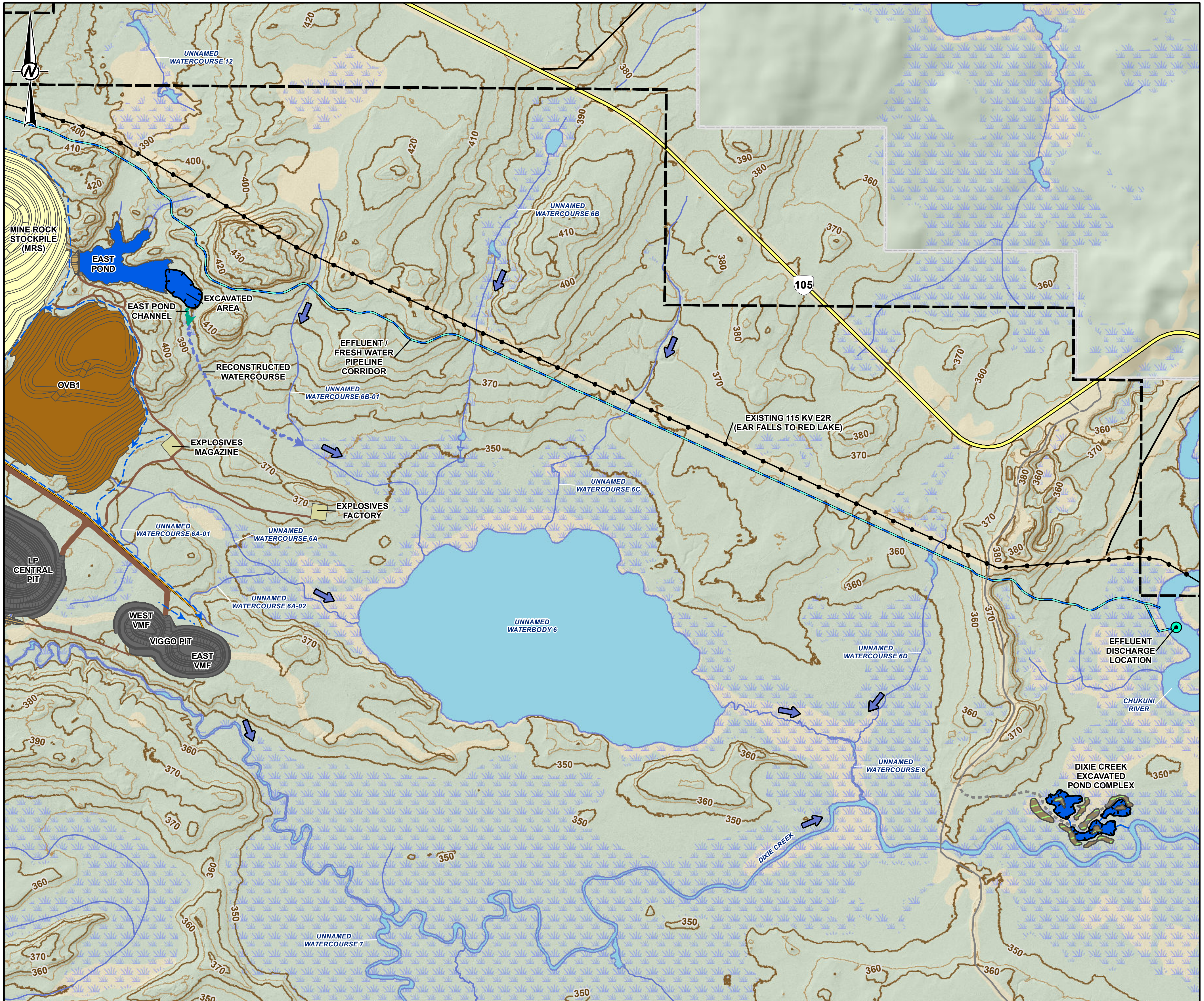
The proposed fish habitat offset and compensation strategy includes replacing lost fish habitat within the Dixie Creek watershed and the development of a fisheries management plan for Wabauskang Lake. The habitat will be in kind replacement for the lakes and ponds affected by the Project although the amount of watercourse habitat that can be developed is limited.

The onsite offsetting and compensation components of the proposed Plan are shown in Figure 5.9-1 and detailed in Appendix L-2 which includes:

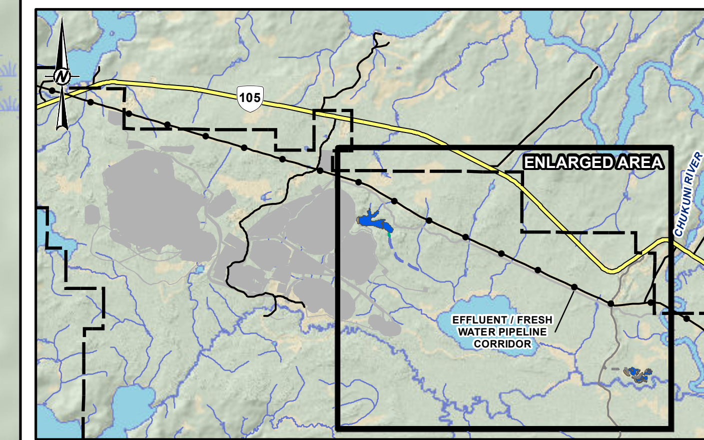
- Construct a dam and pond (east pond dam and east pond) at the upper reaches of Unnamed Watercourse 3B
- Excavate an additional pond area to connect the east pond and the east channel, to create an additional surface area
- Construct a connection channel (east pond channel) measuring approximately 1,300 m in length to connect to and enlarge Unnamed Watercourse 6B
- Excavate a new pond complex within the Dixie Creek floodplain.

The majority of the replacement habitat is largely lake and pond habitat, with the amount of watercourse length constructed being limited by natural topography.

These proposed offset and compensation measures are feasible and have been vetted for consistency with the Fisheries and Oceans Canada (DFO 2025) offsetting policy; however, they may be revised and refined during the regulatory process including as a result of ongoing consultation activities.



KEY MAP



SCALE 1:175,000

LEGEND

- PROPERTY BOUNDARY
- HIGHWAY (INCLUDING NATURAL GAS PIPELINE)
- LOCAL ROAD
- RESOURSE / RECREATION ROAD
- EXISTING TRANSMISSION LINE
- WETLAND AND LOW-LYING AREA
- WATERCOURSE
- WATERBODY
- EXTENT OF LIDAR SURVEY
- MAJOR CONTOUR (10 M INTERVAL)
- MINOR CONTOUR (5 M INTERVAL)
- FLOW DIRECTION

PROPOSED FISH HABITAT OFFSETTING MEASURES

- POND
- DAM
- EXCAVATED AREA
- EAST POND CHANNEL
- RECONSTRUCTED WATERCOURSE
- TREED EXCAVATED SOIL ISLAND
- ACCESS ROAD

PROPOSED MINE FEATURE

- OPEN PIT
- MINE ROCK STOCKPILE (PAG)
- OVERBURDEN STOCKPILE (OVB)
- COLLECTION DITCH
- MINE FACILITIES / INFRASTRUCTURE
- ROAD
- TAILINGS PIPELINE
- EFFLUENT / FRESH WATER PIPELINE CORRIDOR
- EFFLUENT DISCHARGE LOCATION

0 0.25 0.5 1
1:25,000 KILOMETRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE
2. VMF: VIGGO MANAGEMENT FACILITY

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
ONSITE FISH HABITAT OFFSET AND COMPENSATION AREAS

CONSULTANT

YYYY-MM-DD	2026-03-31
DESIGNED	MR
PREPARED	MD
REVIEWED	----
APPROVED	SD

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	5.9-1

5.10 Aggregate Supply

The primary source of aggregate for site construction is planned to be re-purposed NPAG mine rock from open pit development. This will be supplemented during the construction and operations phases by onsite dedicated quarries, and sand and gravel pits (Figure 5.2-1 and Figure 5.2-2), including for specialized requirements. Stockpiled overburden will be the primary material used in site reclamation.

Rock suitable for use in construction of the TMF will not be available from the open pits when construction of the TMF starter dams starts. Rock will be quarried using explosives from accessible bedrock areas within or near the TMF. Two potential locations have been identified within the TMF footprint which could provide a source for NPAG rock. These locations also have the benefit 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. A third potential quarry location west and outside of the TMF footprint has also been identified which could provide a rock source during the construction and operations phases. A portable crusher and screen will be used to size the rock at the quarry and then hauled to the placement destination. It has been assumed for the Impact Statement that all three quarries will be developed although they may not all be needed. Approximately 1.0 Mm^3 of rock may be extracted from the quarries over the life of the mine, primarily during the construction phase and during the early years of the operations phase.

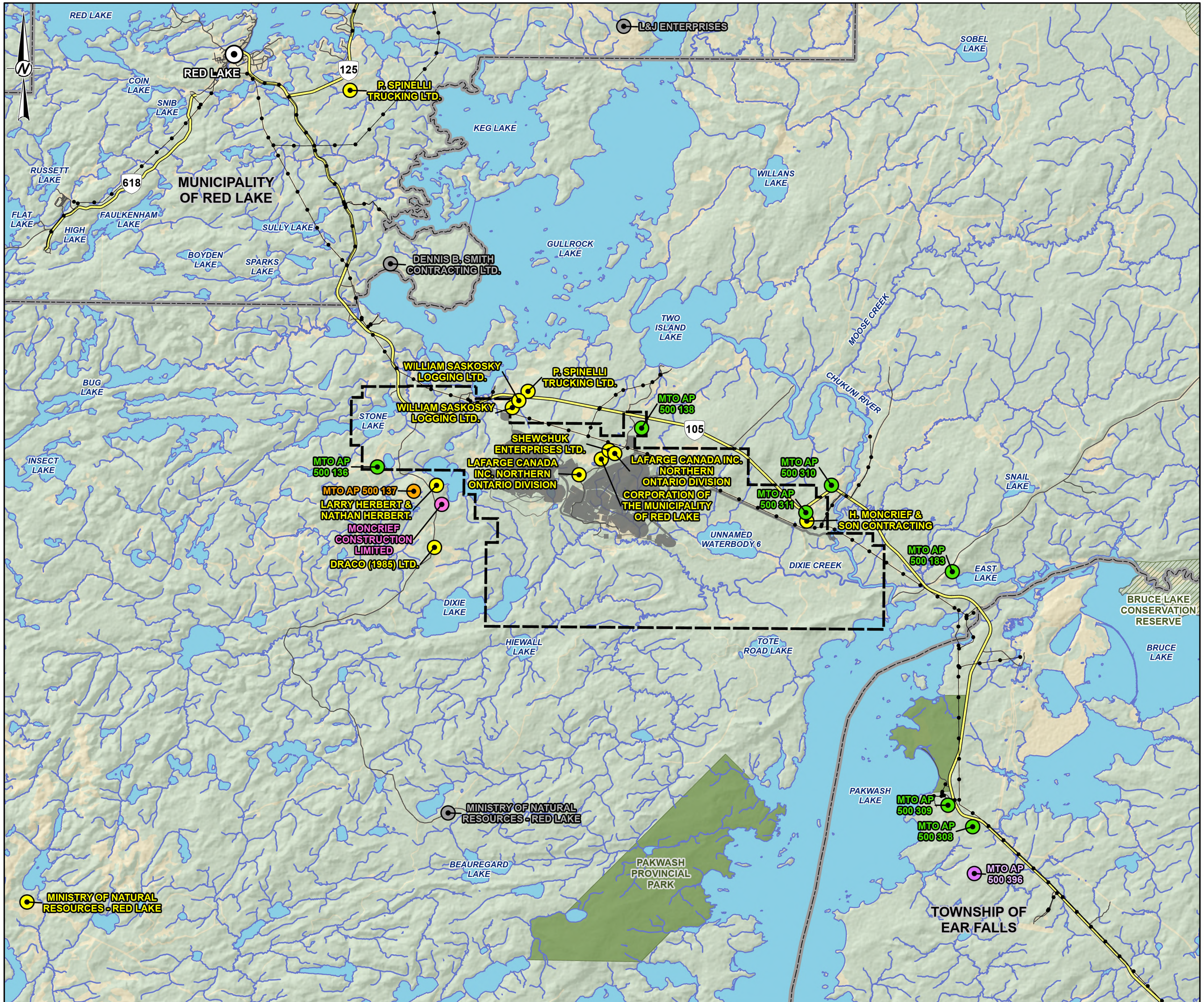
Additional aggregate will be required for specialized uses such as tailings dam filters, concrete manufacturing, and road construction and maintenance. Two raised sand and gravel areas have been identified on the Property that are currently under investigation north of the TMF (Figure 5.2-1). If the site investigations are supportive, sand and gravel resources will be removed to above the groundwater table at one or more of these areas. A portable screening plant may be used for size control. It has been assumed for the Impact Statement that both sand and gravel pits will be developed. Approximately 1.0 Mm^3 may be extracted from the two borrow sources, primarily to supply sand for the TMF facilities and water management structures.

Table 5.10-1 provides a summary of the proposed aggregate operations on the Property.

Aggregate could also potentially be purchased to supplement onsite dedicated sand and gravel pits. Although there are no commercial rock quarries nearby, there are a number of active commercial sand and gravel operations near the Property, including as shown on Figure 5.10-1. Sand and gravel could be purchased from these suppliers for specialty uses, or where the source location provides an advantage based on proximity to the need.

Table 5.10-1: Project Aggregate Sources

Location	Type of Material	Area (ha)	Project Phases
BS3	Sand and gravel	9.1	Construction and operations
BS3B	Sand and gravel	5.7	Construction and operations
Q1	Rock	13.1	Construction and operations
Q2 (north)	Rock	6.1	Construction, early operations
Q2 (south)	Rock	3.2	Construction, early operations



LEGEND

- PROPERTY BOUNDARY
- GREAT BEAR PROJECT FOOTPRINT
- TOWN
- CONSERVATION RESERVE
- PROVINCIAL PARK
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- LOWER TIER MUNICIPAL BOUNDARY
- WATERCOURSE
- WATERBODY

AGGREGATE OPERATIONS

- ACTIVE AGGREGATE PIT
- AGGREGATE PIT APPLICATION
- MINISTRY OF TRANSPORTATION (MTO) AGGREGATE PIT
- MINISTRY OF TRANSPORTATION (MTO) AGGREGATE QUARRY
- MINISTRY OF TRANSPORTATION (MTO) AGGREGATE PIT / QUARRY
- SURRENDERED AGGREGATE PIT

0 1.25 2.5 5

1:150,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
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
NEARBY AGGREGATE PITS AND QUARRIES

CONSULTANT

wsp

YYYY-MM-DD	2026-03-31
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	SD

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	5.10-1

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

25mm

5.11 Water Supply

Water requirements 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.

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, vary from about 0.09 to 0.43 Mm^3 per year (during the operations phase).

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 density polyethylene 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 Program effluent pipeline may be re-purposed 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.

A potable water treatment system will be established to treat water intended for human consumption, although bulk bottled water may be used for drinking purposes, particularly during the construction phase. A modular, containerized package plant is proposed and will be designed and operated to meet the stringent Ontario drinking water requirements.

5.12 Power Supply

Although there is a regional transmission line that crosses the Property, Great Bear Resources understands from discussions with Hydro One Networks, that the line currently has insufficient capacity available to support all of Project operations (50 MW). Great Bear Resources is not proposing to reinforce the regional electrical grid to bring more grid power for the Project. Grid infrastructure upgrades in the region by Hydro One Networks may complete as early as 2031, with early study work in progress for a regional solution that would expand the currently available capacity.

The main, long-term power supply for the mine site 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.

The balance of power required for the early operations phase will be generated from an expansion of the AEX Program natural gas plant (peak natural gas power to be less than 25 MW), proposed to be used until such time as the regional electrical grid is reinforced. The natural gas plant will include natural gas generators, electrical equipment and potentially a waste heat recovery system to heat the nearby infrastructure and process plant facilities.

Overhead 34.5 kV distribution lines will transmit the power across the PA. 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.

5.13 Atmospheric Emissions

5.13.1 Air Quality

Air emissions generated from the Project will be regulated, including under the provincial *Environmental Protection Act*. Sources of air emissions from the Project during the construction and operations phase include (but are not limited to):

- Site preparation activities
- Emissions from drilling, blasting, material handling, in-pit road dust and mobile equipment in the open pit
- Ore processing at the process plant
- Material handling at the process plant, crusher, portable crushers and rock stockpiles (MRS, LGO and ROM)
- Material handling at the TMF
- Material handling at quarries, and sand and gravel pits
- Exhaust from natural gas facilities and heating
- Equipment tailpipe exhaust
- Exhaust from diesel generators
- Wind erosion at rock stockpiles and the TMF.

An air quality assessment was completed to allow comparison of the predicted cumulative air concentrations to applicable air quality criteria. The cumulative concentrations were predicted by adding air dispersion modelling concentrations to existing baseline condition concentrations.

Cumulative concentrations for all air parameters were predicted to be below the respective Ontario Ambient Air Quality Criteria at the leased claims boundary for all averaging times with planned mitigation and operations controls for all applicable averaging times and Project phases. Further information regarding the air quality assessment, including the results of dispersion modelling are presented in Appendix D-2.

5.13.2 Greenhouse Gas Emissions

5.13.2.1 Project Emissions

Greenhouse gas (GHG) air emissions, including carbon dioxide, methane and nitrous oxide emissions, are of particular interest because of the relationship between GHGs and climate change on the broader scale. The main sources of GHG emissions from the Project as detailed in Appendix D-3 are:

- Mobile combustion: diesel equipment is used across the PA, but particularly at the open pit, underground mine, quarries, sand and gravel pits and TMF
- Stationary combustion: stationary natural gas and diesel equipment, such as related to onsite natural gas electricity generation, natural gas heating equipment and emergency diesel generators

- Blasting: the emulsion includes compounds containing carbon, which are assumed to be oxidized to carbon dioxide during detonation
- Landfill: decomposition of landfilled domestic waste will produce GHGs if the onsite landfill is developed (not currently proposed)
- Land use changes: removal of biomass carbon stocks (such as forest and other vegetation) and biomass decay
- Acquired energy: GHG emissions from the generation of electricity which will be purchased from a third party for the Project.

The Project GHG sources and emissions are summarized in Table 5.13-1 and detailed in Appendix D-3. The net GHG emissions from the Project are estimated at 4,987 kt-CO_2e of direct GHG emissions and acquired energy GHG emissions over the construction, operations, and closure phases of the Project. The life of mine estimate is comprised of:

- Diesel combustion in mobile equipment, 2,082 kt-CO_2e
- Stationary combustion from natural gas, 2,469 kt-CO_2e
- Stationary combustion from diesel fuel, 197 kt-CO_2e
- Use of explosives (blasting), 28 kt-CO_2e
- Domestic waste landfill (not currently proposed to be developed), 17 kt-CO_2e
- Purchased electricity, 77 kt-CO2e
- Biomass removal associated with land clearing, 146 kt-CO_2e.

The highest annual operations phase GHG emissions of 227 kt-CO_2e occur in Year 4. The annual amount of material moved from the open pit decreases after this year, as does the level of fleet activity. Table 5.13-2 provides a summary of the GHG emissions for Year 4.

The largest source of GHG emissions during mine operations is the combustion of natural gas for electricity, contributing to 36% of the overall Project GHG emissions (Figure 5.13-1). As indicated in Section 5.12, although there is a regional transmission line that crosses the Property, Great Bear Resources understands that the line currently has insufficient capacity available to support all of Project operations (50 MW). Natural gas power generation is proposed until such time as Hydro One Networks completes grid infrastructure upgrades in the region.

The average and maximum annual GHG intensities for the Project of 13.8 and 19.5 t CO_2e/kg-gold, respectively, are in line with other Canadian gold mining operations, considering the mine will only have a portion of its onsite electricity provided by the Ontario electricity grid.

5.13.2.2 Net Zero

The Project Net-Zero Plan (Appendix W-1) presents a credible scenario to achieve net-zero emissions by 2050. This plan reflects the commitments of Great Bear Resources to environmental stewardship and climate action, and is a required element of both the Strategic Assessment of Climate Change and the Tailored Impact Statement Guidelines.

The required GHG reductions will be achieved primarily through implementation of selected Best Available Technology / Best Environmental Practices (Appendix W-2) to reduce GHG emissions from the Project. These include practices and technologies to reduce energy demand, measures to eliminate or substitute GHG emissions sources with lower carbon alternatives, and technologies to mitigate GHG emissions.

The Project design includes a number of measures to mitigate GHG emissions including for energy conservation. Other potential measures to reduce the GHG emissions that may be considered in the future described in detail in Appendix D-3 and Appendix W-2 include:

- Electrification of fleet vehicles and the use of lower emission vehicles; proposed actions will be enhanced when the regional electric grid is reinforced by Hydro One or others, and 100% grid power become available
- Incorporating lower-carbon energy sources to minimize fossil fuel combustion
- Seeking additional opportunities for incorporating renewable energy sources into Project planning where practical.

The acquisition of offset credits could potentially be used to address residual GHGs that cannot be mitigated with current technologies.

5.13.3 Noise

Noise will be generated within the PA during all Project phases. During construction, associated activities are planned to occur approximately 12 hours per day, 7 days a week, while during operations, the site is expected to operate continuously for 24 hours per day, 7 days per week. Noise emissions generated from the Project will need to meet the applicable Ministry of the Environment, Conservation and Parks noise guideline(s) associated with the provincial *Environmental Protection Act*.

The primary noise emissions from the Project are expected to originate from equipment and infrastructure used for construction and operational purposes. This includes stationary equipment and mobile equipment fleet operating at different areas of the mine, equipment used for production above ground at the open pits, ventilation systems and noise transmission through walls, roofs and ventilation openings of major facilities and infrastructure. Noise emissions are considerably less during the closure phase, relating primarily to materials movement. The main noise sources by phase are:

- Construction phase: power generator, haulage routes with high truck traffic and primary drills
- Operations phase: power generation plant, primary and pebble crusher, haulage routes with high truck traffic and surface fans for underground mine
- Closure phase: power generation.

Details regarding the various sources of noise are provided in Appendix E-3.

5.13.4 Blasting Vibration and Overpressure Emissions

Vibrations will result from the use of explosives during all phases of the Project. The potential impact of blasting impact was evaluated with respect to ground vibration, air overpressure and water overpressure (Appendix F). By considering the planned nominal explosive charges per blast location provided by Great Bear Resources, the Project is expected to be compliant with limits established by the Province (MOE 1982) and the Health Canada (2017) at all human Points of Reception.

The impact of the Project on the nearest fish habitats was evaluated using the methodology established by the Fisheries and Oceans Canada. A blast management plan will be developed for the blasting operations to maintain vibration levels within Fisheries and Oceans Canada guidelines (Hopky and Wright 1998).

5.13.5 Lighting

During the construction phase, activities are expected to be transient and to occur predominantly during the day; however during the operations phase, more artificial lighting will be required to support activities in the PA. The Project is not located within or near a Dark Sky Preserve.

Light emitting diode high efficiency lighting is expected to be included in the future mine design, including exterior pole mounted lighting, installed around the perimeter of the facilities to provide lighting for personnel safety and vehicle movements.

Industrial light pollution guidelines for Ontario will be applied to balance minimizing excess artificial light in the environment while presenting sufficient light to permit nighttime work to occur safely and effectively. As of Impact Statement preparation, there are no Ontario guidelines for industrial light emissions.

In assessing potential effects, international guidance on limiting obtrusive light from lighting installations have been applied. The assessment indicates that nuisance is not expected and should be manageable through use of responsible outdoor lighting practices and dark-sky friendly fixtures where possible. Further information is provided in Appendix G.

Table 5.13-1: Greenhouse Gas Emissions by Phase

Category	Phases			Total (1) (kt-CO_2e)
	Construction (kt-CO_2e)	Operations (kt-CO_2e)	Closure (kt-CO_2e)	
Direct Emissions				
Open pit, diesel fuel	140.0	694.4	17.2	851.6
Underground mine fleet, diesel fuel	11.5	956.6	2.9	971.0
Aggregate operations and tailings, diesel fuel	24.3	210.6	24.3	259.2
Explosives use	2.2	25.9	0.0	28.1
Heating, natural gas	40.4	613.0	18.9	672.3
Electricity generation - natural gas	0.2	1,796.2	0.0	1,796.4
Electricity generation - diesel fuel	56.2	0.0	0.0	56.2
Other diesel generators, diesel fuel	13.2	114.4	13.2	140.8
Domestic waste landfill (2)	0.2	14.3	2.5	17.0
Land use changes from biomass removal	146.2	0.0	0.0	146.2
Indirect Emissions				
Acquired energy	7.6	69.4	0.4	77.4
Net GHG emissions	442.1	4,496.2	79.6	5,017.9
Foregone CO_2 sequestration	59.7	474.3	49.8	583.8

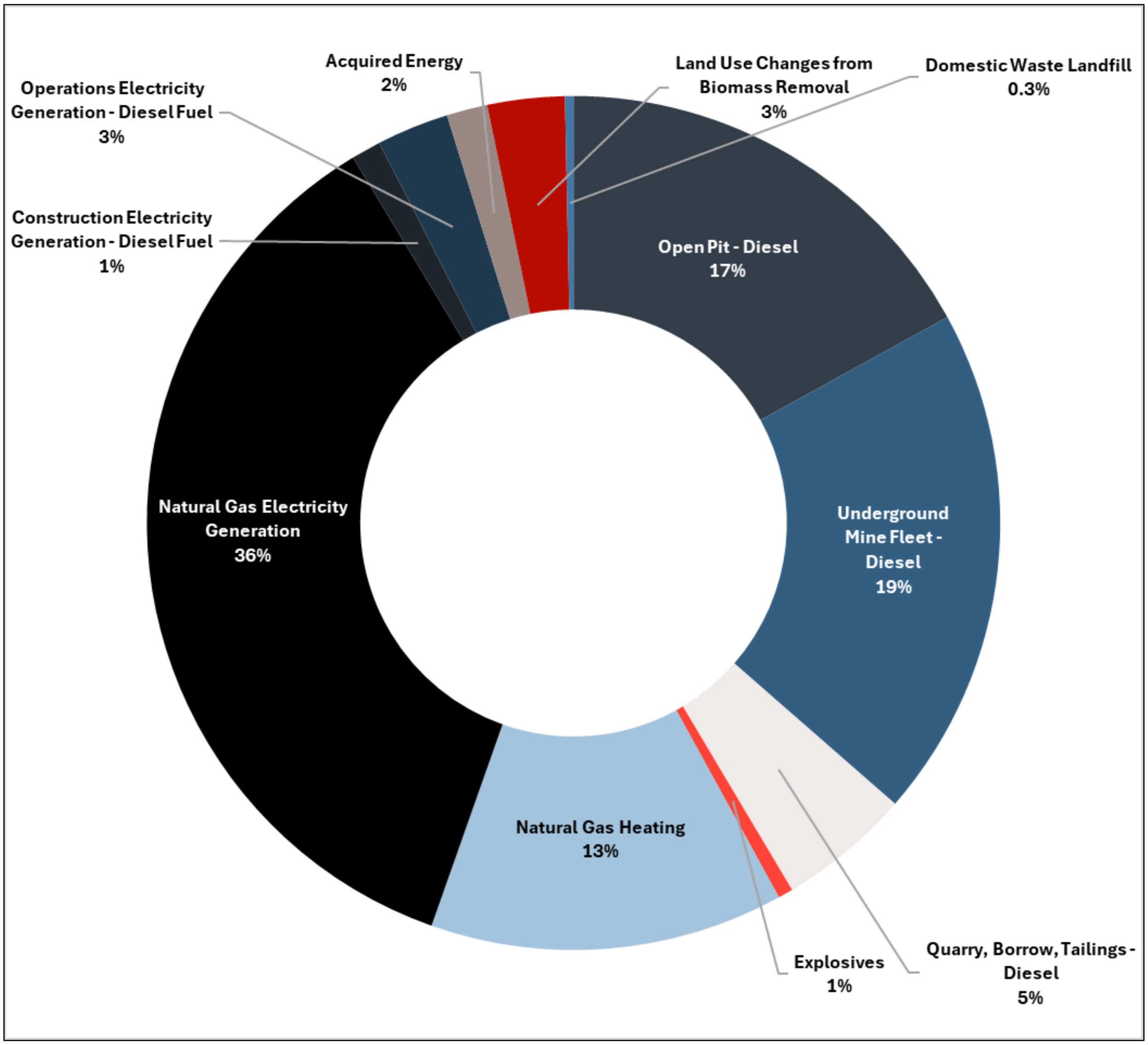
Notes:
1. Subtotals may not add to totals due to rounding.
2. Estimate is conservative estimate as an onsite domestic landfill is not proposed to be developed.

Table 5.13-2: Greenhouse Gas Emission for Maximum Operations

Category	Maximum Annual GHG Emissions (kt-CO_2e) (1)
Direct GHG emissions (2)	222.2
Acquired energy (electricity)	4.6
Total annual GHG emissions	226.9

Notes:
1. Subtotals may not add to totals due to rounding.
2. Direct GHG Emissions include diesel and natural gas fuel usage from mobile and stationary combustion and blasting.

Figure 5.13-1: Greenhouse Gas Emissions by Source for the Project Lifetime



5.14 Water Management and Discharge

5.14.1 Overall Approach

Water that comes into contact and may be affected by Project facilities and activities (contact water) and non-contact water will both be present within the PA. Water management for the Project incorporates best management practices, including as appropriate for each Project phase:

- Diversion of non-contact water from the main site where reasonable, starting during the construction phase and continuing through operations
- Collection and transfer of contact water into the integrated site water management system once established during the construction phase and continuing through operations for additional management
- Management of contact water in facilities designed to be protective of the environment, such as establishing on low permeability native materials or use of commercial liners
- Recycling and re-use of contact water on the site, including for use in ore processing during commissioning and operations, and dust control during all Project phases
- Treatment of excess contact water to meet regulatory requirements and discharge treated excess water to a receiver determined based primarily on assimilative capacity.

5.14.2 Non-Contact Water Diversions

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 (Figure 5.2-1 and Figure 5.9-1). 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 described in more detail in Appendix L-2. The new pond and channel will naturalize over the succeeding years of the Project life 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 connection will result in an additional 130 ha of drainage area reporting to the natural watershed of Unnamed Watercourse 6B and through that watercourse to downstream areas. These non-contact waters will continue to Dixie Creek downstream of the existing inflow, and then to the Chukuni River.

A detailed geomorphological investigation (Appendix B in Appendix L-2) determined that the existing channel of Unnamed Watercourse 6B had sufficient capacity to attenuate and convey the increased drainage from approximately 1.2 km upstream of Waterbody 6, to its confluence with Dixie Creek. The remaining channel northward to the diversion channel and pond would require reconstruction to convey the additional flows. The additional watershed area diverted to Unnamed Watercourse 6 below Unnamed Waterbody 6 is less than 10% and as such reconstruction of channels downstream is not necessary.

The east pond dam and east (diversion) pond will be established in the upper reaches of Unnamed Watercourse 3B to develop fish habitat while diverting the flows to the new diversion channel and the existing Unnamed Watercourse 6B-02. The diversion dam will be a low permeability structure with a normal operating water level of 389 masl. The hydraulic head pressure of the associated east pond will be established so that contact water from the MRS will not seep into the fish habitat complex.

Smaller diversion channels may be used selectively at other locations within the PA to divert non-contact water from site facilities, particularly during the construction phase. If developed, these will keep contact and non-contact water separate, and reduce water needing treatment by directing non-contact water away from the mine site activities.

5.14.3 Contact Water Management Facilities

A fully integrated water management system will be developed, that will expand as needed during Project phases. The contact water management system is designed to collect, store, convey and treat contact water for an Environmental Design Flood, defined as the 100-year return period events during the operations and closure phases. The 20-year Environmental Design Flood was applied to the construction phase. A 1:20 or 1:100 return period refers to a flooding event with a likelihood of being exceeded occurring once in a 20- or 100- year period. These are typical water management design criteria in the mining industry.

The primary contact water management facilities for the Project described in the sections that follow and summarized in Table 5.14-1 are the:

- AEX Program ponds
- Main collection channel
- Collection water pond
- TMF pond
- East VMF
- Mine water pond
- Local ditches, sumps and minor ponds.

5.14.4 Construction Phase Water Management

Water management during the construction phase will adapt with the changing site conditions, as the site develops beyond the initial AEX Program footprint (Figure 5.14-1), through to the fully integrated water management system that will support the operations phase. Further information regarding the construction phase water management is provided in Appendix I-2.

The construction water management has been designed to:

- Collect runoff from areas cleared for construction for testing for water quality, prior to discharge to existing (pre-development) watersheds if appropriate; if the runoff is not acceptable for passive discharge to the environment, the water will undergo further treatment
- Runoff from areas that expose or otherwise contain PAG materials will be collected and treated, initially using the AEX Program effluent treatment plant (ETP) and later in the WTP, prior to discharge to the Chukuni River.

The preliminary construction water management sequencing is as follows:

- Water pumped to surface from the underground will be collected in the AEX Program ponds; excess water will be treated in the AEX ETP, and discharged to the Chukuni River through the AEX effluent pipeline
- During the initial nine months of construction surface runoff is proposed to be managed locally with temporary settling ponds which will discharge to their existing conditions watershed after water quality confirmation
- Once development of the Viggo pit commences, mine rock will be produced and infrastructure will be installed to collect runoff from the MRS which will be transferred to the AEX ponds where it will be combined with underground water (and treated in the AEX ETP and discharged to the Chukuni River as needed)
- Runoff from other newly developed areas will continue to be managed locally and will discharge to their existing conditions watershed after water quality confirmation
- As development continues in the Viggo pit, LGO1 will be created; runoff from this stockpile will be directed to AEX Program water management facilities
- Near the end of the first year of construction, the TMF pond dam will be complete, and water will collect behind the dam that will be used for process plant start up purposes; once established, surface runoff from areas that were being directed to the AEX ponds and AEX ETP will be directed to the TMF pond to also support process plant commissioning
- After process plant commissioning is initiated, the WTP will receive excess water from the AEX ponds, and runoff from the MRS, LGO1 and Viggo pit runoff for treatment and discharge to the Chukuni River potentially initially through the AEX pipeline, or the new pipeline constructed for operations
- After mining of Viggo pit is complete near the end of construction, mining related infrastructure will be removed from the pit as needed to allow for repurposing of the open pit for water management (Section 5.14.5), permanent concentrate tailings storage (Section 5.7.3) and temporary storage of membrane filtration reject solution during the operations phase (Section 5.14.8).

As appropriate during the construction phase (and during the operations phase), contact water will be collected locally using ditches, sumps and minor ponds, located to take advantage of the site topography. The secondary water management facilities will provide some retention time for initial settling of coarse suspended solids out of solution. If needed, the collected solids may be removed from these water treatment facilities so that sufficient storage volume and retention time is maintained. Settled solids if removed, will be tested, and transported to the TMF, VMF or an OVB for permanent storage, depending on the source location and quality of the solids.

Excess contact water from the secondary facilities will be transferred by gravity by means of low permeability constructed channels, or by pumping through pipelines to larger, primary water storage facilities. The primary water management facilities will provide greater temporary storage and additional time for settling of solids if present, as well as potentially a source of water for recycling if water quality is appropriate. Excess contact water collected in primary contact water facilities will be pumped to the WTP for treatment, and then re-used on site or discharged by pipeline to the Chukuni River.

5.14.5 Operations Phase Water Management

The operations phase water management will build on the facilities develop during the construction phase, to actively manage water from the Project site including the process plant is actively managed.

For the first part of operations (until approximately Year 15), contact water will be directed to one of three primary storage facilities (Figure 5.14-2):

- 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 Program ponds will manage runoff from their local watershed as well as from underground dewatering. Excess water from the AEX ponds will be pumped to the WTP.
- 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 a 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 mine water pond (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 (Figure 5.14-3). 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.

Further detail is provided in Appendix I-2 and Appendix I-3.

5.14.6 Closure Phase Water Management

A conceptual closure approach for the Project is provided in Section 5.19 which also discusses water management aspects. In summary at the end of operations, contact waters from the PA will be directed to fill the LP Central pit. Freshwater from the Chukuni River will be pumped through the effluent discharge pipeline to assist with filling the LP Central pit, VMF and underground workings at an accelerated rate, rather than relying solely on runoff, direct precipitation and groundwater inflow.

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.

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).

Water management flow schematics for the active and passive closure phase are presented in Figure 5.14-4 and Figure 5.14-5. Water management after the closure phase is completed is shown in Figure 5.14-6. Further information is provided in Appendix I-2.

5.14.7 Contact Water Treatment

Contact water from the PA will need to be treated for re-use, with excess treated water discharged to the environment. This treatment will be in addition to the cyanide destruction and metal reduction that will occur within the process plant, and the natural physical and chemical processes that will occur within the contact water facilities:

- Contact water ponds will provide a principal means of suspended solids removal is the use of settling ponds.
- The cyanide and metallo-cyanide complexes present in some of the contact waters are inherently unstable, and if retained in a pond for a sufficient length of time under the right conditions of pH, temperature and ultraviolet light, residual cyanide and metallo-cyanide complexes after the primary destruction in the process plant, will naturally break down to simpler compounds.
- Ammonia may be present in contact water ponds from the use of ammonia-based blasting agents, as well as from the cyanide destruction process in the process plant. Ammonia is degraded in ponds through the process of direct volatilization of free ammonia to the atmosphere, as well as through bacteria and algae taking up ammonia as a nutrient.

Although these natural processes can be effective, A conservative approach has been taken, and it has been assumed that additional treatment will be required to remove metals, suspended solids, and some residual ammonia or other dissolved constituents in contact waters. The WTP will be a centralized facility located close the process plant and infrastructure area, with treated effluent that will be discharged by pipeline to the Chukuni River. The WTP will be designed to produce water that is suitable for re-use or discharge to the environment in accordance with applicable regulatory requirement, including the Metal and Diamond Mine Effluent Regulation, and the anticipated effluent concentrations required by the Ministry of the Environment, Conservation and Parks to protect the receiving water and aquatic resources. Best available technologies that are economical achievable will be considered for the WTP to meet the protection requirements of local Indigenous Nations.

The primary WTP design is expected to include the following sequential treatment steps:

- Collection and preliminary treatment (neutralization and softening) through chemical and reagent addition, and aeration in reaction mixing tank(s) to facilitate metals removal from the contact water
- Flocculant addition to bind solids into larger, heavier flocs to settle out and create a precipitate sludge and produce a clarified solution
- Filtration to remove additional solids.

Sludge from the water treatment plant will be pumped to the tailings pump box for co-disposal with tailings. Additional treatment steps may be added during detailed design as needed.

A portion of the contact water treatment stream (excess water from the TMF) will be subject to enhanced water treatment (membrane filtration) to reduce sulphate concentrations in treated effluent. Membrane filtration is a separation process that uses a semi-permeable membrane to separate components of a liquid based on their size and properties. It involves passing the contact water to be treated through the membrane by differential pressure, to produce clear water and a reject solution.

The membrane-treated water will be combined with other treated water, and excess treated water will be discharged to the environment (Section 5.14.8). The reject solution will primarily be used in the paste backfill mixture that will be sent underground to fill underground voids and solidify (Section 5.4.3.1). Excess reject solution will pumped for temporary storage in the holding pond, and west VMF for storage during operations (Section 5.14.8). At closure it will be pumped underground for permanent storage (Section 5.19.3.4).

5.14.8 West Viggo Management Facility

As indicated in Section 5.7.3, the Viggo pit will be mined during the construction phase to provide materials for Project construction. This development approach also allows the well-contained west lobe of the Viggo pit to be repurposed for temporary storage of excess reject solution from membrane filtration during the operations phase.

Excess reject solution that cannot be re-used in paste backfill formation, will be pumped through a high density polyethylene pipeline to the bottom of the west VMF. The reject solution will be maintained below the bedrock saddle that separates the west lobe and east lobe of the Viggo pit (Figure 5.7.6). No dams are required for reject solution within the west VMF.

The west lobe of the Viggo pit will be approximately 75 m deep when mining ceases. There is anticipated to be sufficient space in the west VMF the excess reject solution produced over the life of the mine while remaining below bedrock saddle.

Smaller quantities of reject solution could potentially be temporarily stored at other Project locations during operations, such as in the east VMF or a sequestered area in the depleted LP Central pit, pending confirmation of appropriate containment.

5.14.9 Treated Contact Water Discharge

There are strict regulatory requirements regarding discharge of industrial waters to the environment. The Chukuni River (Figure 5.2-1 and Figure 5.2-2) was selected as the receiver of treated contact water through the alternatives assessment summarized in Section 4.4.6, as the preferred discharge location built-out integrated water management system for excess treated water (effluent) for the construction and operations phases.

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.

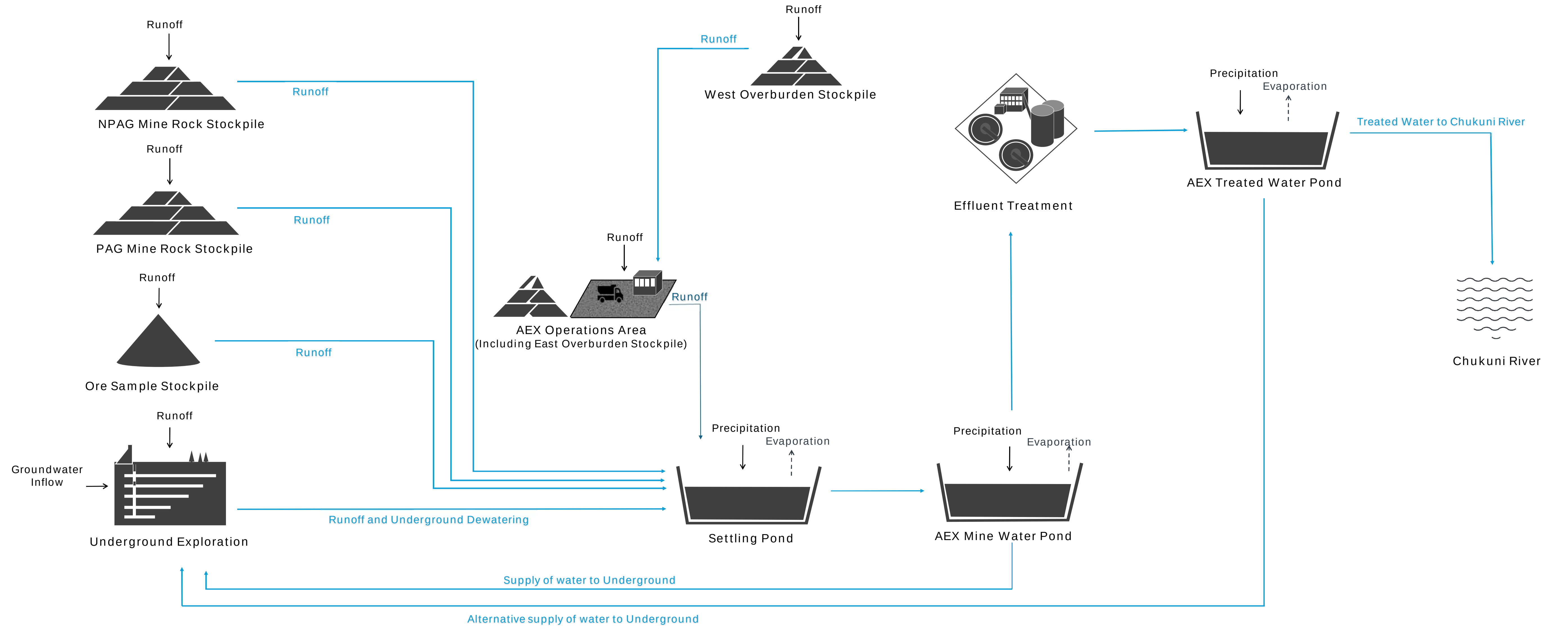
The AEX Program effluent pipeline will continue to be utilized during the construction phase, and at least until the Project effluent pipeline is in place. An additional larger above grade high density polyethylene pipeline will be installed to support the higher flow rate from the WTP. The Project effluent 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 the Environment, Conservation and Parks criteria.

A pressure reducing station will be constructed along the Project effluent pipeline nearer the Chukuni River, to manage flow and pressure prior to discharge. A distribution power line is proposed to be established within the pipeline corridor to power the fresh water pump station and pressure reducing station. Diesel generation may be required temporarily until this distribution line is established and as backup.

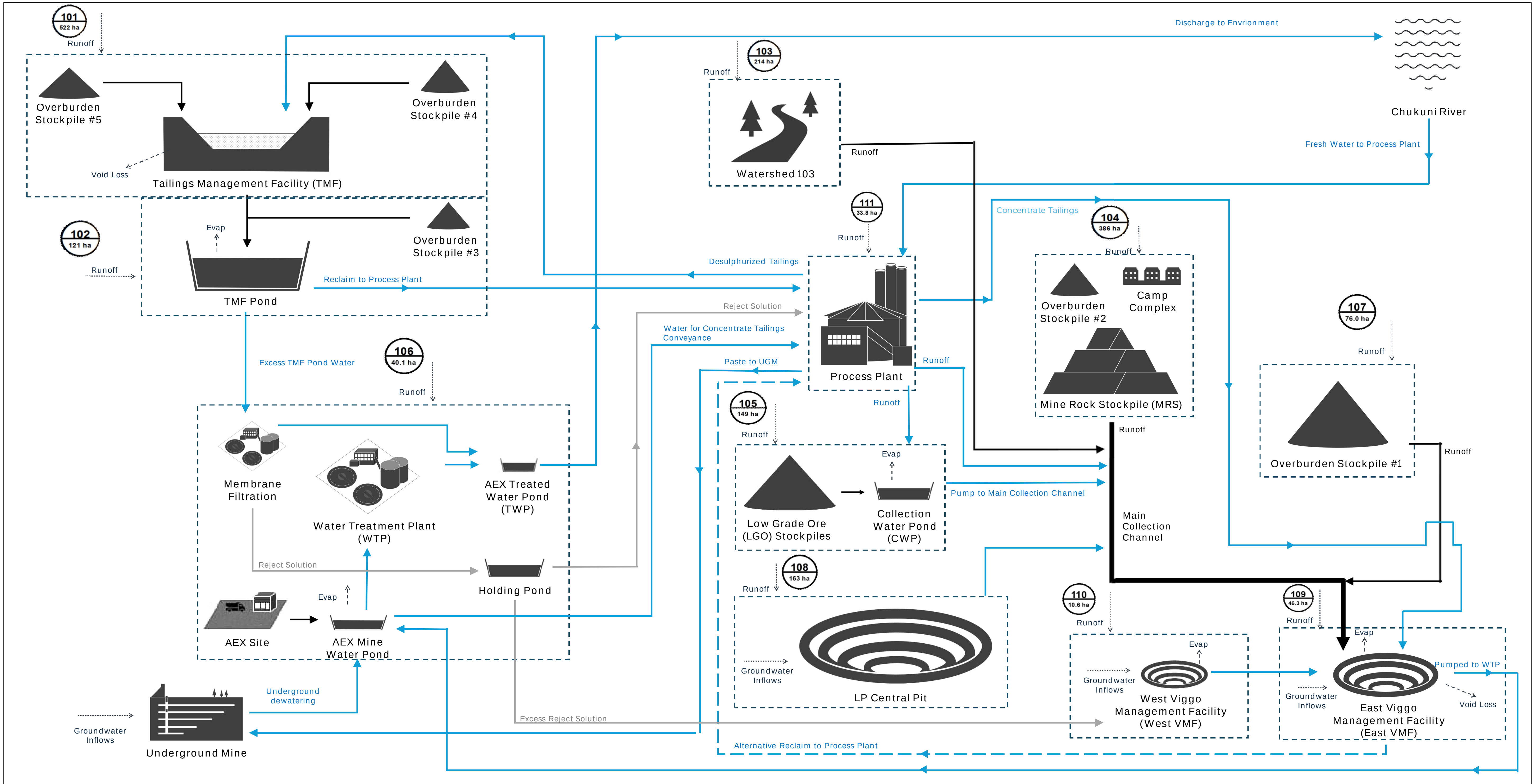
Table 5.14-1: Summary of Primary Contact Water Management Facilities

Primary Facility (1)	Design and Dimensions	Purpose
TMF pond	• Pond retained by engineered dam with filter zones and sheet pile wall to retain water • 39.5 ha (water area)	• Collect and manage runoff and seepage from the TMF • Excess water sent to the WTP for treatment
Mine water pond	• Pond retained by engineered dam with filter zones and sheet pile wall to retain water • 33.0 ha (water area)	• Constructed during operations to collect and retain water from the PA once the east VMF no longer has excess capacity for a 1:100 year storm
Collection water pond	• Pond retained by engineered and lined water retaining dam • 7.9 ha	• Collects contact water from LGO1, LGO2 and some of the infrastructure area watershed
VMF (re-purposed Viggo pit)	• Construction phase open pit re-purposed for concentrate tailings storage, contact water management and reject solution storage • Maximum of 22.8 ha (Viggo pit area at surface; VMF pond areas will be less)	• Collects and manages contact water received from the main collection channel • Also provides: permanent, under water storage of concentrate tailings pumped from the process plant in the east VMF; and temporary storage of reject solution resulting from select membrane filtration treatment of contact water during operations in the west VMF
Main collection channel	• Lined collection channel upgradient of a haul road collecting contact water • Approximately 4.5 km in length	• Collects contact water by gravity from OVB1, OVB2, MRS and an infrastructure area, as well as receiving pumped contact water from other areas including the collection water pond and LP Central pit, and directs the water to the east VMF
Supplementary collection channels	• Lined collection channels at various facilities • Multiple	• Direct contact water by gravity as need water management
AEX Program ponds (existing)	• Four, dug, lined ponds • 2,700 m^3, 5,000 m^3, 10,000 m^3 and 140,000 m^3	• Proposed to manage runoff from the AEX area and from the underground workings that is pumped to surface

Note:
1. Sumps, small ponds, ditching and pipelines will be used as required on the site to manage contact water collection and routing.
2. The TMF will have some ponding on the surface that will vary in extent.



LEGEND:	CLIENT LOGO:	CLIENT:	COMPANY LOGO:	PROJECT TITLE:	DATE:
Pumped / Gravity Flow Input Loss	KINROSS	GREAT BEAR RESOURCES WSP E&I Canada Limited 6925 Century Avenue, Suite 600 Mississauga, Ontario, Canada, L5N 7K2	wsp	GREAT BEAR PROJECT DRAWING TITLE: ADVANCED EXPLORATION FLOW SCHEMATIC	AUGUST 2025 PROJECT NO: OMEMA2303 FIGURE NO: 5.14-1



LEGEND:
- Pumped Flow
- Contingency Pumped Flow (Not Modeled)
- Reject Solution Flow
- Gravity Flow
- Input
- Loss
- Watershed

KINROSS

GREAT BEAR RESOURCES

WSP Canada Inc.
6925 Century Avenue, Suite 600
Mississauga, Ontario, Canada, L5N 7K2

WSP

GREAT BEAR PROJECT

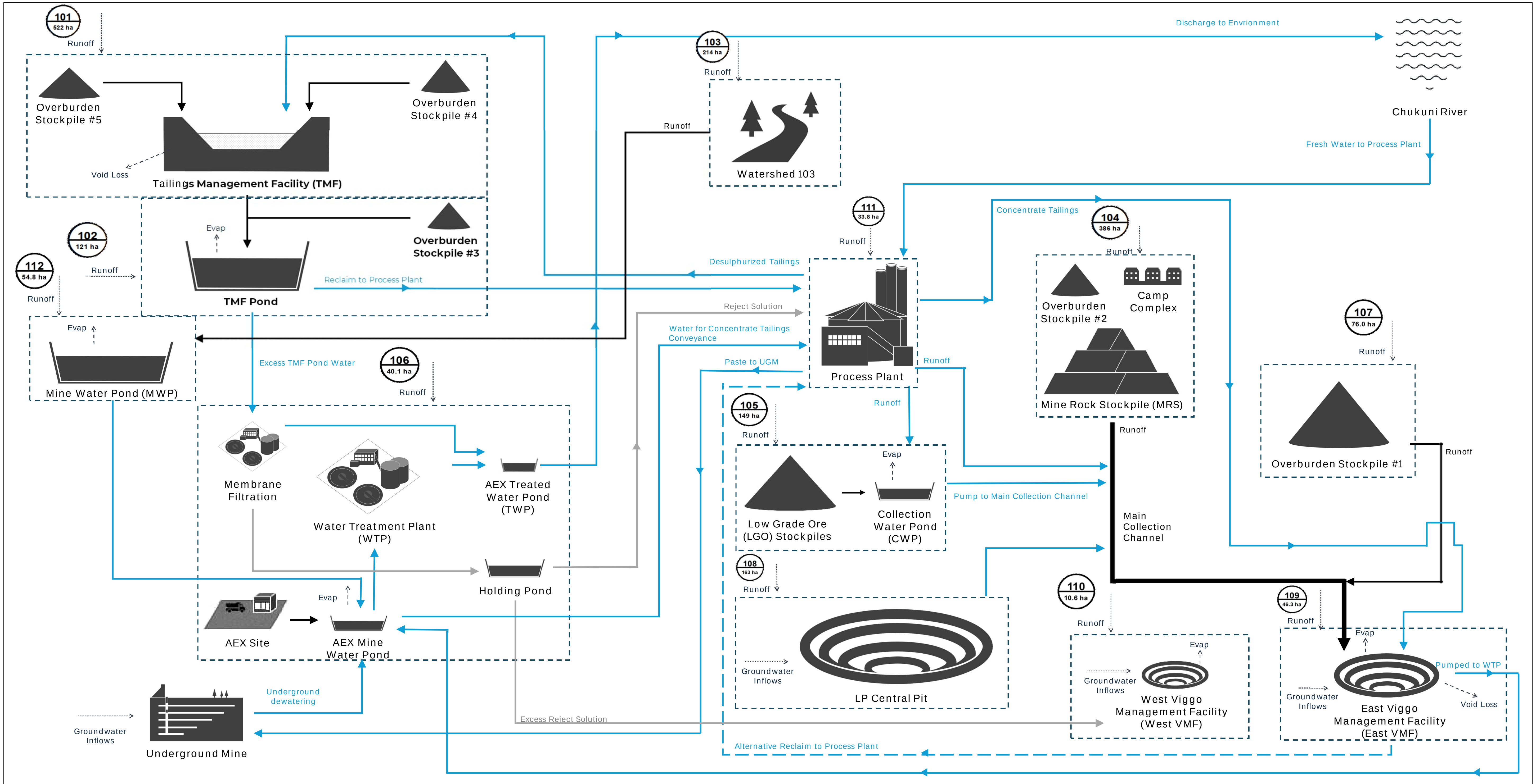
MINE SITE WATER BALANCE

DRAWING TITLE:
FLOW SCHEMATIC - OPERATIONS PHASE
(SUB-PHASE 1 PRIOR TO MWP CONSTRUCTION)

DATE: AUGUST 2025

PROJECT NO: OMEMA2303

FIGURE NO: 5.14-2



LEGEND:

- Pumped Flow
- Contingency Pumped Flow (Not Modeled)
- Reject Solution Flow
- Gravity Flow
- Input
- Loss
- Watershed

KINROSS

GREAT BEAR RESOURCES

WSP Canada Inc.
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Mississauga, Ontario, Canada, L5N 7K2

wsp

GREAT BEAR PROJECT

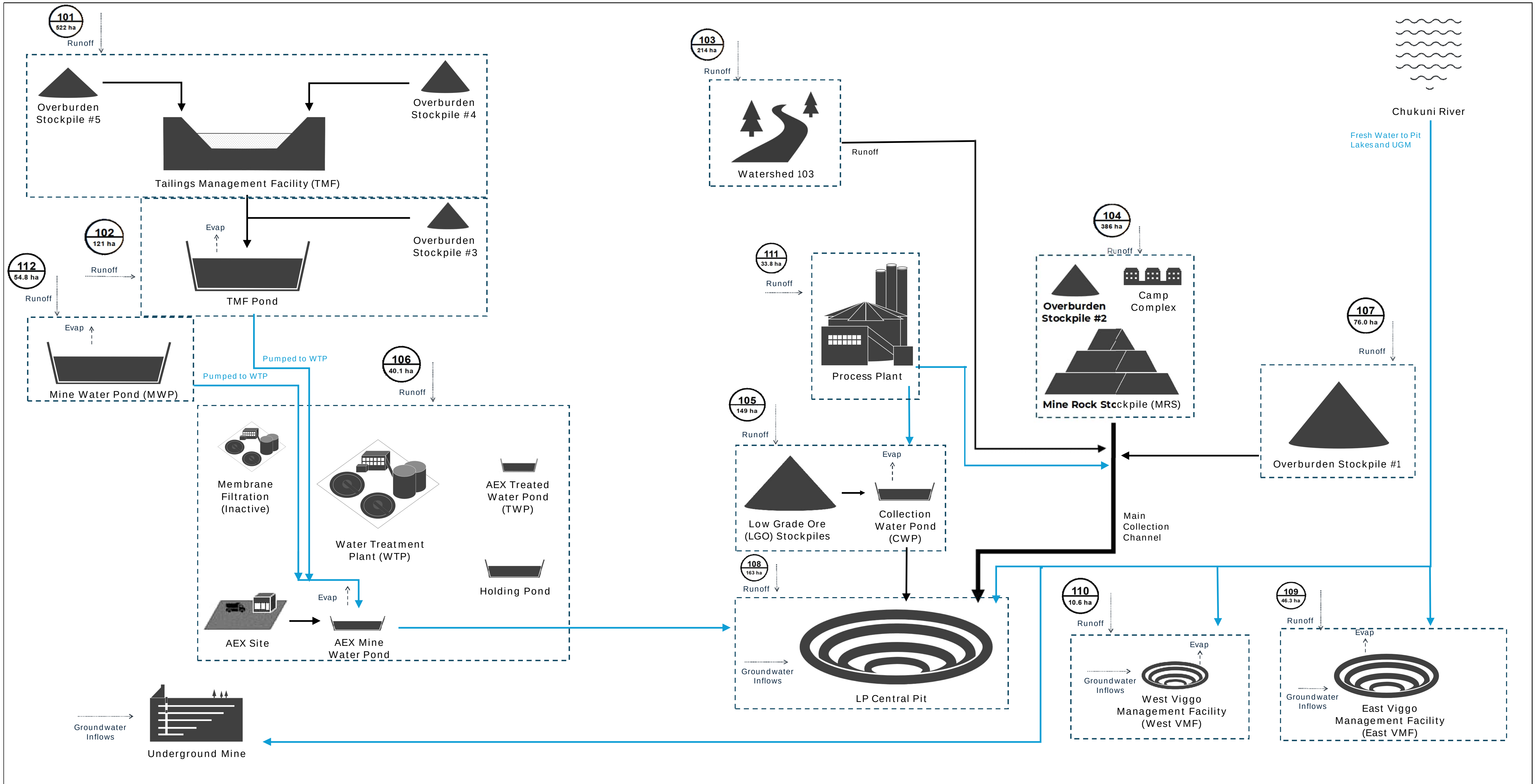
MINE SITE WATER BALANCE

DRAWING TITLE:
FLOW SCHEMATIC - OPERATIONS PHASE
(SUB-PHASE 2 FOLLOWING MWP CONSTRUCTION)

DATE: AUGUST 2025

PROJECT NO: OMEMA2303

FIGURE NO: 5.14-3



LEGEND:

- Pumped Flow
- Gravity Flow
- Input
- Loss
- Watershed

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GREAT BEAR PROJECT

MINE SITE WATER BALANCE

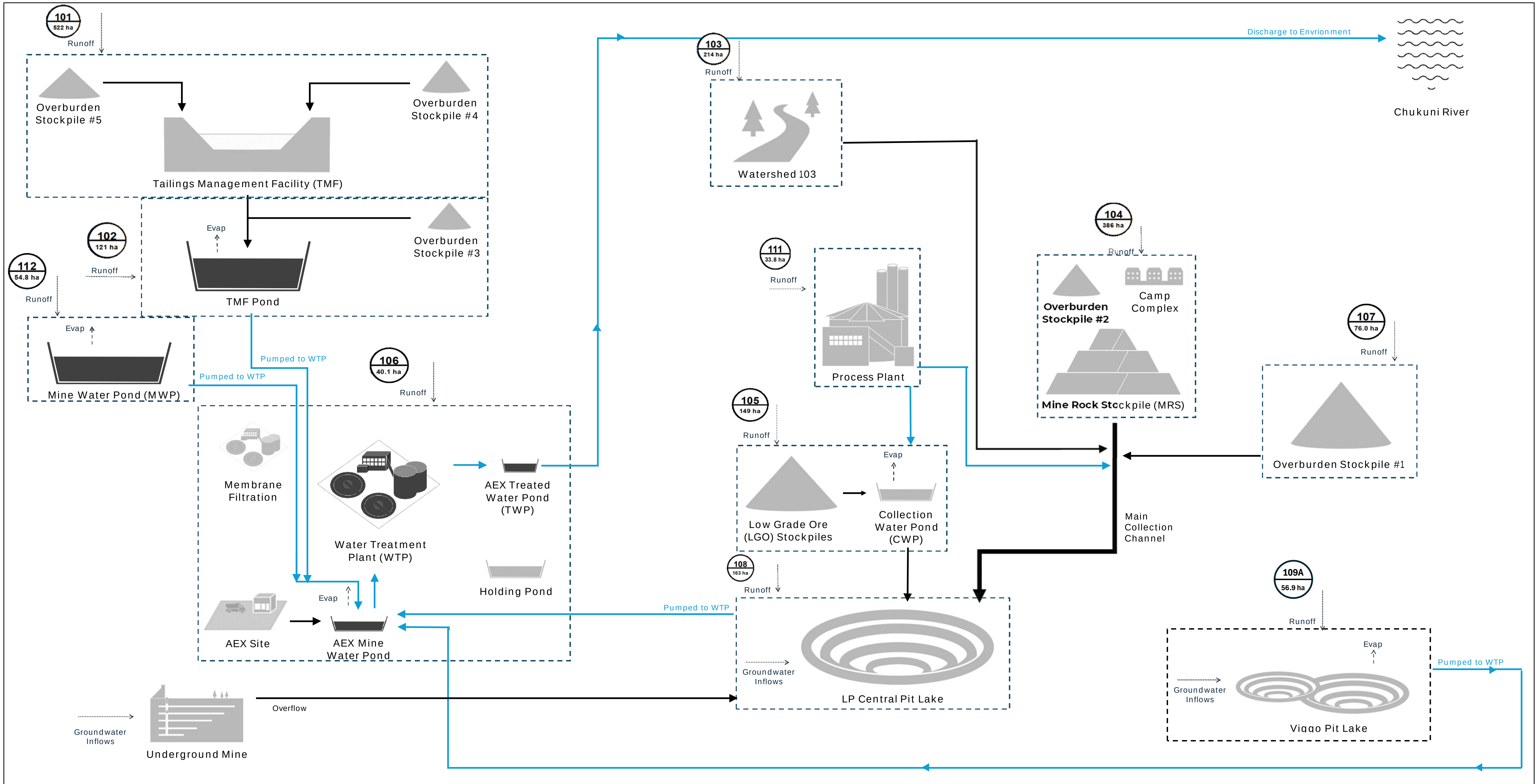
DRAWING TITLE:

FLOW SCHEMATIC - CLOSURE PHASE
DURING UNDERGROUND AND PIT FILLING

DATE:
AUGUST 2025

PROJECT NO:
OMEMA2303

FIGURE NO:
5.14-4



LEGEND:

- Reclaimed
- Potential Pumped Flow
- Gravity Flow
- Input
- Loss
- Watershed

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GREAT BEAR PROJECT

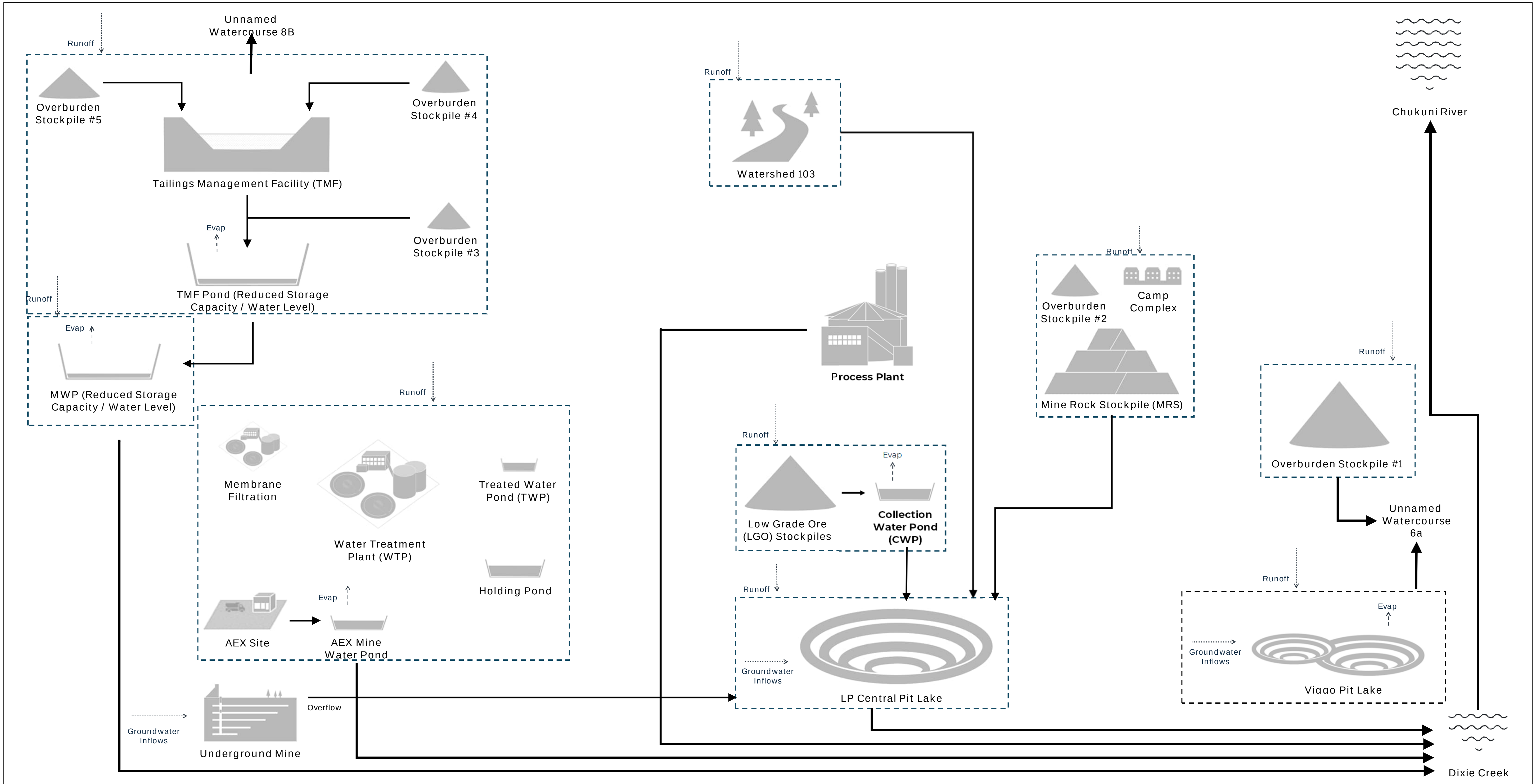
MINE SITE WATER BALANCE

DRAWING TITLE:
FLOW SCHEMATIC - CLOSURE PHASE WITH FILLED VMF / LP CENTRAL / UNDERGROUND MINE (WATER TREATMENT CONTINUING)

DATE: AUGUST 2025

PROJECT NO: OMEMA2303

FIGURE NO: 5.14-5



LEGEND:

Reclaimed
Passive Gravity Flow
Input
Loss
Watershed

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GREAT BEAR PROJECT

MINE SITE WATER BALANCE

DRAWING TITLE:

FLOW SCHEMATIC - POST - CLOSURE

DATE:
AUGUST 2025

PROJECT NO:
OMEMA2303

FIGURE NO:
5.14-6

5.15 Fuel and Chemicals, Storage and Management

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

- Process-related chemicals and reagents (Section 5.6, Table 5.6-2)
- Fuels (diesel, gasoline, propane gas and compressed natural gas)
- Equipment maintenance materials (oil, grease, lubricants and coolants).

Table 5.15-1 provides a summary of the chemicals 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.

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.

The bulk of the liquid fuel used at the Project will be diesel needed for the heavy equipment fleet. A fuelling station will be established at the service and administration complex 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.

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.

Table 5.15-1: 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.

5.16 Waste Management

5.16.1 Solid Waste

As with all industrial operations, 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.

Table 5.16-1 provides an overview of the proposed management approach for each type of waste.

5.16.2 Domestic Sewage

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 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 building 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. The plant will be sized to treat approximately 11.5 m^3/hr, and will have holding tanks sized to accommodate short term fluctuations in flow. 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.

Table 5.16-1: Waste Management Approach

Waste Type	Management Approach
Domestic solid waste	Anticipated waste volumes 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 large volume representing 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	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.
Contaminated soil	Soils contaminated with hydrocarbons 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.
Domestic sewage treatment plant sludge	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.
Water treatment sludge and sediments	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	Demolition waste generated during closure will be trucked to an approved, offsite facility such as the Red Lake Regional Landfill (Environmental Compliance Approval A600903) or Ear Falls Landfill (Environmental Compliance Approval A7107001), subject to appropriate commercial arrangements.

5.17 Workforce

5.17.1 Workforce Requirements and Schedule

The majority of the workforce is targeted to be local to the area, as the Project is prioritizing local positions. Great Bear Resources proposing to attract and hire from First Nations partners and local communities before looking regionally and provincially. Great Bear Resources recognizes that some talent will need to be sourced from a larger region, including for specialty positions. This is due to the low unemployment rate in the area, lack of housing, as well as existing mining operations. Therefore, an onsite accommodation complex will be provided, to help recruit and retain employees. Contractors will be actively engaged to support consistency in approaches across the Project site.

The workforce numbers will peak during the construction phase with the majority of positions requiring skilled trades, operators and laborers, to be sourced throughout the region and nearby provinces, given the current tight labour market. Engineering studies to date support a peak construction workforce estimated as over 1,300 people in -Year 1 with approximately 1,000 people staying in onsite accommodations at any time. This workforce includes both construction-related work and open pit and underground mining development.

A peak workforce of approximately 1,100 people is expected during the operations phase, when both the open pit and underground mines are operating. When only the underground mine is operating, the site workforce decreases to approximately 700 workers. There will be occasional contractors for sustaining capital projects and short-term visitors that are not included but will be present on site.

Table 5.17-1 to Table 5.17-4 presents a list of potential operations phase positions based on engineering studies to date and other Ontario mining operations. Four primary types of positions are anticipated for the Project:

- Superintendents, supervisors and general management
- Professionals
- Skilled trades
- Operators and labourers.

The mine will operate 365 days a year excluding planned maintenance. The majority of site personnel will be required to work a rotational cycle schedule. The length of a rotation is still being analyzed to promote a human-centered approach to shift design is taken, but it is anticipated to be similar to nearby mines (seven working days followed by seven days off, with the potential for remote workers flying in being on more extended two weeks on and two weeks off. Some short-term contractors may work a 2:1 time on to time-off schedule, pending fatigue management plan approval, primarily during the construction phase. Schedules for supervisory staff may vary because of difficulty in duplicating some positions at this level.

Mining, processing and maintenance operations personnel will work 12-hour rotational shifts (day and night shift), which will require four crews in order to cover the shift cycles. Non-operator roles (i.e., managers, superintendents and technical roles) which comprise approximately 60% of the operations workforce will work day shift only.

5.17.2 Workforce Region of Origin and Transportation

The intent is that the majority of the workforce will be local to the area, but there is a recognition that mining labour may be challenging to find locally. Buses may be offered if there is sufficient interest, such from the Red Lake Municipal Airport, and from Ear Falls and Red Lake as well as local Indigenous communities to limit personal vehicle traffic on the road and reduce the risk of driver fatigue management especially post-shift and travel during poor weather conditions. Car-pooling will also be encouraged, as appropriate. Parking will be provided for staff and visitors. Shuttle buses and other dedicated site vehicles will be used to transport personnel within the site.

Busing may also be employed to gather contractors and employees from larger hubs (i.e., Thunder Bay and Winnipeg) during the construction phase to consolidate transportation to and from the Project. Out of town employees may fly into and out of the Red Lake airport during operations on commercial or charter operations.

5.17.3 Workplace Policies and Programs

Great Bear Resources, as part of Kinross Gold Corporation (Kinross), has four core values that form an integral part of how the Company conducts business in all regions:

- Putting people first
- Outstanding corporate citizenship
- High performance culture
- Rigorous financial discipline.

Kinross integrates human rights best practices into all worldwide business operations and decision-making processes. Human rights are defined in the International Bill of Human Rights, which has been adopted by the overwhelming majority of nations, including all countries where Kinross operates. While it is the duty of governments to protect human rights through the establishment and enforcement of appropriate laws, it is the duty of Kinross as a company to respect and uphold those rights. For Kinross, this means understanding the ways that company activities, and those of company vendors, could adversely impact the human rights of others, including taking reasonable measures to avoid, reduce and address those risks. Additional information regarding the social performance management system for the Project is provided in Section 18.6.1.3.

The following and other policies currently exist with Kinross Gold Corporation and Great Bear Resources, and will be implemented to promote Indigenous employment and employment of other underrepresented groups, and to promote an inclusive and safe workplace:

- Kinross Code of Conduct
- Workplace Safety
- Safety Excellence
- Education
- Employee Development and Training
- Cultural Awareness Training Programs.

The Kinross Code of Conduct, which has been embraced and will followed by the Great Bear Resources team, reflects the fundamental principles and behaviors that all persons are expected to live by:

- Respect and dignity
- Honesty
- Compliance with the law
- Equality
- Professionalism
- Accountability
- Fairness.

Kinross operates an integrity hotline where reports of activities that are believed to potentially breach the Code of Conduct can be reported without fear of retaliation.

Fair compensation, access to healthcare services, adequate housing and opportunities for skills development and career advancement are essential for attracting and retaining skilled workers. Employes are offered a number of programs including:

- Employee assistance
- Long-term disability
- Comprehensive benefits package
- Retirement program
- Employee share purchase plan and competitive total rewards package.

Workers and contractors will be required to adhere to strict safety protocols and regulations to mitigate the risks associated with a large, active industrial operation. The Project site including the camp will be a drug and alcohol-free workplace that promotes healthy lifestyle choices as a core company value. Firearms will be prohibited at the site, except for individual(s) who are authorized and trained to carry a firearm for wildlife management purposes.

Table 5.17-1: Summary of Potential Operations Phase Administration Positions

Role [(1)]	Number of Positions [(1)]
Administrative Assistant	1
Accounts Payable Clerk	2
Assistant Controller	1
Buyers	4
Continuous Improvement Manager	1
Continuous Improvement Specialist	2
Communications Coordinator	1
Community Relations Coordinator	2
Contracts Admin	2
Electrical - Site Fixed	4
Emergency Response Coordinator	2
Environmental Coordinator	2
Environmental Manager	1
Environmental Superintendent	1
Environmental Technician	2
External Relations Manager	1
External Relations Superintendent	1
Financial Analyst / Accountant	2
Fixed Site Services Handyman	4
General Manager	1
Health and Safety Coordinator	3
Health and Safety Manager	1
Human Resource Generalists	3
Human Resource Manager	2
Industrial Hygiene	1
Inventory Analyst	1
Information Technology Manager	1
Information Technology Systems Analysts	3
Materials Manager	1
Mine Technology Engineer	2
Mine Technology Manager	1
Nurse Practitioner / Physician Assistant	2
Open Pit Superintendent	2
Operations Manager	1
Procurement Manager	1
Projects Coordinator	1
Projects Engineer	2
Projects Manager	1

Role [1]	Number of Positions [1]
Security Manager	1
Security Officer	20
Security Supervisor	1
Senior Financial Analyst / Accountant	2
Senior HR Coordinator	1
Site Controller	1
Site Services Operators	4
Site Services Superintendent	1
Supervisor, People Services	1
TMF Operators	4
Trainers	2
Training Superintendent	1
Underground Superintendent	2
Underground Trainers	2
Warehouse Administrator	1
Warehouse Superintendent	1
Warehouse Technician	10
Water Treatment Operator	4
Water Treatment Supervisor	1

Note:
1. Information should be considered preliminary and is subject to change as additional information becomes available.

Table 5.17-2: Summary of Potential Operations Phase Processing Positions

Role (1)	Number of Positions (1)
Chief Metallurgist	1
Control Room Operator	4
Electrical Apprentice	1
Electrical Journeyman	12
Instrument Technician	1
Laboratory Supervisor	2
Laboratory Technician	4
Maintenance Planner	2
Maintenance Superintendent	1
Maintenance Supervisor	2
Mechanical Apprentice	1
Mechanical Journeyman	16
Metallurgical Technician	2
Metallurgist	1
Metallurgical Technologist	2
Mill Trainer	2
Operations Superintendent	1
Plant Helper	4
Plant Operators - Crushing	4
Plant Operators - Elution / Carbon handling	4
Plant Operators - Flotation / Thickeners	4
Plant Operators - Grinding / Gravity	4
Plant Operators - Leach / CIP / Detox	4
Plant Operators - Lead Hand	4
Plant Refiner	1
Process Control Technician	1
Process Manager	1
Sample Preparation Technician	6
Senior Metallurgist	1
Shift Supervisor	4

Note:
1. Information should be considered preliminary and is subject to change as additional information becomes available.

Table 5.17-3: Summary of Potential Operations Phase Underground Positions

Role [(1)]	Number of Positions [(1)]
Administrative Assistant	1
Backfill (Pastefill) Operator	12
Blockholer Operator	4
Bolter Operator	36
Boom Truck Operator	8
Cable Bolt Operator	8
Chief Mine Engineer	1
Concrete Agitator Operator	16
Construction Miner	12
Core Geologist	2
Development Charge-up	16
Development Scoop Operator	12
Development Services	20
Development Truck Operator	12
Drill and Blast Engineer	2
Drill Doctor	2
Electrical Planner	1
Electricians - Beat	8
Electricians - Construction & UG Power	4
Electricians - Lead	4
Electricians - PM's	4
Expeditor (Shipments)	3
Fuel/Lube Truck Operator	12
Garbage Services	8
Geotech Technician	1
Grader Operator	4
Instrumentation	4
Instrumentation / Network Tech	4
Jumbo Operator	20
Long Term Planning Engineer	2
Mechanics - Fixed Plant	8
Mechanics - Fixed Plant - Lead	1
Millwright	2
Mine Clerk – Day / Night	2
Mine Control Room - Leader	1
Mine Labourer	8
Mine Supervisors - Development	4
Mine Supervisors - Fixed Plant	4

Role [1]	Number of Positions [1]
Mine Supervisors - Production	4
Mine Surveyor	2
Mine Ventilation Engineer	2
Mobile Maintenance - Lead Mechanic	4
Mobile Maintenance Mechanic	16
Mobile Rockbreaker Operator	4
Parts / Storeman	4
Planner - Fixed Equipment	1
Planner - Mobile Equipment	1
Production Charge-up	16
Production Charge-up Helper	16
Production Drill Operator	16
Production Geologist	2
Production Scoop Operator	16
Production Truck Operator	16
Raisebore Operator	8
Rough Terrain Forklift Operator	12
Scissor Truck Operator	20
Short Term Planning Engineer	1
Shotcrete Operator	5
Shotcrete Operator	7
Site Cleaner	8
Sludge Truck Operator	12
Superintendent - Backfill and Construction	1
Superintendent - Development	1
Superintendent - Logistics	1
Superintendent - Planning	1
Superintendent - Production	1
Superintendent - Maintenance	1
Supervisor - Electricians	4
Supervisor - Mechanics	4
Surveyor Technician	2
Technical Services Manager	1
Tire Crew	4
Underground Operations Manager	1
Ventilation Technician	2
Welders	4

Note:
1. Information should be considered preliminary and is subject to change as additional information becomes available.

Table 5.17-4: Summary of Potential Operations Phase Open Pit Positions

Role [(1)]	Number of Positions [(1)]
Blaster Helper	8
Drill and Blast Engineer	2
Database Geologist	1
Dispatcher	4
Dozer Operators	20
Engineering Supervisor	1
Grade Control Technician	14
Ground Control Engineer	2
Ground Control Technician	2
Lead Blaster	2
Maintenance Planners	8
Maintenance Superintendent	2
Mine Foreman	2
Mine Manager	1
Mine Planners (Production Engineer)	4
Mine Trainer	1
Mining Technician	2
Mobile Mechanics	87
Mobile Supervisors	4
Open Pit Truck Operators	84
Open Pit Superintendent	1
Other Support	28
Production Drillers	24
Production Geologist	4
Senior Geologist	2
Senior Mine Engineer (Long Range)	3
Shifter	4
Short Range Planner	2
Shovel Operator	32
Surveyor Supervisor	2
Surveyors	6
Systems / Dispatch Engineer	2
Welders	12

Note:
1. Information should be considered preliminary and is subject to change as additional information becomes available.

5.18 Off-Property Facilities and Infrastructure

No off-Property Project facilities or infrastructure are proposed, with the exception of offices and similar, proposed to be leased in existing buildings. A Project office is currently located in Red Lake, Ontario and corporate headquarters are in Toronto, Ontario. Other space / lands may be leased as needed, such as to support hiring, training and other activities.

5.19 Conceptual Closure Plan

5.19.1 Overall Approach

Closure of the Project will be governed primarily by the *Mining 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, and 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.

The Great Bear Resources approach to mine closure is to plan for rehabilitation in the Project design and initiate the work early as practical (progressive reclamation) with the objective of incorporating site specific knowledge and information through the mine life cycle. In addition to applicable regulatory requirements, Great Bear Resources will also be held to the Kinross Integrated Closure Policy Statement (Kinross 2025) and Mine Closure Standard. The Standard requires integration of closure planning in all stages of a mine's life cycle from initial project planning. Each site is required to maintain a current Closure Plan. Formal risk assessments are conducted during project planning and updated as mining progresses to ensure closure objectives are met. Progressive reclamation activities are incorporated into the mine planning process to minimize environmental impact and promote a smooth transition to post-mining land use. Two years prior to final closure, detailed execution planning begins with a dedicated multi-disciplinary closure team.

Kinross is experienced with mine closure and has successfully closed other mining projects. Members of the Lac Seul First Nation and Wabauskang First Nation had the opportunity to view the approach to integrated closure directly during a tour of the Bald Mountain Mine located in Nevada, United States in 2024.

The overall closure objective for the Project is to reclaim the affected lands to a naturalized and productive condition when mining ceases. The terms naturalized and productive are interpreted to mean a rehabilitated site without infrastructure (unless otherwise negotiated), that is capable of supporting plant, wildlife and fish communities, and other applicable land uses, although different from the existing baseline conditions. The PA will be actively and passively revegetated to support plant and wildlife communities, which could support future Indigenous traditional practices. Other land uses may be considered if raised through ongoing consultation and engagement activities including with local Indigenous Nations.

Community feedback during consultation and engagement affirms the importance of surface water and groundwater to closure planning. Great Bear Resources recognizes and respects the importance of Nibi (water), and acknowledges our collected responsibility to protect Nibi today and for future generations. The approach to closure proposed is respectful of this shared responsibility. The approach to water management during the closure phase incorporates best management practices and provides a comprehensive water management approach that is protective of the environment into post-closure.

Closure of the Project after operations cease will entail three primary periods, sequentially:

- Active closure period (three years):
  - The majority of the physical decommissioning, demolition and rehabilitation is completed

- Site contact waters are re-routed to fill the mine and discharge of treated contact waters to Chukuni River is discontinued
- Underground mine, LP Central pit and VMF are being actively filled with water from the Chukuni River
- Covers are placed and stockpiles, the TMF and general site areas are revegetated as needed

- Passive closure period (at least one additional year):
  - Active and passive filling of the LP Central pit, VMF and underground mine is completed to interim levels within one additional year
  - Water levels are maintained at this level until water quality acceptable for passive discharge to the environment with excess water is treated and discharged to the Chukuni River
- Final closure period (less than one year):
  - Water quality is acceptable for passive discharge to the environment, and water levels are allowed to rise to steady-state levels
  - Residual Chukuni River pipelines and other remaining site infrastructure are decommissioned
  - Passive discharge from the reclaimed site to the environment.

5.19.2 Progressive Reclamation

Rehabilitation activities that can be performed during the construction phase or operations phase (i.e., prior to the end of operations) and that do not constrain ongoing mining operations and activities will be considered for progressive rehabilitation. Progressively reclaiming facilities and site features where practical, is considered a best practice and reduces the amount of work required during the closure phase, and can shorten the length of the closure phase. 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 progressive reclamation measures or similar (pending regulatory review and detailed design), are proposed to be completed during the construction (C) and operations (O) phases:

- Recontouring and revegetation of areas disturbed during construction activities that are not needed during operations (C, O)
- Decommissioning and salvage of equipment and infrastructure when no longer needed (C, O)
- 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 (O)
- 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 (O)

- 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 runoff control if appropriate (O)
- Progressive shaping, covering and revegetating the PAG MRS as maximum stockpile extent is achieved (O)
- As stockpiled low grade ore (LGO1 and LGO2) is processed, the depleted ore stockpile areas may be progressively reclaimed which is anticipated to include (O):
  - 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.
- Placement of 0.3 m cover of overburden on the TMF surface and revegetation if a final surface becomes available and accessible during operations (O).

Other measures that could be completed during operation to expedite final reclamation 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.

5.19.3 Final Reclamation

The approach to final reclamation described in this section is consistent with the requirements of the *Mining Act* per the Mine Rehabilitation Code. Information has been provided to support the assessment of effects during the closure phase of the mine. A regulatory Closure Plan with additional details will be completed prior to physical disturbance associated with the Project. A preliminary draft of the future regulatory Closure Plan focussed on the technical aspects pertinent to the Impact Statement, is provided in Appendix S.

5.19.3.1 LP Central Pit

Once mining is completed, pit dewatering will cease and the following measures will be taken to reclaim the LP Central pit, 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 pit lake level 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

- Develop a spillway 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 Project site plan has purposefully been designed so that at closure, runoff from a large portion of the PA including the primary stockpiles, will drain by gravity into the LP Central pit. This provides an opportunity to monitor runoff while collecting in a central location, allowing the contingency of pit lake water treatment to be implemented if required. Great Bear Resources proposes to enhance this passive 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, and increase the safety at the site when there less workers present.

Great Bear Resources proposes to reduce the length of time until the LP Central pit lake reaches a stable water level by pumping fresh water from the Chukuni River and other site runoff water to the LP Central pit (Figure 5.14-4). 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 (and VMF and underground mine). With active fresh water filling, the filling of the LP Central pit will be completed within about four years after end of operations (longer than the VMF or underground mine). The required fresh water taking at the maximum pipeline capacity, will be approximately 3% of the flow in the Chukuni River during the driest month.

Water level and water quality will be monitored while the LP Central pit is filling with water to confirm predictions on pit lake water quality and the ability to meet regulatory requirements to allow passive discharge when 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 all quality requirements, the water level will be allowed to rise to the final elevation which will be controlled by means of a spillway connected to the residual channel of Unnamed Watercourse 3 which flows to Dixie Creek.

5.19.3.2 Portals, Raises and Shafts

The Project will include the following mine openings at surface:

- Two portals
- One shaft with headframe
- Seven raises (exhaust and fresh air).

Measures to be taken to reclaim the underground workings at closure will include:

- Remove infrastructure and equipment within the underground workings
- Investigate and if needed, clean up waste explosive materials and contamination related to equipment malfunctions (such hydrocarbons and other fluid spills).

The underground mine would naturally fill with groundwater inflow in about 22 years. Great Bear Resources is proposing to reduce this time to less than approximately three years, by filling with fresh water from the Chukuni River. 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.

Openings to underground be appropriately secured during active closure to prevent inadvertent access. The shaft and raises will be secured with reinforced concrete cap caps designed by a qualified professional engineer to meet *Mining Act* requirements.

The two portals established during the AEX Program will be backfilled with NPAG mine rock or otherwise consistent with the provincial *Mining Act* requirements at the time. The box cut walls will be re-sloped at 3H:1V or the box cut will be backfilled flush with surface.

5.19.3.3 Tailings Management Facility

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. The TMF surface will be covered with a layer of overburden amended as needed to support plant growth. This cover will be revegetated either progressively or at closure with non-invasive 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 rockfill check berms for erosion control (wind / runoff) or other elements may be added if needed.

5.19.3.4 Viggo Management Facility

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. The NPAG tailings cover is designed to restrict the exchange between the concentrate tailings and the permanent water cover.

Early in the active closure phase (or near the end of the operations phase), the reject solution temporarily stored in the west VMF will be pumped into the underground workings at depth.

The VMF will fill with water naturally from direct precipitation, groundwater inflow and localized runoff once operation of the VMF ceases. Great Bear Resources propose to actively fill the VMF with fresh water from the Chukuni River to expedite filling, to enhance this passive water filling and minimize the length of time until the water reaches and stabilizes at the natural groundwater level. 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). The water-filled facility, based on current hydrogeological modelling and the Viggo pit design, including with respect to climate change predictions, is expected to remain as an isolated pit lake. If determined to be needed later in the mine life, a channel will be constructed connecting the VMF pit lake to the LP Central pit lake to control the VMF pit lake level so that it will not overflow directly to the environment.

5.19.3.5 Mine Rock Stockpile

The majority of the PAG MRS is anticipated to reach final extent and contours when mining at the LP Central pit ceases, and will be progressively rehabilitated where practical, during the operations phase. The MRS will be reshaped if needed for long-term stability, and a cover will be placed to limit water and oxygen entry. The PAG MRS will be seeded for plant growth.

The NPAG stockpile will be covered with a layer of growth media (overburden, amended if needed), sufficient for vegetative growth. This may be completed progressively during operations; however an area will be left to allow for extraction of NPAG for use during the closure phase.

Some of the overburden material may infill mine rock voids on the PAG and NPAG MRS, the final overall appearance is expected to be a mixture of rock faces with vegetative growth, providing varied habitat. Revegetation of the covered PAG and NPAG MRS is expected to occur through seeding with commercially available species. Native plants species will be preferentially use as practical, and invasive species will not be used. This may be supplemented by hand planting of tree seedlings.

5.19.3.6 Ore Stockpiles

Ore stockpiled in the ROM, LGO1 and LGO2 during the construction and operations phases, will be processed prior to the start of closure. Reclamation of the areas will be progressively reclaimed during operations (Section 5.19.2). If there is stockpiled ore or ore stockpile areas that are not fully reclaimed when operations cease, the stockpile(s) will be reclaimed in the manner described in Section 5.19.2.5 for the PAG MRS.

5.19.3.7 Overburden Stockpiles

The overburden stockpiles located near the TMF (OVB3, OVB4 and OVB5) are projected to be fully depleted or lowered to single lifts after overburden is extracted for reclamation of the TMF surface. OVB1 and OVB2 will be utilized to cover the PAG MRS and facilitate other closure requirements around the PA; however, both OVB1 and OVB2 are expected to have a residual stockpile after reclamation is complete. An initial materials balance suggests that up to approximately 9 Mm^3 of overburden will remain stored on surface, primarily in OVB1 and OVB2. Once depleted as needed, the stockpile areas or residual stockpiles will be recontoured to promote natural drainage patterns, and revegetated with commercially available seeds to minimize the potential for future erosion.

5.19.3.8 Buildings Machinery and Equipment

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. Concrete foundations will be broken in place, infilled with overburden, or NPAG mine rock as needed covered with overburden, and revegetated.

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 offsite 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.

Once no longer required to support site activities, pipelines will be purged and cleaned if needed, cut and removed from the site for re-use, scrap or disposal. Empty tanks will be sold as scrap, re-used off site, or disposed of in an approved facility.

5.19.3.9 Petroleum Products, Chemicals and Explosives

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.

An environmental site investigation will be conducted at the end of operations or early in the closure phase. Surficial materials found to exceed acceptable criteria will be remediated on site or transported to an approved disposal facility off site.

5.19.3.10 Roads and Power Distribution

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 the Ministry of Natural Resources.

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.

Power will be required at closure to support infrastructure such as pumping and water treatment, until such time that water treatment and power are no longer available. Power-related infrastructure not required for the closure phase will be decommissioned with the other equipment and infrastructure. It is anticipated that the natural gas infrastructure will be removed and the transmission line infrastructure retained to support closure. Once power is no longer needed, remaining power-related infrastructure will be removed and disposed of in accordance with regulatory requirements.

5.19.4 Expected Site Conditions Post-Closure

The primary changes to the topography are: additional revegetated raised areas (rehabilitated TMF, MRS and overburden stockpiles), additional large waterbodies (LP Central pit lake and VMF pit lake) and expanded smaller fish-bearing waterbody in the upper reaches of Unnamed Watercourse 6.

5.19.4.1 Topography

The terrain within the PA 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 (Figure 5.14-6)
- Isolated pit lake at the VMF (an overflow channel to the LP Central pit lake will be created if needed)

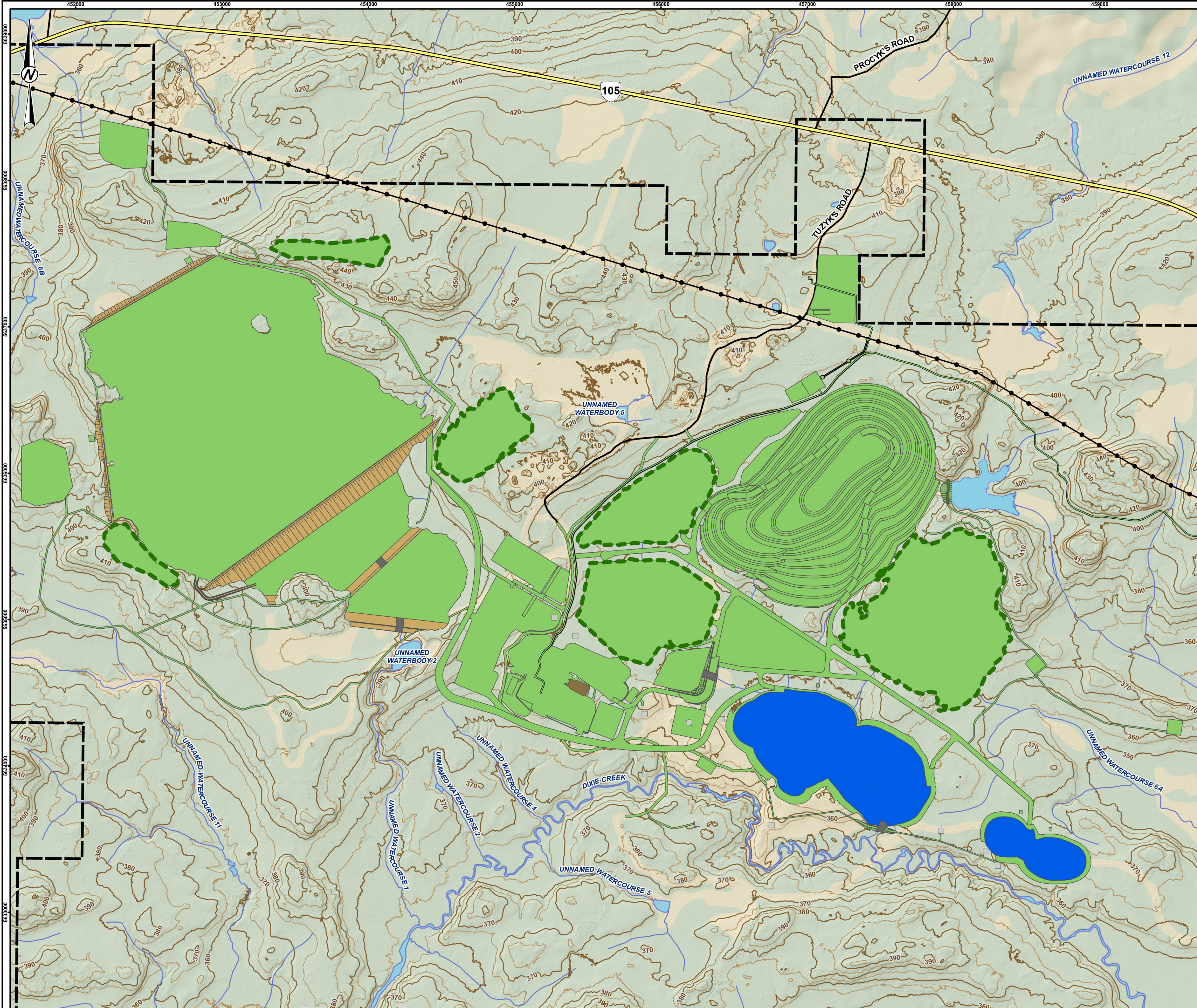
- Flattened, revegetated terrain associated with the aggregate extraction areas (BS3, BS3B and Q1)
- Enhanced fish-bearing pond in the upper reaches of Unnamed Watercourse 6B
- Residual revegetated flood protection berm, which except at Unnamed Watercourse 3 where it will be breached, will be a few metres 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.

5.19.4.2 Land Use and Vegetation Communities

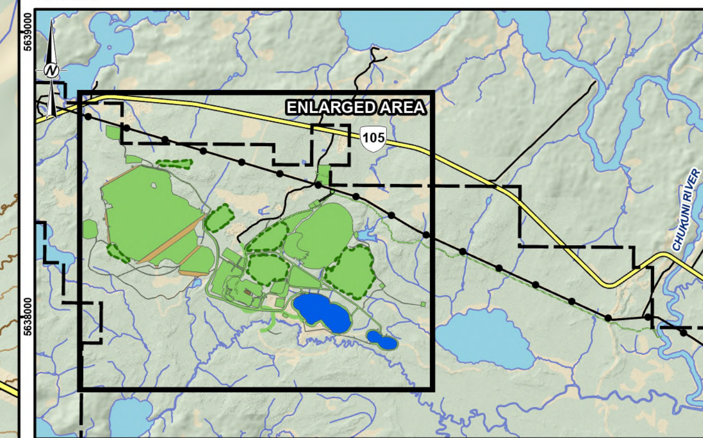
The Project is located in an area in which forestry, and traditional and recreational pursuits (i.e., hunting, fishing and trapping use) are the dominant non-mining land uses. The revegetation program for the Project is proposed to use a mix of commercially available, native species combined with natural revegetation and vegetation succession. Revegetation species will be selected to encourage wildlife to re-enter and use the area once vegetation is re-establishing. This may support future hunting and gathering of traditional medicines or foods within the reclaimed PA in the future.

5.19.4.3 Fish Habitat

Fish habitat will be increased through 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 as provided for in the fisheries offset and compensation plan (Appendix L-2).



KEY MAP



SCALE: 1:175,000

LEGEND

- PROPERTY 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 / FLATTENED MINE FEATURE
- WATER-FILLED OPEN PIT
- OVERFLOW CHANNEL / SPILLWAY
- ENGINEERING CAP

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. 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
PRELIMINARY POST-CLOSURE LANDSCAPE

CONSULTANT

wsp

YYYY-MM-DD	2026-03-31
DESIGNED	----
PREPARED	MD
REVIEWED	----
APPROVED	SD

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	5.19-1

5.20 Project Optimizations since Impact Assessment Planning Phase

The Project has been planned and designed to avoid adverse environmental effects through the careful configuration of Project components, and use of economically and technically feasible control technologies. Extensive study, analysis and consultation has informed the following optimizations that have occurred since the Detailed Project Description was issued during the Impact Assessment Planning Phase.

The location of Project components have been optimized with the additional information gained during site investigations and ongoing engineering activities, with an overall goal of maintaining a compact footprint to minimize disturbance to the natural environment. Refinements also include strategic placement of facilities, such as stockpiles upgradient of open pit for efficient seepage collection and avoid waterbodies and watercourses as reasonable.

- Primary site plan optimizations since the Detailed Project Description was issued:
  - Reduction in the eastern extent of the stockpiles toward Unnamed Waterbody 6 and the TMF footprint
  - Water management infrastructure including the number and location of ponds and effluent discharge location has been refined
  - A fish compensation area including a pond (east pond) and channel improvement northeast of the MRS, and new pond complex within the Dixie Creek floodplain
  - Footprint of the LP Central Pit has been reduced and the Discovery Pit will no longer be developed
  - A flood protection berm is proposed south of the LP Central pit
  - Infrastructure south of Dixie Creek has been minimized.
- TMF:
  - Design and operations will follow Mining Association of Canada / Canadian Dam Association guidelines
  - An independent board of experts (Independent Tailings Review Panel) has been established to review and advise on the design, construction, operation, performance and closure of the TMF
  - The Panel was established earlier than for most mining projects, well in advance of construction, to provide review and advice from detailed design going forward
- VMF:
  - Viggo pit will be mined during the construction period which is earlier than initially proposed, to provide construction rock for building
  - After depletion during construction, it will be repurposed for reject solution storage during the operations phase (west VMF); and water management during the operations phase and permanent storage of concentrate tailings (east VMF)
  - By using this approach, a separate facility on surface is not required for temporary storage of reject solution, and concentrate tailings will be continuous stored under a water cover to limit oxidation while also avoiding the need for a separate surface facility

- Additional water treatment:
  - Contact water will be collected, recycled and re-used as reasonable
  - Excess waters will be treated to meet or exceed regulatory standards
  - Proven, industry standard treatment methods will be used, supplemented by selective use of membrane filtration.

Further detail is provided in Table 5.20-1.

Additional Project optimizations may occur as a result of ongoing consultation and engagement, progression of detailed design, and regulatory feedback during the environmental approvals processes.

Table 5.20-1: Changes to the Project since Detailed Project Description

Changes to the Project [1]	Reason for Change
Optimization of site plan including refinement to the Project layout to reflect increased geotechnical (subsurface), engineering knowledge and expanded land tenure to Highway 105 (Figure 5.2-1 and Figure 5.2-2), primarily: • Change to two open pits from three (Section 5.4.2; Discovery pit is no longer being developed which frees up that area for other Project facilities and activities) • Reduced surface footprint for LP Central pit (Section 5.4.2.2) • Expanded Viggo pit and development of two lobes to provide additional construction material • TMF layout and dam design, and reduction in overall TMF footprint (Section 5.7.2) • Strategic placement of stockpiles upgradient of open pit for efficient seepage collection, to avoid waterbodies and watercourses as reasonable, and provide an overall reduction in footprint (Section 5.5) • Establishment of segregated storage areas for potentially acid generation and non-potentially acid generating mine rock within a single stockpile (Section 5.5.2) • Placement of overburden stockpiles from construction of the TMF closer to the TMF, to support reclamation activities at the TMF (Section 5.5.1) • Reduction in scale of facilities south of Dixie Creek, currently limited to a fresh air raise from the underground workings (Figure 5.2-1 and Figure 5.2-2) • Establishment of water management collection pathways, and refinement of arrangements and connections of contact water ponds to improve water management efficiency (Figure 5.2-1 and Figure 5.2-2; Section 5.1.4) • Addition of a Dixie Creek flood protect berm (Section 5.4.1.5) • Identification of proposed dedicated rock quarries and sand and gravel pits (Section 5.10) • Refinement of building arrangements and camp location (Figure 5.2-1 and Figure 5.2-2) • Removal of one of the explosives magazines on surface (Figure 5.2-1 and Figure 5.2-2) • Inclusion of the east pond and east channel proposed as part of fish compensation and offsetting measures (subject to regulatory approval; Section 5.9)	• Reduced direct and indirect terrestrial habitat loss during construction and operations phases • Improved mitigation of potential effects to surface water and groundwater, flows, levels and quality during all Project phases and post-closure • Reduced potential for malfunctions related to major precipitation events and flooding primarily during the construction and operations phases • Reduced potential for changes to the environment off Property

Changes to the Project [1]	Reason for Change
• Refinement of Chukuni River pipeline corridor reflecting changes made to the alignment for the AEX program, to accommodate local topography to minimize pumping requirements (Figure 5.2-1 and Figure 5.2-2) • Relocation of effluent discharge location further downstream for improved natural mixing and attenuation (Figure 5.2-1 and Figure 5.2-2; Section 5.14.8)	
Addition of a new circuit to the process plant to segregate the tailings stream into a non-potentially acid generating tailings and potentially acid generating tailings, to support more effective management (Section 5.6.3)	• Improved mitigation of potential effects to surface water and groundwater quality for all Project phases and post-closure
Greater internal site management of contact waters including ditching and seepage collection ponds (Section 5.14), and enhanced water management	• Improved mitigation of potential effects to surface water and groundwater quality during construction and operations phases, and active and passive closure periods
Enhanced water treatment (membrane filtration) of select contact water streams to reduce sulphate concentrations in treated effluent (Section 5.14.7)	• Improved mitigation of potential effects to surface water during operations and closure phases, and post-closure
Re-use of the Viggo pit during the operations phase for temporary storage of membrane filtration reject solution (west VMF; Section 5.14.7), permanent storage of concentrate tailings (Section 5.7.3) and contact water management during operations and active closure phases (east VMF; Section 5.7.3).	• Improved mitigation of potential effects to surface water and groundwater quality for all Project phases and post-closure
Establishment of proposed onsite facilities to compensate and offset loss of fish habitat (including east pond, east diversion channel and compensation ponds within the Dixie Creek floodplain)	• Mitigation of potential effects to fish and fish habitat from the construction and closure phases

Note:
1. This table provides a summary of key changes made to the Project as originally proposed in the Detailed Project Description including the reasons for these changes, as required by Section 3.4 of the Tailored Impact Statement Guidelines. Additional details are provided in the facility descriptions in Section 5 with applicable section references provided in brackets.

5.21 References

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