KINROSS Great Bear

Great Bear Gold Project
Impact Statement

Section 2: Environmental Setting

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Acronyms and Abbreviations

AAQC	Ambient air quality criteria
AEX	Advanced exploration program
ANA	Asubpeeschoseewagong Netum Anishinabek
CCME	Canadian Council of Ministers of the Environment
CHL	Cultural heritage landscapes
COSEWIC	Committee on the status of endangered wildlife in Canada
DO	Dissolved oxygen
DOC	Dissolved organic carbon
ECCC	Environment and Climate Change Canada
FMU	Forest management unit
L_d	Daytime sound level
L_n	Nighttime sound level
L_{dn}	Day-night sound level
LSFN	Lac Seul First Nation
MCM	Ministry of Citizenship and Multiculturalism
MDL	Method detection limit
MECP	Ministry of Environment, Conservation and Parks
MNR	Ministry of Natural Resources
NAPS	National air pollutant surveillance
NWOMC	Northwestern Ontario Métis Community
PA	Project area
PM_{10}	Particulate matter < 10 micrometres
$PM_{2.5}$	Particulate matter < 2.5 micrometres
POR	Point of reception
Project	Great Bear Gold Project
Property	Great Bear Property
SFL	Sustainable forest license
SAR	Species at risk
SPM	Suspended particulate matter
TID	Total invertebrate diversity
TOC	Total organic carbon
V_{PPV}	Peak particle velocity
V_{RMS}	Root-mean-square velocity
WFN	Wabauskang First Nation
WSC	Water Survey of Canada
WQG PAL	Water Quality Guideline for the Protection of Aquatic Life

2.0 Environmental Setting

The purpose of this section is to familiarize the reader with the local setting of the Great Bear Property (Property) in relation to the Great Bear Project (Project) and provide regional context to support the assessment of effects and alternatives. The details provided in this section are based on the existing baseline studies that have been conducted on site, including those appended to the Impact Statement, as well as published information.

2.1 Local Context

2.1.1 Overview of Historical and Current Land Use

The Project is situated in the unorganized territory, District of Kenora, in northwestern Ontario. Kenora District covers an area of 395,432 km^2.

Although somewhat remote, there are three major regional infrastructure facilities that are nearby or overlapping with the Property:

- Highway 105, Ontario Ministry of Transportation
- Regional natural gas pipeline, Enbridge Gas
- 115 kV transmission line and local distribution line, Hydro One Networks Inc.

2.1.2 Designated Land Use

Provincial Crown land use planning assigns Crown lands and waters with land use designations. These designations determine the specific uses that may occur in the area and provide overall direction. The Crown Land Use Policy Atlas identifies the Property as within land use code General Use Area G2514 (Red Lake – General Use Area). Mining-related land use activities are permitted within this area, subject to provincial review and evaluation. Present uses in G2514 include mineral exploration, forestry, cottaging, tourism, recreation, fishing, hunting and fur harvesting. The major industries in the area include mining, forestry and commercial aggregate operations.

2.1.3 Non-traditional Land and Resource Use

2.1.3.1 Mining and Mineral Exploration

The Property has not experienced historical mining operations, although there is history of grassroots exploration as described in Section 5.1.

Great Bear Resources is continuing surface exploration to assess the mineral potential of the Property. An Advanced Exploration (AEX) Program has been initiated by Great Bear Resources near the centre of the Property to extract a bulk ore sample. The objective of the AEX Program, along with ongoing surface exploration drilling, is to collect information to assist with engineering design. The bulk ore sample will be transported off site to a mineral testing facility. Further information is provided in Section 5.6.

2.1.3.2 Forestry and Aggregate Operations

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

There are seven aggregate operations located within the Project Area (PA) that are not part of the Project. Lafarge Canada currently operates a commercial sand and gravel pit on Tuzyk's Road on lands they hold that are located within the overall Property boundary. There are other smaller properties held for aggregate resources along Tuzyk's Road, some of which have had previous extraction. Great Bear Resources has been in discussions with these land holders regarding the proposed development of the Project and use of Tuzyk's Road as the primary Project access to Highway 105, as well as other aspects.

2.1.4 Traditional Land and Resource Use and Indigenous Knowledge

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

Publicly available information regarding ongoing land claims and assertions by Indigenous Nations is provided in Table 2.1-1. Great Bear Resources understands that LSFN has advanced preliminary work and drafting to support the establishment of a Lac Seul Land Code that would apply to Reserve lands. Great Bear Resources is not aware of any additional land codes currently in progress for potentially affected Indigenous Nations.

Indigenous knowledge related to the environmental setting of the Project has been provided within confidential reports prepared for WFN, LSFN and NWOMC. Indigenous knowledge was not received from ANA although funding has been provided.

WFN completed a mapping study to investigate traditional land and resource use in the PA. The study showed that there were no trapping locations, or sacred or cultural sites within the PA. There are Pike and Whitefish fishing sites in waterbodies surrounding the PA, and blueberry picking sites within the PA. There are hunting sites within the PA for Moose, Deer and Grouse.

LSFN identified waterfowl hunting at the Wild Rice stand including along Pakwash Lake and Chukuni River. Hunting is also common in the area surrounding the Property, both by local communities and by guests at local resort camps. Traplines are also present in the vicinity of the PA. Fishing is common in lakes surrounding the PA, including Pakwash Lake, Chukuni River and Gullrock Lake. Wild Rice harvesting areas were identified in the vicinity of the Property on Pakwash Lake. No known archaeological sites on the Property were identified by LSFN; however, they note that the regional area includes travel routes and village / camp sites.

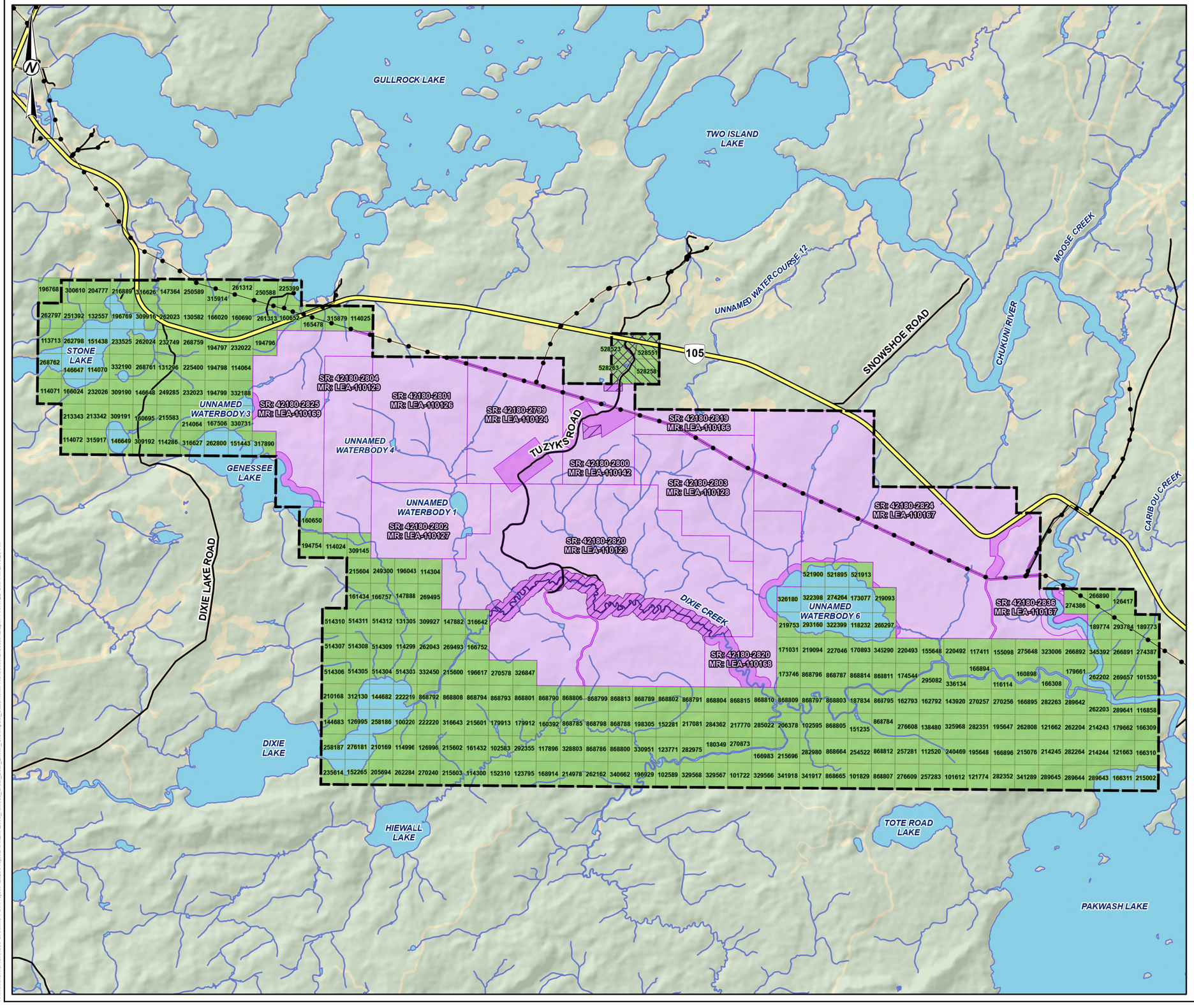
A confidential study completed on behalf of the NWOMC determined that Métis people have been conducting harvesting activities within a 100 km radius of the Property, including harvesting of Moose, Walleye, Northern Pike, Perch, Partridge, Grouse and Bass. Indigenous people have also harvested various plant species within this 100 km buffer.

2.1.5 Land Tenure

Great Bear Resources is the 100% owner of the 11,780 ha Property consisting of mining claims and leases, located in the unorganized townships of Faulkenham Lake, South of Byshe, Dixie Lake and Bruce Lake. There are a number of land tenure exclusions within the Property boundary, including for regional infrastructure and aggregate lands (Figure 2.1-1). These facilities are not in conflict with the proposed Project, and lands associated with these facilities and land tenure held by others will be avoided by the Project. The process to lease surface and mining rights for a portion of the Property proposed for development by Great Bear Resources was initiated with the Ministry of Energy and Mines and the required leases have been obtained or are in progress.

Table 2.1-1: Ongoing Claims and Assertions by Indigenous Nations

Indigenous Nation	Ongoing Claims and Assertions
Lac Seul First Nation (LSFN)	LSFN is negotiating a 2014 claim relating to the failure to set aside lands selected by the Nation around Bruce Lake as Reserve lands pursuant to Treaty 3.
Wabauskang First Nation (WFN)	WFN and ANA submitted a joint claim to the provincial and federal governments in 1993, asserting that they did not receive all the land to which the Nations were entitled under Treaty 3. Ontario accepted the claim for negotiation in March 2011 and proceeded with negotiations. The federal government accepted the claim in October 2019, and negotiations between the four parties began in early 2020.
Asubpeeschoseewagong Netum Anishinabek (ANA)	
Northwestern Ontario Métis Community – Region 1 (NWMOC)	The NWOMC assert their right to harvest in large areas of Ontario. The government has accommodated Métis rights on a regional basis within the Métis harvesting territories identified by the NWOMC. An interim agreement between the NWOMC and the Ontario government recognizes the Harvester Card system. On April 30, 2018, the NWOMC and Ontario signed a new Framework Agreement on Métis Harvesting that advanced the recognition of Métis' rights in Ontario.



LEGEND

- PROPERTY BOUNDARY
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

GREAT BEAR RESOURCES LAND TENURE

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

NOTE(S)

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

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. LAND TENURE PROVIDED BY GREAT BEAR RESOURCES, MARCH 2026.
3. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
LAND TENURE

CONSULTANT

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

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2.2 Information Sources

Baseline data to support the Impact Statement were obtained from site-specific baseline studies, published sources, government databases, community and Indigenous engagement and Indigenous knowledge shared with Great Bear Resources.

The site-specific baseline studies used to support the Impact Statement include:

- Air Quality Baseline Report (Appendix D-1)
- Sound and Vibration Baseline Reports (Appendix E- 1 and Appendix E-2)
- Ambient Light Baseline and Predictive Light Assessment (Appendix G)
- Hydrogeology Baseline Report (Appendix H-1)
- Hydrology Baseline Report (Appendix I-1)
- Geochemistry Summary Report (Appendix J)
- Water Quality Baseline Report (Appendix K-1)
- Aquatic Resources Baseline Report (Appendix L-1)
- Terrestrial Baseline Environment Report (Appendix M-1)
- Socioeconomic Baseline Report (Appendix O-1)
- Cultural Heritage Report (Appendix P-1)
- Terrestrial Archaeological Assessments (Appendix Q-1)
- Marine Archaeological Assessment (Appendix Q-2)
- Climate Dataset (Appendix W-3).

The supporting baseline studies and other referenced materials are provided in the appendices listed above. Scientific names for species are provided in the detailed baseline reports. These environmental baseline studies were completed using standard practices and scientific methodology to accurately represent the baseline environment. Great Bear Resources provided opportunities for regulators, stakeholders and Indigenous communities to review and provide input on the baseline studies and monitoring plans. The following subsections provide an overview of the existing natural, social, economic, cultural and built environment conditions to support the assessment of effects and alternatives.

2.3 Meteorology and Climate

Climate data typically includes information on precipitation, temperature and wind used to support the Project water balance and flood design, general site design and operations design. The climate baseline dataset and methodology are provided in the Detailed Climate Change Dataset (Appendix W-3). Local data and methodology are provided in the Air Quality Baseline Report (Appendix D-1). The monitoring stations used to determine existing meteorological conditions are presented in Figure 2.6-1.

Meteorological data were collected at two locations (Stations 1 and 3; Figure 2.5-1) on the Property. Data were collected from September 2022 to November 2024 at Station 1 and from June 2022 to April 2024 at Station 3. The data from each location are summarized in Table 2.3-1 and Table 2.3-2, respectively. According to onsite data, the coldest months of the year at the

Property based on mean temperature measurements were January and February, and the warmest month of the year was July at Station 1 and June at Station 3.

To support the characterization of climatic conditions in and around the Project, a review of longer-term, regional records was also undertaken for climate data development. There are five Environment and Climate Change Canada (ECCC) climate stations located near the Property, with closest being Red Lake A station. While there were no precipitation data from Red Lake A station from 2014 to 2022, review of the historical data from Red Lake A and Ear Falls station concluded that the climate data from Red Lake A and Ear Falls stations shared similar trends and patterns in temperature and precipitation. Therefore, historical climate data from Red Lake A and Ear Falls stations were combined to characterize the climate conditions for the Property.

Table 2.3-1: Station 1 Onsite Meteorological Data Summary

Parameter	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec
Mean Temperature (°C)	-13.1	-12.2	-8.9	1.1	11.1	16.0	17.4	16.5	12.9	4.5	-3.8	-10.7
Mean Daily High (°C)	-10.3	-6.7	-3.0	7.0	17.9	22.6	23.9	22.4	18.6	9.3	-0.64	-7.4
Mean Daily Low (°C)	-16.4	-17.9	-14.8	-4.3	4.5	10.0	11.5	11.2	7.9	0.5	-7.1	-14.3
Maximum Temperature (°C)	5.2	4.0	12.5	19.4	31.0	33.8	31.9	30.2	31.1	24.5	17.7	3.8
Minimum Temperature (°C)	-33.6	-34.7	-26.1	-15.7	-2.3	1.8	5.0	6.2	-3.5	-9.7	-22.8	-33.2
Precipitation (mm) (3)	3.7	20.7	21.1	43.4	68.6	144.5	88.3	123.8	79.4	39.3	36.2	22.1
Mean Daily Evaporation (mm) (2)	—	—	—	—	4.3	4.6	4.5	2.7	2.2	1.8	—	—
Mean Wind Speed (km/h)	4.2	5.9	6.4	6.5	6.6	5.2	4.8	4.6	5.4	5.5	6.2	5.8
Most Frequent Wind Direction	NW	NW	NW	E	E	S	NW	NW	S	W	NW	S
Maximum Wind Speed (km/h)	19.5	21.2	24.6	26.0	25.3	23.3	21.0	20.8	24.3	23.8	22.3	21.9
Direction of Maximum Wind Speed	W	SW	E	E	SE	E	W	S	SW	SW	NW	NW
Mean Solar Irradiance (W/m^2) (4)	18.1	58.6	118.0	157.5	187.4	169.7	173.9	158.0	108.5	67.9	27.6	13.7
Maximum Solar Irradiance (W/m^2) (4)	407.1	726.0	887.0	1045.0	1121.0	983.0	970.0	948.0	951.0	755.3	538.8	221.1

Parameter	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec
Mean Barometric Pressure (mmHg) (1)	721.4	719.6	722.7	721.6	722.0	720.8	721.2	723.1	722.4	721.1	718.8	721.1
Mean Relative Humidity (%)	87.6	78.2	68.0	63.8	65.2	74.4	75.0	80.3	84.2	83.9	85.6	86.9

Notes:
From 5-minute averaging source data. Data from September 2022 to November 2024.
Barometer experienced abnormally low readings in November 2023.
Class A Evaporation, only 2023 evaporation data is included, gauge experienced unreliable measurements in 2024.
Precipitation gauge heater failed in autumn of 2023, was temporarily replaced in January 2024, temporary gauge measured high precipitation values in August and September 2024 when compared to Ear Falls. Temporary gauge was replaced in October 2024.
Solar irradiance sensor was replaced in summer of 2024.

Table 2.3-2: Station 3 Onsite Meteorological Data Summary

Parameter	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec
Mean Temperature (°C)	-14.2	-9.5	-8.8	1.4	13.2	18.3	16.2	16.4	12.2	4.4	-3.9	-8.8
Maximum Temperature (°C)	7.8	5.0	13.6	20.0	30.2	33.6	29.7	28.1	31.4	25.8	18.5	5.3
Minimum Temperature (°C)	-36.2	-35.8	-30.0	-23.7	-1.3	1.4	2.6	3.0	-4.0	-11.0	-26.5	-37.7
Mean Wind Speed (km/h)	5.4	8.6	11.9	9.3	6.4	4.1	5.2	4.2	4.4	7.4	10.0	9.3
Maximum Wind Speed (km/h)	24.9	27.3	35.6	33.3	22.2	31.9	43.6	24.0	27.2	26.6	32.1	26.5

Note:
From 5-minute averaging source data; Data from June 2022 to April 2024. Minimal data collected in winter of 2022 / 2023.

2.4 Air Quality

Air quality baseline data were used to characterize the local and regional ambient air quality prior to construction and operations of the proposed Project. The monitoring stations used to determine the existing conditions are presented in Figure 2.6-1. Detailed methodology and results are reported in the Air Quality Baseline Report found in Appendix D-1.

Baseline ambient air quality at the Property is influenced by natural sources, such as pollen from vegetation and wildfire-related air pollutants, as well as anthropogenic sources, such as traffic, construction, heating of buildings, wind-blown particulate from exposed areas, mining and power generation in the local area. Air quality is also influenced by transboundary transport of air contaminants from outside the local area. During construction and operations of the Project, the main sources of air emissions are expected to include fugitive dusts and Criteria Air Contaminants from fuel combustion.

Suspended particulate matter (SPM) concentrations measured a 90th percentile concentration of 21.4 µg/m^3, a geometric mean of 4.5 µg/m^3 and an arithmetic mean of 8.0 µg/m^3. SPM concentrations were generally higher in the summer than in the winter. No concentrations above the 24-hour Ministry of Environment, Conservation and Parks (MECP) Ambient Air Quality Criteria (AAQC) of 120 µg/m^3 were measured. SPM measurements from 2022 and 2023 showed no notable differences.

The majority of metals were present in concentrations below the method detection limit (MDL) used by the laboratory. On only one occasion over the entire program, the following metals were measured to be above the MDL: arsenic, cadmium, chromium, cobalt, nickel and mercury.

The discrete particulate matter less than 10 micrometres (PM_{10}) sampler measured a 90th percentile concentration of 18.3 µg/m^3 and an arithmetic mean of 9.6 µg/m^3. Four measurements were above the MDL for 24-hour Interim AAQC of 50 µg/m^3 were measured in 2023. The continuous PM_{10} samplers measured a 90th percentile PM_{10} concentration was 16.2 µg/m^3 at Station 2 and 28.2 µg/m^3 at Station 3, the arithmetic means for the total sampling period were 7.2 µg/m^3 and 10.6 µg/m^3, respectively. Concentrations were generally higher in the summer than in the winter. Several concentrations above the 24-hour PM_{10} AAQC were measured during the summer of 2023. Elevated concentrations in both datasets were likely influenced by the wildfire season.

The discrete particulate matter less than 2.5 micrometres ($PM_{2.5}$) sampler measured a 90th percentile concentration of 10.0 µg/m^3 and an arithmetic mean of 5.8 µg/m^3. Two measurements were above the MDL of the 24-hour AAQC of 27 µg/m^3 were measured. The continuous $PM_{2.5}$ samplers measured a 90th percentile $PM_{2.5}$ concentration of 14.7 µg/m^3 at Station 2 and 21.7 µg/m^3 at Station 3 with arithmetic means of 6.4 µg/m^3 and 8.7 µg/m^3, respectively. Station 2 measured 19 measurements above the MDL of the 24-hour AAQC while Station 3 measured 40 measurements above the MDL of the 24-hour AAQC in 2023. Measurements above the MDL in both datasets were likely influenced by the wildfire season.

For total dust fall, the arithmetic mean was 0.98 g/m^2/30-day across the entire at the Project, while the corresponding 90th percentile value was 2.4 g/m^2/30-day. All monthly dust fall values were below the AAQC of 7 g/m^2/30-days.

Measured concentrations of NO_2 and SO_2 were either extremely low or not detected. The continuous NO_2 monitors measured a maximum hourly concentration of 25.3 ppb and an

arithmetic mean for the period of 0.4 ppb at Station 1, and maximum hourly concentration of 19.5 ppb and an arithmetic mean for the period of 0.3 ppb at Station 3. The continuous SO_2 monitor at Station 1 measured a maximum 10-minute concentration of 16.3 ppb and an arithmetic mean for the period of 0.3 ppb. In addition, most passive volatile organic compound measurements were below the MDL.

For respirable silica, analytes included cristobalite, quartz, and tridymite forms of silica. Quartz had the highest 90th percentile concentration for a silicate mineral at 18% of its AAQC for the 24-hour averaging period. For polycyclic aromatic hydrocarbons, benzo(a)pyrene had a 90th percentile concentration that was 27% of its AAQC for the 24-hour averaging period. For diesel particulate matter, 3 out of 11 samples were above the detection limit of elemental carbon. The mean elemental carbon concentration was measured to be 0.092 µg/m^3. For mercury vapour, none of the samples collected were above the detection limit for vapour fraction.

Desktop research on regional air quality was also conducted. Date from the ECCC National Air Pollutant Surveillance (NAPS) stations in Thunder Bay and Pickle Lake, Ontario, and Winnipeg, Manitoba were reviewed in order to compare conditions on the Project to regional conditions. Discrete concentrations of $PM_{2.5}$ on the Project were reasonably consistent with the regional NAPS stations, while continuous concentrations on the Project were higher that regional NAPS stations. Passive and continuous NO_2 levels at the Project were much lower than regional NAPS stations. Passive SO_2 levels at the Project were similar to the Winnipeg NAPS station, while continuous levels were slightly higher than the Winnipeg NAPS station.

2.5 Light

Light baseline data are used to characterize the existing ambient light conditions Light intensity is quantified in units known as lux, with one lux being equal to one lumen m^2. Natural sources of ambient light during the night include the illumination from the moon and, to a smaller degree, starlight. Artificial light, stemming from anthropogenic light sources, leads to a phenomenon called sky glow, which is the artificial light scattered and reflected back to the earth's surface by the atmosphere. This sky glow alters the natural ambient lighting conditions of the night. The monitoring stations used to determine the existing conditions for light are presented in Figure 2.6-1. Detailed methodology and results are reported in the Ambient Light Baseline and Predictive Light Assessment found in Appendix G.

The existing light sources on the Property include limited infrastructure with no substantial buildings or lighting. Potential sources of light near the Project include the Municipality of Red Lake and the Township of Ear Falls.

The average brightness across all samples was 21.2 mag/arcsec^2 in the 0 to 30-degree zenith angle. Based on the sky brightness model of the VIIRS surface radiance data, the Municipality of Red Lake may cause some sky glow near the Project, especially at the northern parts of the Property. The measured sky nightness is dependent on season and generally expected to be towards the darker end of the E2 (20.15 to 21.49 mag/arcsec^2) lighting zones.

Light measurements at each monitoring location did not measure maximum illuminance greater than 0.01 lux on the vertical plane in the direction of the Property, with the exception of one measurement taken in May 2023 that may have been influenced by an aurora borealis.

2.6 Sound and Vibration

Acoustic and vibrational data are essential in delineating the prevailing conditions to accurately evaluate the potential impact of noise and vibrations emanating from the Project. This evaluation helps to maintain compliance with the sound guidelines set by the MECP at receptors in proximity. Three programs were completed to reflect potential seasonal changes (leaves on and leaves off), as well as over a holiday break, when exploration and forestry activities were not active.

The monitoring locations used to determine existing conditions are presented in Figure 2.6-1. Detailed methodology and results are reported in the 2022 Sound and Vibration Baseline Report (Leaves On Program) found in Appendix E-1, 2023 Sound and Vibration Baseline Report (Leaves Off Program) found in Appendix E-2.

2.6.1 Leaves On Program

The data indicate low background sound levels with average hourly sound level (L_{Aeq}) below 40 dBA during the daytime and below 30 dBA during the nighttime at all four monitoring sites. The broadest range of average minimum sound level to average maximum sound level (L_{Asmin} – L_{Asmax}) was noted at R2 during the day and at R1 during the night. The L_{A90} value, used to describe background sound levels, is defined as the sound level above 90% of the measurement period. Results here recorded the highest background sound levels at R1 to be 27 dBA during the day and 24 dBA at night. Daytime sound level (L_d), nighttime sound level (L_n) and day-night sound level (L_{dn}) were calculated for each monitoring day following the Health Canada Noise Guideline (Health Canada 2017). On average, R1 and R4 recorded the highest baseline L_{dn} level of 42 dBA.

Vibration was also measured for this program. The 95th percentile of measured peak particle veolocity (V_{PPV}) values were below 0.005 mm/s for all four locations, which is notably low. Average root mean square velocity (V_{RMS}) levels at all locations were around 0.001 mm/s. The summary of daytime (07:00 to 23:00) and nighttime (23:00 to 07:00) V_{PPV} levels indicate no notable difference between daytime and nighttime vibration levels.

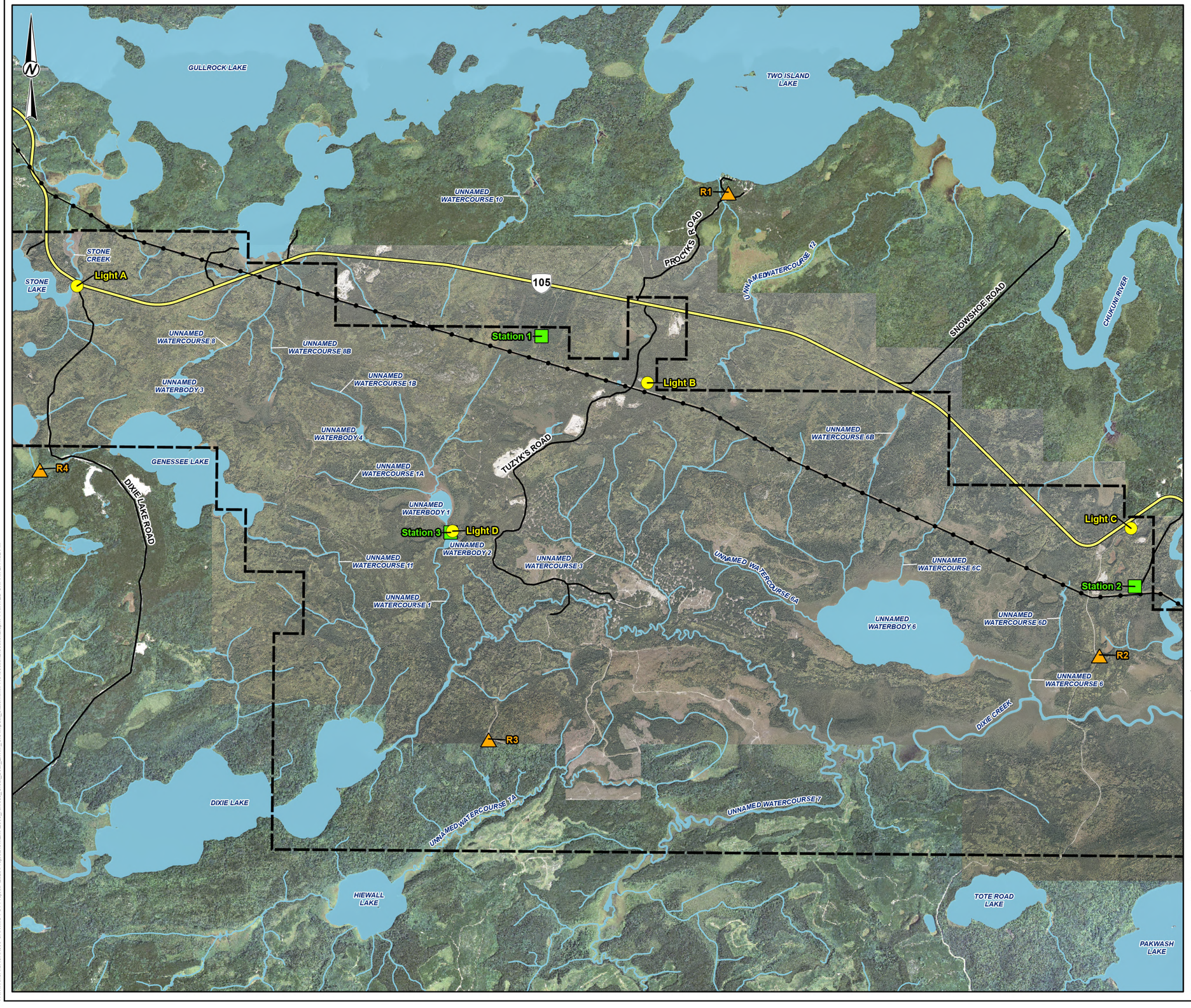
2.6.2 Leaves Off Program

The data indicate relatively low background sound levels with the average hourly L_{Aeq} below 35 dBA during the day and below 30 dBA at night at all four locations. The broadest range of (L_{Asmin} – L_{Asmax}) was observed at R2 during the day and R1 during the night. The L_{A90} value recorded the highest background sound levels at R1 to be 27 dBA during the day and 26 dBA at night. L_d, L_n, and L_{dn} were calculated for each monitoring day following Health Canada (2017). On average, R1 recorded the highest baseline L_{dn} level of 39 dBA.

The 95th percentile of measured V_{PPV} values were below 0.005 mm/s for all four locations, which is notably low. Average V_{RMS} levels at all locations were around 0.001 mm/s. The summary of daytime (07:00 to 23:00) and nighttime (23:00 to 07:00) V_{PPV} levels indicate little to no difference between daytime and nighttime vibration levels.

2.6.3 No Drilling Monitoring Campaign

The average hourly L_{Aeq} levels were below 35 dBA during the day and below 25 dBA at night. The average L_{dn} levels were below 30 dBA for all monitoring stations. The 95th percentile of measured V_{PPV} values were below 0.005 mm/s for all four locations, which is notably low. Average V_{RMS} levels at all locations were around 0.001 mm/s.



LEGEND

- PROPERTY BOUNDARY
- LIGHT MONITORING LOCATION
- AIR QUALITY MONITORING LOCATION
- NOISE AND VIBRATION MOITORING LOCATION
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

0 0.5 1 2

1:57,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

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

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
ATMOSPHERIC AND ACOUSTIC MONITORING LOCATIONS

CONSULTANT

wsp

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

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	2.6-1

2.7 Geology and Physiography

Detailed information regarding the geology and physiography of the Property are reported in the Hydrogeology Baseline Report found in Appendix H-1.

2.7.1 Topography

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

Dixie Creek is situated in the most pronounced low-lying areas within the Property, meandering through a flat area towards its confluence with the Chukuni River outside the eastern Property boundary. The local topography of the Property is illustrated in Figure 2.7-1.

2.7.2 Overburden Geology

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

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

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

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

2.7.3 Bedrock Geology

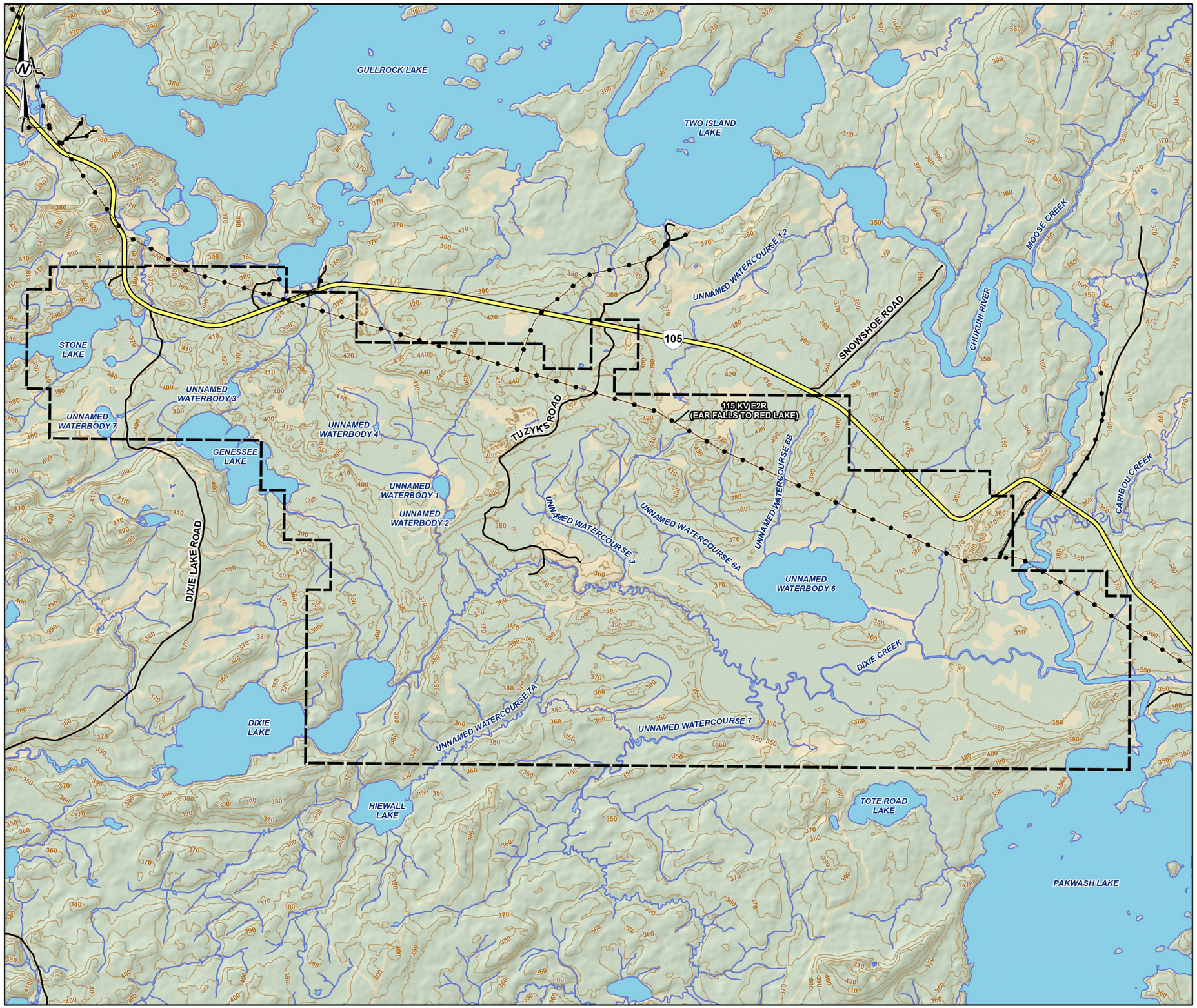
The regional geology of the Red Lake District is illustrated in Figure 2.7-2. The Property is located within the Red Lake greenstone belt of the Uchi Subprovince of the Archean Superior Province of the Canadian Shield. The rocks in this belt are interpreted to have evolved by eruption and deposition of volcanic sedimentary sequences. Continental collision led to subsequent crust thickening and metamorphism. Both greenstone belts in the Red Lake District are dominated by the Balmer and Confederation Lake assemblages:

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

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

2.7.4 Geochemistry

Comprehensive metal leaching and acid rock drainage assessments have been completed and are continuing, for all Project geologic materials including mine rock, tailings and overburden. This information is summarized in Section 5 by storage facility and detailed in Appendix J.



LEGEND

- PROPERTY BOUNDARY
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- CONTOURS (10 M INTERVAL)
- WATERCOURSE
- WATERBODY

0 1 2 4

1:72,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

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

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
LOCAL TOPOGRAPHY

CONSULTANT

wsp

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

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	2.7-1

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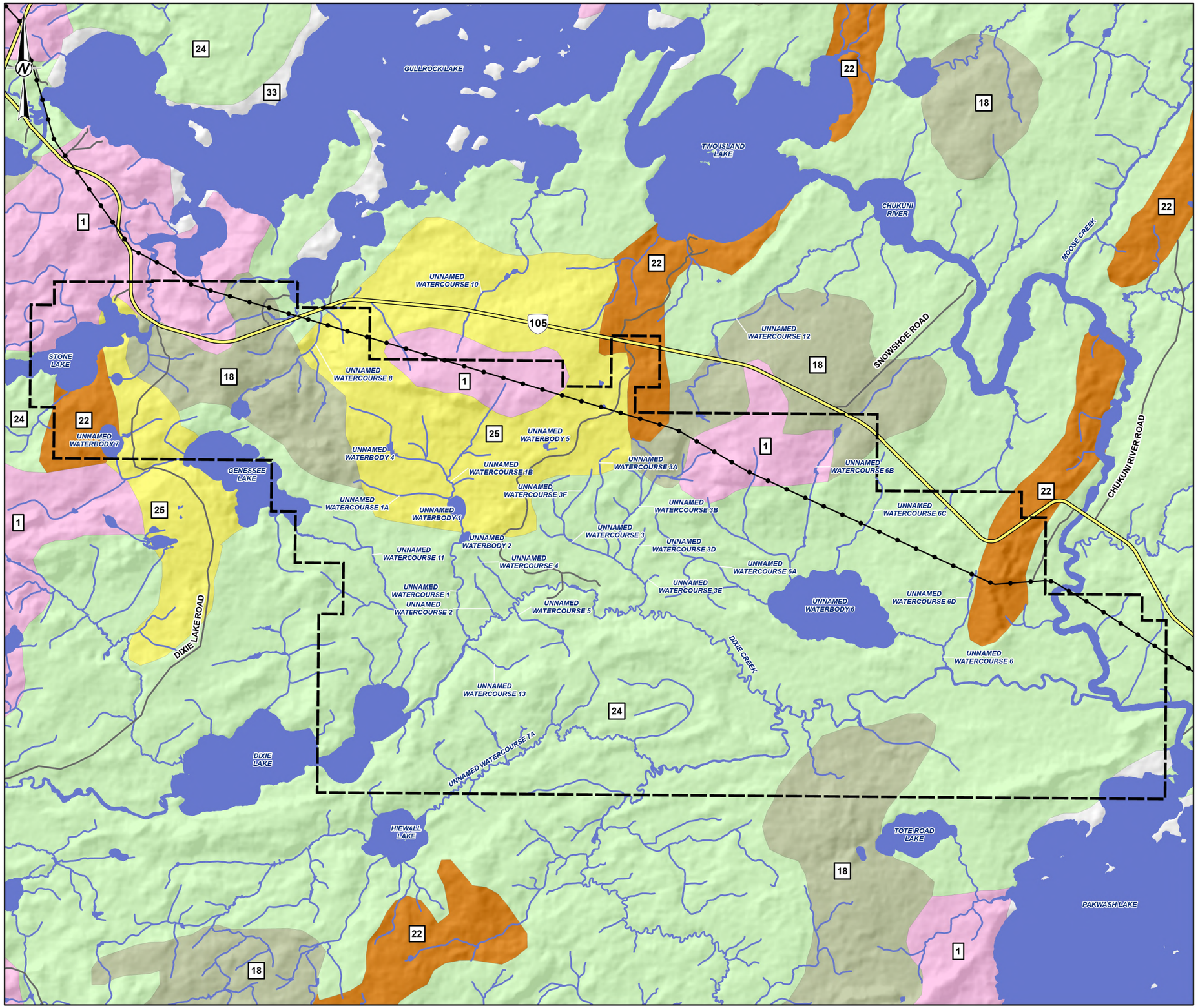

LEGEND

- PROPERTY BOUNDARY
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

QUATERNARY GEOLOGY

- 33 LAKES
- 25 GLACIOMARINE DEPOSITS: SAND, GRAVELLY SAND AND GRAVEL NEARSHORE AND BEACH DEPOSITS
- 24 GLACIOMARINE DEPOSITS: SILT AND CLAY, MINOR SAND BASIN AND QUIET WATER DEPOSITS
- 22 GLACIOFLUVIAL ICE-CONTACT DEPOSITS: GRAVEL AND SAND MINOR TILL INCLUDES ESKER, KAME, END MORAINE, ICE-MARGINAL DELTA AND SUBAQUEOUS FAN DEPOSITS
- 18 TILL: UNDIFFERENTIATED, PREDOMINANTLY SAND TO SILTY TO SILT MATRIX, COMMONLY RICH IN CLASTS, OFTEN LOW IN MATRIX CARBONATE CONTENT
- 1 BEDROCK: UNDIFFERENTIATED IGNEOUS AND METAMORPHIC ROCK, EXPOSED AT SURFACE OR COVERED BY A DISCONTINUOUS, THIN LAYER OF DRIFT

0 1 2 4

1:70,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. QUATERNARY GEOLOGY ACQUIRED FROM THE ONTARIO GEOLOGICAL SURVEY DATA SET 14 (NDMNRF), 1997.
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
REGIONAL GEOLOGY

CONSULTANT

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

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	2.7-2

2.8 Groundwater

Baseline hydrogeological conditions at the Project site are described in terms of the geological setting, physical characterization and assessment of groundwater quantity. Detailed methodology and results are reported in the Hydrogeology Baseline Report provided in Appendix H-1. The hydrogeology baseline study information is used to support water balance calculations and water management strategies. It can also be used as a future reference in identifying environmental changes and for the assessments of potential effects on groundwater regimes. The monitoring wells used to determine the existing conditions are presented in Figure 2.8-1.

2.8.1 Hydrostratigraphy

The hydrogeologic system at the Property consists of bedrock that is overlain by Quaternary deposits of varying thickness. Groundwater flow is anticipated mainly within the more permeable portions of the overburden with relatively little groundwater movement occurring in the bedrock. The four main groundwater units are:

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

At lower elevations on the Property (i.e., below 380 masl), the bedrock is in contact with glacial till overlayed with glaciolacustrine deposits, which are anticipated to limit the interaction between the bedrock flow system and surface water features such as Dixie Creek. Areas of higher elevations on the Property presented with glaciofluvial sediments or exposed till and bedrock. The continuous sand layer is underlain by glacial till and is expected to act as a conduit to groundwater flow (Appendix H-1).

2.8.2 Groundwater Elevations

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

Vertical hydraulic gradients on the Property are typically mild. Downward vertical hydraulic gradients are observed generally in areas of the Property above 380 masl, representing the inferred groundwater recharge zones across the Property. Vertical upward hydraulic gradients are located in three locations on the Property that are close to the surface water features and in lower elevations to the southeast of the topographic high ground area.

The magnitude of water levels changes varies across locations on the Property. The greatest variability is seen in glaciolacustrine areas, and this is an indication of reduced hydraulic connection with this unit than the other materials found at the Property. There is a lack of large

seasonal variation in the inferred groundwater recharge areas, which is an indication of better hydraulic connection in these areas.

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

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

2.8.3 Hydraulic Conductivity

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

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

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

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

GULLROCK LAKE
UNNAMED WATERCOURSE 10
UNNAMED WATERCOURSE 8
UNNAMED WATERCOURSE 12
105
BH22-208
MW24-211
MW24-211A
MW24-212
BH23-201
BH22-207
BH22-209
BH23-203
BH23-204
MW24-210
MW24-210A
MW23-11
MW24-15
MW24-209
MW24-208
BH23-218
MW2/22
MW23-06
MW24-07
MW23-07
MW24-08
BH22-118
UNNAMED WATERBODY 4
UNNAMED WATERBODY 5
BH22-206
BH23-205
MW24-3
MW24-4
MW24-201
MW24-202
BH23-215
MW3/22
MW9/22
BH22-116
MW23-15
MW23-201
BH22-202A
BH22-202B
BH23-213
BH23-213A
BH24-206A
BH24-206
TUZYK'S ROAD
BH23-211A
BH22-203
BH23-212
BH23-219
BH23-208
BH23-210A
BH23-207
BH23-210
BH23-115
BH22-120
MW1/22
MW23-202
GENESSEE LAKE
UNNAMED WATERBODY 1
BH23-230A
BH22-109
BH23-220
MW4/22
BH23-226
BH23-228
BH23-227
PTL1MW1/22
BH23-102
MW24-AEX-101
MW23-10
BH23-120
BH22-127
UNNAMED WATERCOURSE 6B-02
BH22-124
MW23-12
MW24-AEX-102
UNNAMED WATERBODY 2
MW23-02 Shallow
MW23-02 Deep
MW24-214A
MW24-214
PTL1MW2/22
MW25-02
BH22-101
BH23-121
BH23-122
BH24-108
BH22-103
BH23-103
MW25-215
MW24-215A
MW24-215
MW24-213
MW25-01
BH22-135
UNNAMED WATERCOURSE 6A
UNNAMED WATERCOURSE 3
BH22-108
MW7/22
MW23-04 Deep
MW23-04 Shallow A
MW23-04 Shallow B
PTL1MW3/22
MW12/22
MW23-14
UNNAMED WATERCOURSE 4
UNNAMED WATERCOURSE 11
UNNAMED WATERCOURSE 1
BH22-105
BH23-106
BH22-134
MW24-105
MW24-104
MW11/22
UNNAMED WATERBODY 6
MW10/22
MW24-109
MW23-08
BH23-105
MW24-107
MW23-09
PTL2MW1/22
MW24-106
PTL2MW4/22
MW6/22
MW5/22
PTL2MW2/22
DIXIE CREEK
MW24-16
PTL2MW3/22
MW24-09
DIXIE LAKE

LEGEND

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

QUATERNARY GEOLOGY

HOLOCENE **NONGLACIAL**

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

LATE WISCONSINAN **PROGLACIAL AND GLACIAL**

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

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

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

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

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

GLACIAL

GLACIAL DESPOSITS: SEDIMENT DEPOSITED DIRECTLY FROM GLACIAL ICE

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

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

0 0.25 0.5 1

1:30,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. QUATERNARY GEOLOGY BASE MAPPING IS EXTRACTED FROM QUATERNARY GEOLOGY OF RED LAKE-CONFEDERATION LAKE AREA; SHARPE, D R; RUSSELL, H A J. GEOLOGY SURVEYS OF CANADA, OPEN FILE 2876, 1996.
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES KINROSS, AUGUST 2024.
4. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
5. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
GROUNDWATER SAMPLING LOCATIONS

CONSULTANT

wsp

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

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	2.8-1

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2.9 Surface Water Flows and Levels

Detailed methodology and results regarding surface waterbodies and watercourses on and near the Property are reported in the Hydrology Baseline Report found in Appendix I-1. The Project is located within the greater English River watershed above Pakwash Lake. Flow in the English River below Pakwash Lake joins with the Lac Seul and Lake of the Woods watersheds to become the Winnipeg River. The Winnipeg River discharges northwest to Lake Winnipeg which discharges to the Nelson River, ultimately reporting to Hudson Bay. The Manitou Falls Generating Station is located downstream of Pakwash Lake along the upper portion of the English River, with a total watershed area of 48,880 km^2. The Snowshoe Rapids Dam is located on the Chukuni River between Two Island Lake and Highway 105 and is used to control water levels of Red Lake, Gullrock Lake, Keg Lake, Ranger Lake and Two Island Lake. Regional monitoring stations (Figure 2.9-1) and local monitoring stations (Figure 2.9-2) were used to establish the existing conditions.

The Project is located primarily within the Dixie Creek subwatershed, with a large portion of the Property located to the north of Dixie Creek. Dixie Lake has a watershed area of around 180 km^2, which accounts for around 50% of the overall Dixie Creek watershed.

2.9.1 Regional Stations

The following conditions were established for the regional Water Survey of Canada (WSC) hydrologic monitoring stations (Figure 2.9-1):

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

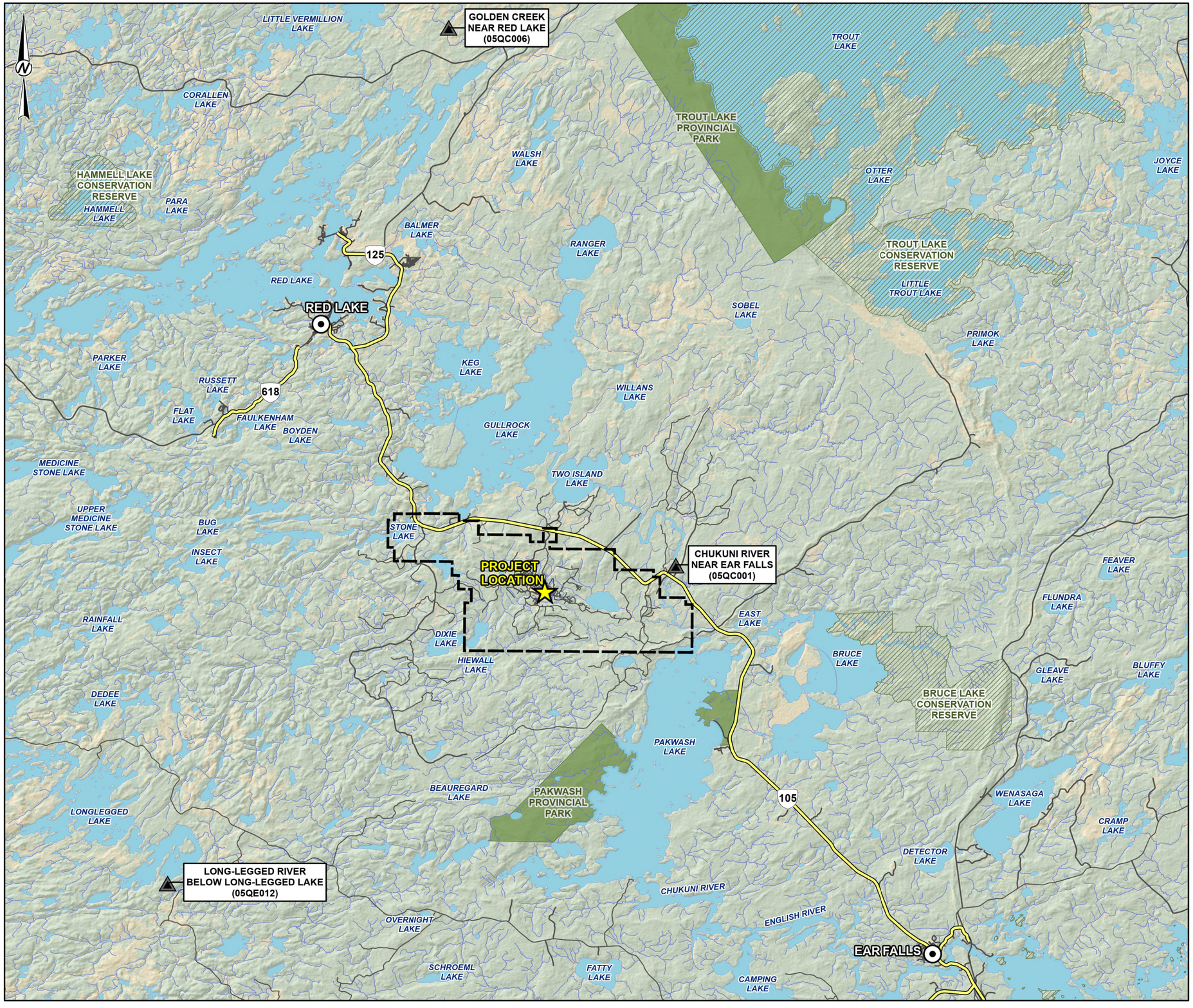
Low flows for were calculated for the three above WSC hydrometric monitoring stations. The Chukuni River near Ear Falls WSC hydrometric monitoring station low flows range from 7.57 m^3/s to 1.86 m^3/s. For the Long-Legged River below Long-Legged Lake WSC station, the low flows ranged from 0.84 m^3/s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

2.9.2 Monitoring Programs

Average monthly discharge for the on-site stations (Figure 2.9-2) displayed a wide range of flows from station to station, with the greatest discharge during spring months April to June. The maximum average discharge was at 6.13 m^3/s at Dixie Creek at Tuzyk's Road during June 2024, and the minimum was < 0.001 m^3/s at Dixie Lake Outlet. Low flows observed at the Dixie Lake outlet are due to beaver activity both downstream and at this location. The minimum monthly discharge along the tributaries contributing to Dixie Creek ranged from 0.002 m^3/s at Unnamed Watercourse 1 to 0.004 m^3/s at Unnamed Watercourse 3.

For the available period of record, average water elevation change ranged from 0.4 m to 1.7 m. Peak water levels were generally observed during the spring months, corresponding to the spring freshet, while low water levels correspond to the summer low flow periods. Water levels at the monitoring stations along Dixie Creek and Genessee Lake are also influenced by beaver activity. A bathymetric survey was completed in Unnamed Waterbody 6 during fall 2022, which recorded a maximum water depth of 1.78 m and an average water depth of 1.26 m.

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



LEGEND

- PROJECT LOCATION
- PROPERTY BOUNDARY
- WATER SURVEY CANADA (WSC) STATION (LABELLED WITH STATION NAME AND ID)
- TOWN
- CONSERVATION RESERVE
- PROVINCIAL PARK
- HIGHWAY
- LOCAL ROAD
- RESOURCE/ RECREATION ROAD
- WATERCOURSE
- WATERBODY

0 2.5 5 10

1:260,000 KILOMETRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR.
3. ROADS INFORMATION PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2022.
4. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
5. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
REGIONAL HYDROMETRIC MONITORING STATIONS

CONSULTANT

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PREPARED	MD
REVIEWED	----
APPROVED	LK

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	2.9-1

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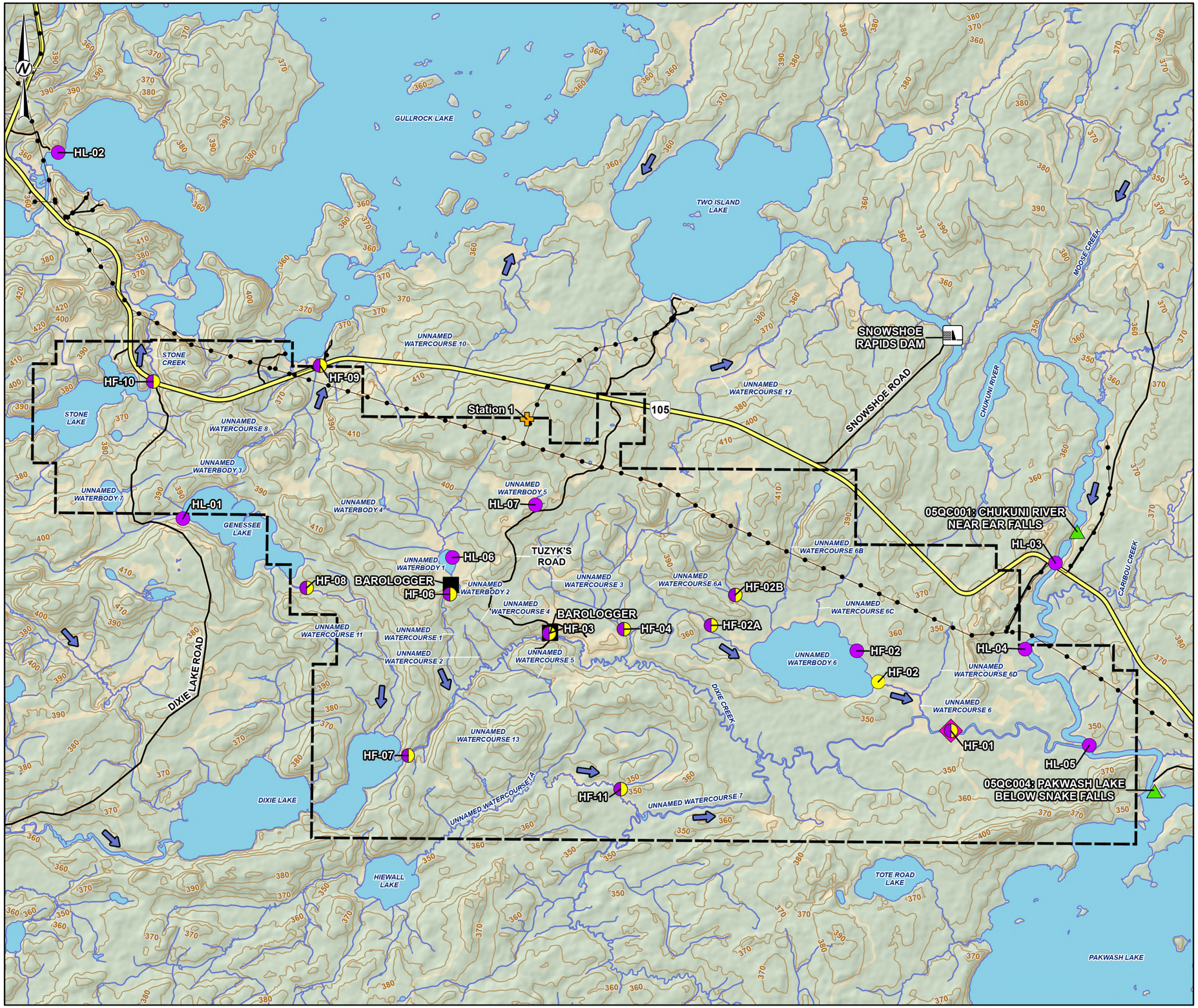


LEGEND

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

HYDROMETRIC STATION (BY INSTRUMENTATION)

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

0 1 2 4

1:72,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
LOCAL HYDROMETRIC MONITORING STATIONS

CONSULTANT

wsp

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

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	2.9-2

2.10 Water Quality

Detailed methodology and monitoring results are reported in the Water Quality Baseline Report found in Appendix K-1. Water quality is an important parameter for both the physical and biological environments, helping to define the health of aquatic ecosystems and providing a basis for calculating effluent discharge loadings, design input for potable water treatment systems and for the assessment of potential effects.

2.10.1 Surface Water Quality

2.10.1.1 Chukuni River

Samples were collected along the Chukuni River (Figure 2.10-1), with locations at the approximate discharge location, upstream of the proposed discharge location and downstream of the discharge location and all other Project influences. Results indicate that surface water quality in the Chukuni River is typical of the region, with generally neutral pH, and low concentrations of nutrients and major anions. Sulphate concentrations ranged from 2.0 mg/L to 12.0 mg/L and were similar at all three monitoring stations. Total and dissolved metal concentrations were generally low and were mostly below the identified water quality guidelines for the protection of aquatic life (WQG PAL); however, approximately 25% of phosphorous observations were greater that the WQG PAL at downstream sampling locations. Further, arsenic concentrations were consistently greater than the WQG PAL at all stations. Occasional measurements of pH, total and dissolved aluminum and copper were above guidelines as well. These elevated concentrations may reflect natural conditions dictated by geology and rock weathering processes and / or influences from upstream development activities including the Snowshoe Rapids Dam.

2.10.1.2 Dixie Creek

Samples were collected along Dixie Creek at multiple locations (Figure 2.10-1) upstream of the proposed Project infrastructure, at the southern portion of the proposed Project infrastructure and downstream of the proposed Project influences. Results indicate that the surface water quality in Dixie Creek is typical of the region and likely influenced by surrounding shallow lakes and wetlands, with generally neutral pH and low concentrations of most nutrients and total dissolved solids. Sulphate concentrations were low and ranged from < 2.0 mg/L to 4.0 mg/L, while dissolved organic carbon (DOC) concentrations were moderately high and ranged from 13.7 mg/L to 18.9 mg/L. Total and dissolved metal concentrations were generally very low and below the WQG PAL; however, aluminum concentrations were consistently above the WQG PAL at upstream and mid-stream locations. Further, most total phosphorous observations were greater than WQG PAL and are classified as meso-eutrophic to eutrophic based on Canadian Council of Ministers of the Environment (CCME) framework. Occasional measurements of cobalt, iron and arsenic were above guidelines at individual sampling locations that are proximate to the identified mineral zones in the area. Slightly acidic pH levels were also observed occasionally at three stations.

2.10.1.3 Unnamed Watercourses

Samples were collected from three groups of unnamed watercourses: Dixie Creek tributaries, north flowing tributaries and Unnamed Waterbody 6 tributaries (Figure 2.10-1).

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

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

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

2.10.1.4 Lakes and Unnamed Waterbodies

Samples were collected from four waterbodies on the Property: Unnamed Waterbody 6, Genessee Lake, Unnamed Waterbody 1 and Dixie Lake (Figure 2.10-1).

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

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

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

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

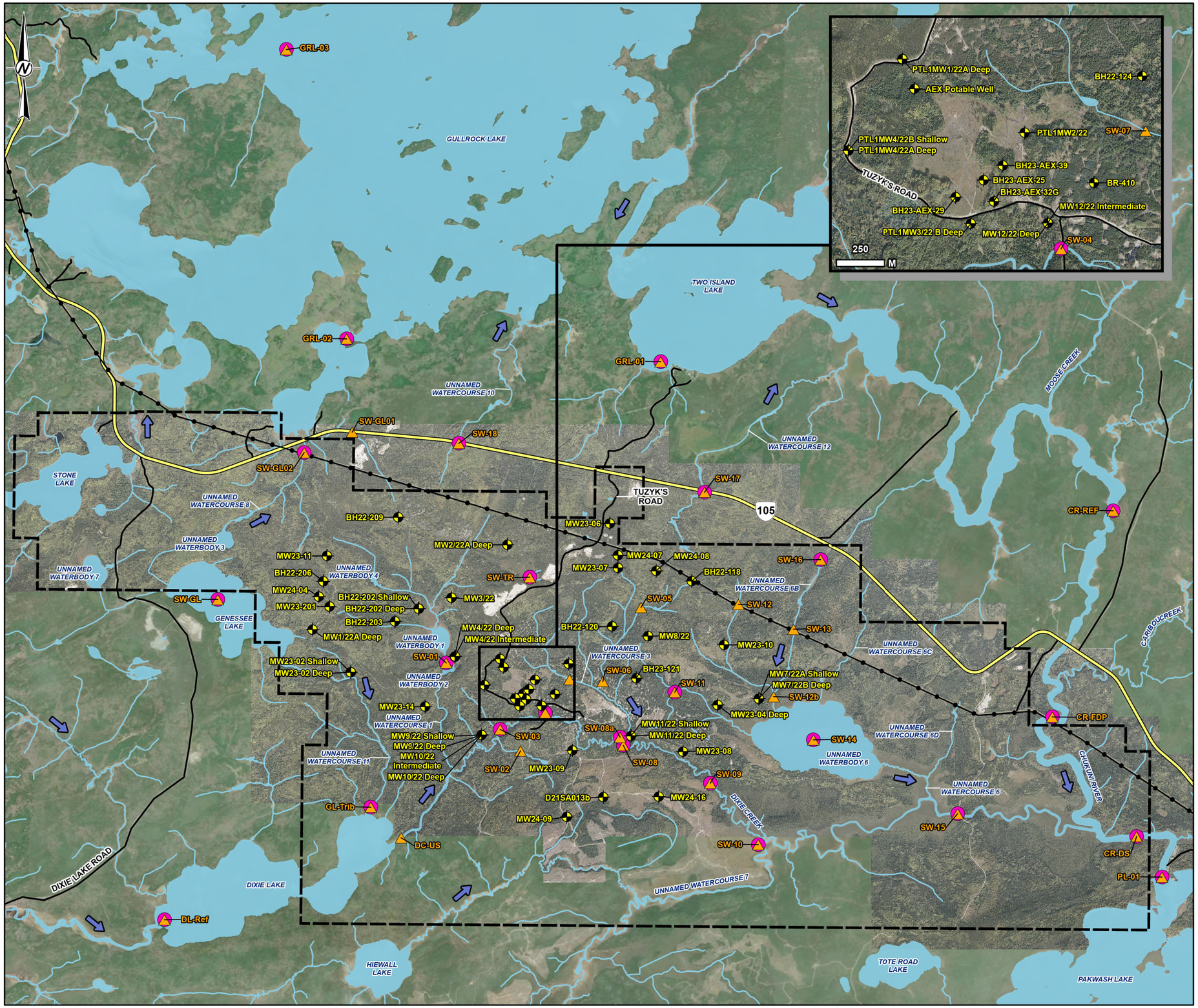
Pakwash Lake had generally neutral pH with low concentrations of nitrite, nitrate and ammonia, and low concentrations of total dissolved solids. Sulphate concentrations ranged from 2.0 mg/L to 6.0 mg/L. Total and dissolved metals were generally low and below WQG PAL, with some exceptions. Arsenic concentrations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

2.10.1.5 Low Level Mercury

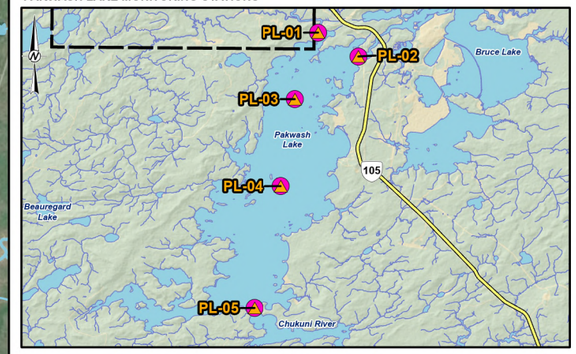
Total and dissolved mercury concentrations are very low in the Project area and were often below detection limits. Supplemental ultra-low level analyses indicated that total mercury concentrations range from 0.67 ng/L to 11.3 ng/L. Methylmercury concentrations range from 0.029 ng/L to 0.65 ng/L. Additional information is provided in Appendix K-1.

2.10.2 Groundwater Quality

Groundwater quality across monitored wells (Figure 2.10-1) was generally neutral to slightly alkaline with high hardness, low chloride concentrations and moderate to high conductivity. Concentrations of nitrogen species such as nitrite, nitrate and ammonia were very low and below WQG PAL. Concentrations of dissolved metals and metalloids were low and below WQG PAL, with some exceptions. Approximately 51% of phosphorous concentrations, 30% of cobalt concentrations and 15% of cobalt concentrations were greater than WQG PAL. Occasional concentrations of tungsten, uranium, iron and nickel were also above guidelines. Monitoring locations that most frequently produced concentrations greater than guidelines were associated overburden monitoring wells, screened into the glaciolacustrine lithological unit. The elevated concentrations of phosphorous and some metal concentrations are expected based on known groundwater quality in the region. Additional information is provided in Appendix K-1.



PAKWASH LAKE MONITORING STATIONS



SCALE: 1:350,000

LEGEND

- PROPERTY BOUNDARY
- SURFACE WATER QUALITY MONITORING STATION
- METHYLMERCURY AND SUPPLEMENTAL ULTRALOW MERCURY MONITORING STATION
- GROUNDWATER QUALITY MONITORING STATION
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY
- FLOW DIRECTION

0 1 2 4

1:70,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

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

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
SURFACE WATER AND GROUNDWATER QUALITY MONITORING LOCATIONS

CONSULTANT

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

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	2.10-1

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2.11 Fish and Fish Habitat

Detailed methodology and results regarding fish and fish habitat on the Property are reported in the Aquatic Resources Baseline Report found in Appendix L-1. The sampling locations used to determine the existing conditions are presented in Figure 2.11-1.

2.11.1 Dixie Creek

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

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

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

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

Total invertebrate numbers at DC-01 were around ten times higher than the other three sampling locations, with DC-01 having consistently high richness and diversity in the benthic invertebrate community. Benthic invertebrate community total abundance was much lower for DC-01, DC-02 and DC-03 in 2023 compared to the previous year.

2.11.2 Chukuni River

Three sampling locations were evaluated along the Chukuni River for fish habitat, community, length, age and tissue as well as water and sediment quality, lower trophic and primary productivity and benthic invertebrate community. All three sampling locations were classified as large river habitat characterized by reaches with moderate flow and occasional fast flowing with soft fine-grained sediments with some boulder / bedrock and cobble / sand. The vegetation near to the riparian zone includes alder, willow and herbaceous species.

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

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

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

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

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

Benthic invertebrate community density, richness and evenness were higher at CR-REF and CR- FDP than CR-DS.

2.11.3 Troutlake River

Troutlake River is a moderately sized river with widths ranging from 100 m to 500 m and was assessed as a potential reference location to the Chukuni River. Troutlake River is downstream of the Griffith mine site, an iron mine that operated until 1968. The Troutlake River riparian is dominated by shrubs, willow and alder species. The upland is comprised primarily of Black Spruce and Tamarack.

Sediment samples were taken from three locations on the Troutlake River. Samples were primarily made up of silt and clay. TOC was higher than guidelines at all locations as were cadmium, chromium, copper, iron, manganese, nickel and zinc.

2.11.4 Genessee Lake

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

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

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

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

2.11.5 Pakwash Lake

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

2.11.6 Gullrock Lake

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

2.11.7 Unnamed Waterbodies

2.11.7.1 Unnamed Waterbody 1

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

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

2.11.7.2 Unnamed Waterbody 2

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

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

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

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

2.11.7.3 Unnamed Waterbody 3

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

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

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

2.11.7.4 Unnamed Waterbody 4

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

2.11.7.5 Unnamed Waterbody 5

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

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

2.11.7.6 Unnamed Waterbody 6

Unnamed Waterbody 6 is a shallow lake with a maximum depth of 1.78 m and a lentic habitat characteristic of the small, shallow waterbodies on the Property. It has a wide riparian habitat comprised of grasses, sedges and shrubs along the northwest margin and outlet to Dixie Creek. The upland vegetation is mostly coniferous species such as Black Spruce. Sediment consists of silt with some clay and fine sand.

DNA from seven fish species was found in the lake, and five species were sampled: Blackchin Shiner, Blacknose Shiner, Fathead Minnow, Northern Pike and Yellow Perch. Mercury concentrations in the fish tissue sampled were less than the Ontario consumption guidelines for

all groups. Methylmercury concentrations were above guideline in all samples, and selenium concentrations were below guidelines in all samples. Water quality measurements for DO and pH were generally within identified guidelines, with the exception of one pH value in the spring and one DO value in the fall. Sediment quality measurements for TOC were all above the guidelines and metal parameters found to have concentrations above guidelines included arsenic, cadmium, chromium, copper, mercury and nickel. The benthic invertebrate community in the lake was similar to other shallow lakes and ponds on the Property.

2.11.8 Unnamed Watercourses

2.11.8.1 Unnamed Watercourse 1

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

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

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

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

2.11.8.2 Unnamed Watercourse 2

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

2.11.8.3 Unnamed Watercourse 3

Unnamed Watercourse 3 is a wide stream with moderate depth and dense deciduous and coniferous forest. The water is dark in colour and the substrate is predominantly clay with eroded sections of bank. A total of 1,705 fish were sampled from the stream, including Brook Stickleback, Central Mudminnow, Finescale Dace, Northern Redbelly Dace, Slimy Sculpin and White Sucker. Methylmercury concentrations in fish tissue samples included several measurements that were above the guidelines. All selenium concentrations were below the guidelines. All DO and pH measurements met the guidelines except for one DO measurement. Sediment quality measurements for TOC were above guidelines at all stations and measurements above the guidelines were also observed for arsenic and manganese. The benthic invertebrate community in the stream had low diversity and evenness compared to other Dixie Creek tributaries.

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

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

2.11.8.4 Unnamed Watercourse 4

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

2.11.8.5 Unnamed Watercourse 5

Unnamed Watercourse 5 is a stream with moderate width and depth and has a moderate to broad floodplain with shrubs and grasses lining the banks. The water is dark in colour and the

substrate is predominantly muck and silt. A total of 2,203 fish were sampled from the stream, including Brook Stickleback, Central Mudminnow, Fathead Minnow, Finescale Dace, Lake Chub, Northern Pearl Dace, Northern Redbelly Dace, and White Sucker. More than half of the methylmercury concentrations in the fish tissue samples were greater than the guidelines, while all selenium concentrations were below the guidelines. All DO and pH measurements met the guidelines except for two pH measurements. All sediment quality samples of TOC were above the guidelines, and concentrations above the guidelines were also noted for arsenic, chromium, copper, iron, manganese, and nickel. This stream had the second-highest TID in the benthic invertebrate community compared to all other locations.

2.11.8.6 Unnamed Watercourse 6

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

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

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

Unnamed Waterbody 6B is a narrow, shallow stream with undercut banks and silt and muck substrate. It is surrounded by dense coniferous and deciduous trees. A total of 206 fish were sampled from the stream, including Brook Stickleback and Central Mudminnow. All methylmercury concentrations from fish tissue samples were greater than the guidelines, while all selenium concentrations were below the guidelines. All DO measurements were within identified guidelines, while several pH measurements were not. The stream had similar benthic invertebrate community metrics as other unnamed watercourses.

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

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

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

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

2.11.8.7 Unnamed Watercourse 7

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

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

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

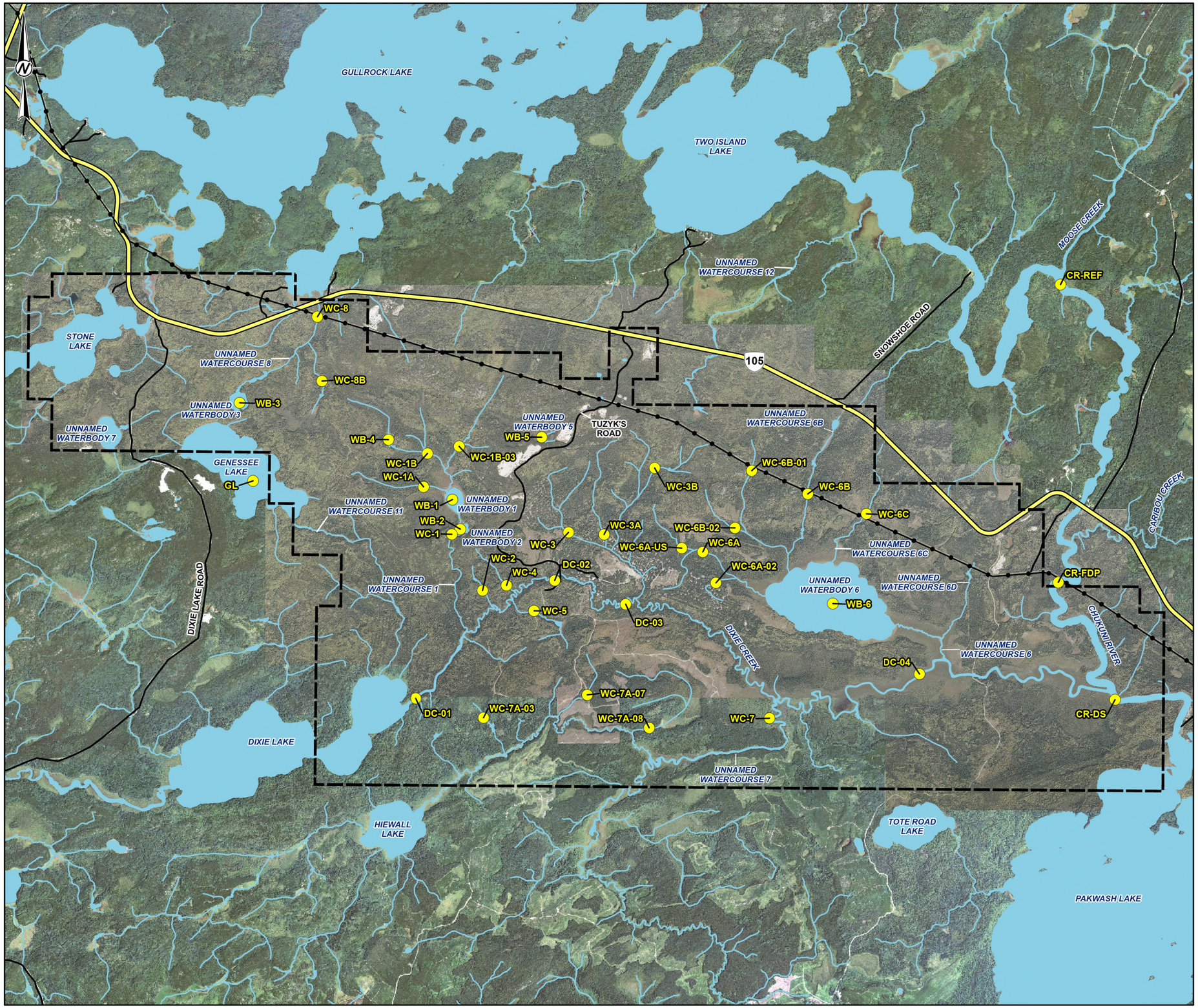
Unnamed Watercourse 7A-08 is a shallow stream with a large drainage pool and impoundment in an alder dominated riparian and mixed coniferous and deciduous forest. The water is dark in colour, and the substrate is predominantly silt. A total of 163 fish were sampled from the stream, including Brook Stickleback,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

also noted for arsenic, iron, manganese and nickel. The benthic invertebrate community had low diversity and evenness compared to other unnamed watercourses.

2.11.8.8 Unnamed Watercourse 8

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

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



LEGEND

- SITE LOCATION
- PROPERTY BOUNDARY
- HIGHWAY
- LOCAL ROAD
- EXISTING TRANSMISSION LINE
- WATERCOURSE
- WATERBODY

0 1 2 4

1:70,000 KILOMETRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. WATERCOURSES AND WATERBODY ACQUIRED FROM LAND INFORMATION ONTARIO (MNRF) AND MODIFIED TO MATCH AERIAL IMAGERY AND LIDAR
3. PROPERTY BOUNDARY PROVIDED BY GREAT BEAR RESOURCES, AUGUST 2024.
4. AERIAL IMAGERY PROVIDED BY GREAT BEAR RESOURCES (SCENE DATE: SEPTEMBER 2022).
5. COORDINATE SYSTEM: NAD 1983 UTM ZONE 15N

CLIENT
GREAT BEAR RESOURCES

PROJECT
GREAT BEAR PROJECT

TITLE
AQUATIC SAMPLING LOCATIONS

CONSULTANT

wsp

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

PROJECT NO.	CONTROL	REV.	FIGURE
CA0031271	0001	A	2.11-1

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2.12 Vegetation Communities

Baseline vegetation communities and wetlands were investigated to identify and assess the existing vegetative assemblages and habitat, including plant Species at Risk (SAR).

Detailed methodology and results regarding vegetation communities on the Property are reported in the Terrestrial Environment Baseline Report prepared by Northern Bioscience (Appendix M-1).

2.12.1 Vegetation Communities

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

Meadow marshes are the most abundant open wetland on the Property, often having formed on the exposed sediments in inactive beaver ponds. Shore fens are also abundant in the vicinity of Unnamed Waterbody 6, Unnamed Waterbody 1 and Dixie Creek. The wetlands on the Property have not been formally evaluated for provincial significance. Non-wetland terrestrial non-forested communities (< 25% tree cover) account for less than 1% of the Property. These barren areas include vascular plant species such as Common Juniper, Bearberry and Three-toothed Cinquefoil, with some occurrence of Pin Cherry, Jack Pine and Balsam Fir. North facing cliffs often support mosses and herbaceous shrubs and ferns.

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

2.12.2 Wetlands

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

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

Marshes were generally found in small pockets interspersed with other wetland communities, with Bulrush-dominated marshes found in the shore of Unnamed Waterbody 6. Some emergent marshes are made up of Wild Rice, which is discussed further in Section 2.14. Shore fens were abundant along the shores of Unnamed Waterbodies 1 and 6 as well as Dixie Creek. These communities consist of a floating mat of species such as peat mosses, Wire Wedge, Few-seeded Sedge and Three-way Sedge.

The wetlands within the study area were evaluated by a certified wetland evaluator based to their size, diversity, hydrological function and features such as Wild Rice.

2.12.3 Non-forested Communities

Excluding the open wetlands described in Section 2.13.3, the other non-forested habitats in the area encompass rock barrens, talus slopes, cliff and rock faces and human-made environments like hydro transmission lines and gravel pits. According to the provincial ecological land classification system, these open communities generally possess less than 25% tree cover. The terrestrial non-forested areas make up about 60 hectares, which is under 1% of the total Property. A large portion of this area consists of active aggregate pits located along Tuzyk's Road.

2.13 Wild Rice

Detailed methodology and information regarding the presence of Wild Rice on the Property are presented in the Terrestrial Environment Baseline Report (Appendix M-1).

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

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

Wild Rice was also observed on Dixie Creek upstream from Dixie Lake and in the lower portion above the junction with the Chukuni River. Competition was not identified as a notable factor in Wild Rice abundance, and no invasive plant species were observed on either Unnamed Waterbody 1 or 6. Two pest species were identified on both lakes, but neither appeared to have an effect on Wild Rice.

2.14 Migratory Birds, Moose and Other Wildlife

Wildlife baseline studies including for migratory birds were conducted to identify the different animal species in the area of the Project, their habitat and to identify SAR. Detailed methodology and results regarding wildlife communities on the Property are reported in the Terrestrial Environment Baseline Report (Appendix M-1).

2.14.1 Mammals

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

2.14.2 Birds

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

2.14.3 Reptiles and Amphibians

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

2.14.4 Insects

A total of 23 odonate species and 25 butterfly species were documented on the Property from 2021 to 2023. Additional species are likely present given broad ranges and habitat types present on the Property. Dragonfly species Cobra Clubtail was observed on Dixie Creek south of the Property and is considered provincially rare and present in fewer than 20 locations in Ontario. Additionally, western white butterflies are considered provincially rare and were observed along several Property roads.

2.15 Species at Risk

Detailed methodology and information regarding provincial and federal SAR on the Property are reported in the Terrestrial Environment Baseline Report (Appendix M-1) and the Terrestrial Technical Methods and Results (Appendix M-2).

Table 2.15-1 provides an overview of the provincial and federal SAR detected on the Property during environmental baseline studies. There were no fish SAR identified through the field programs within and near the Property.

2.15.1 Vegetation

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

2.15.2 Mammals

Six federal or provincial mammal SAR were detected on the Property during environmental baseline studies. Wolverine (Threatened) have been detected at several locations on the Property. Due to the large individual ranges and lack of overlap between the ranges of reproductive females, it is expected that a relatively small number of Wolverines are likely to use the Property. The low-density boreal forest habitat present at the Property is considered to be suitable for Wolverine. Little Brown Myotis, Northern Myotis, Hoary Bat, Silver-haired Bat and Eastern Red Bat have also been detected on the Property, while Red Bat, Hoary Bat and Silver-haired Bat were detected on the Property and are all listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The Project is located within the Sydney Range for Boreal Caribou, which are classified as Threatened both provincially and federally. The eastern portion of the Sydney Range, where the PA is located, is generally not comprised of high quality habitat, and is therefore not commonly used by Boreal Caribou. The entirety of the PA is considered to be low-quality habitat. Boreal Caribou are not expected to use the PA for key seasonal habitat uses such as overwintering, rutting or calving.

2.15.3 Birds

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

2.15.4 Reptiles and Amphibians

Common Snapping Turtle was confirmed on the Property and has a range that overlaps with the Property, including potentially suitable habitat are present along Dixie Creek, Unnamed Waterbody 6 and other large watercourse and waterbodies.

2.15.5 Insects

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

Table 2.15-1: Summary of SAR Identified as Present on the Property

Common Name	SARO	COSEWIC / Schedule 1 (1)	Confirmed Present (Appendix M-2)
Mammals			
Little Brown Myotis	END	END / END	Y
Northern Myotis	END	END / END	Y
Hoary Bat	END	END / -	Y
Silver-haired Bat	END	END / -	Y
Eastern Red Bat	END	END / -	Y
Wolverine	THR	SC / SC	Y
Birds			
Bald Eagle	NAR (4)	NAR	Y
Bank Swallow	THR	THR / THR	Y
Barn Swallow	SC	SC / THR	Y
Canada Warbler	SC	SC / THR	Y
Common Nighthawk	SC	SC / SC	Y
Eastern Whip-poor-will	SC	SC (3) / THR	Y
Eastern Wood-Pewee	SC	SC / SC	Y
Evening Grosbeak	SC	SC / SC	Y
Lesser Yellowlegs	THR	THR / -	Y
Olive-sided Flycatcher	SC	SC / SC	Y
Rusty Blackbird	SC	SC / SC	Y
Short-eared Owl	THR	THR / SC	Y (M) (2)
Yellow Rail	SC	SC / SC	Y
Reptiles and Amphibians			
Common Snapping Turtle	SC	SC / SC	Y
Insects			
Yellow-banded Bumble Bee	SC	SC / SC	Y
Plants			
Black Ash	END (5)	THR / -	Y

Notes:
1. Some species have been assessed by COSEWIC but not added to Schedule 1 of SARA.
2. Within range only as a migrant (M).
3. Recently re-assessed as SC federally and provincially.

4. Downlisted from SC to NAR in 2022 by the Committee on the Status of Species at Risk in Ontario (COSSARO 2022).
5. Black Ash received protection under Section 9 or 10 of the ESA as of January 22, 2024; however, Ontario Regulation 6/24: Limitations on Section 9 Prohibitions under the ESA, provides a conditional exemption for Black Ash in that only trees that meet certain southern municipal requirements will be protected under the ESA. Black Ash in the Project does not receive protection under the ESA.

2.16 Social Environment

Detailed methodology and results regarding socio-economics and land and resource use near the Property are reported in the Socioeconomic Baseline Report found in Appendix O-1. The Socio-economic Baseline provides a comprehensive overview of the existing socio-economic conditions in the region. The study focuses on the Indigenous Nations of WFN, LSFN, ANA and the NWOMC, as well as the Municipality of Red Lake, Township of Ear Falls and the District of Kenora.

Key areas covered in the study include the population size and demographic profile of regional communities, economic factors as well as community services and infrastructure. This encompasses indicators such as education, health care, utilities and transportation systems. Additionally, the study discusses the prevailing land and resource utilization practices in the area.

The PA is situated in the unorganized territory within the District of Kenora in northwestern Ontario. Covering an area of 395,432 km^2, the District of Kenora is home to around 66,000 people, resulting in a sparse population density of about 0.2 persons per km^2. As of 2016, around 49.2% of the Kenora District population identified as Indigenous. The population of the Kenora District is expected to grow in the next 30 years; specifically, the Indigenous population is projected to increase by 26.2% between 2015 and 2030 (Conteh 2017). The Crown Land Use Policy Atlas classifies the Project area under the land use code G2514 (Red Lake – General Use Area), which primarily supports mineral exploration and development, subject to certain limitations. The site is located within the Red Lake FMU and adheres to the Red Lake Forest Management Plan under the Crown Forest Sustainability Act. The region is also a hub for recreational activities, attracting both locals and tourists, and features several fly-in cabins and outfitter lodges. Four trapline areas intersect the Property.

The Project vicinity lacks federal parks, but two protected areas are within 25 km of the Property. Pakwash Provincial Park is located around 10 km away from the Property and is classified under the primary land use code P2528 (Natural Environment Class). Bruce Lake Conservation Reserve is located around 20 km away from the Property.

2.16.1 Red Lake

The Municipality of Red Lake is one of the larger municipalities in Kenora District, located about 270 km north of the City of Kenora. Red Lake is comprised of the Golden Township, Red Lake Township and the Unorganized Territory and consists of five serviced townsites: Red Lake, Balmertown, Cochenour, Madsen and McKenzie Island as well as three non-serviced settlements: Starratt-Olsen, Flat Lake and McMarmac (Municipality of Red Lake 2015). Red Lake has several key service and infrastructure features that make it a hub for the surrounding settlements, such as Red Lake Margaret Cochenour Memorial Hospital, various social services, and Red Lake District High School, for which members of surrounding communities come to Red Lake. In turn, both Red Lake and other communities travel to Kenora for locally unavailable services, like obstetrics (Bishop 2025). According to the 2021 Canadian Census, the total population in Red Lake was 4,094 in 2021 with 950 individuals identifying as Indigenous, representing 24% of the population. The municipality anticipates that the Indigenous population will continue to grow. The median age in Red Lake was 38.4 years, with a majority (65%) of residents aged between 15 and 64 years. Men slightly outnumber women in the population.

Land use in Red Lake is predominantly rural and the leading industry for the municipality is mining. Red Lake's population is expected to grow substantially in the future, with a comprehensive 2011 review projecting that the population could increase to 9,079 by 2031 (Municipality of Red Lake 2022).

2.16.2 Ear Falls

The Township of Ear Falls is located in the Kenora District, around 200 km northeast of the City of Kenora. Ear Falls consists of an urban area north of the English River and rural areas, including both cottages and year-round residences along Lac Seul and the English River. The Township manages municipal services such as water, sewage, landfill and fire protection. The 2021 Census records a population of 924, with 195 individuals identifying as Indigenous, representing 19% of the population (Statistics Canada 2021). The median age in Ear Falls was 43.6 years, with a similar age distribution to Red Lake. Men slightly outnumber women in the population. Reliance on the resource-based economy makes for difficulty in predicting projected populations in Ear Falls, with a 2015 estimate ranging between 882 to 1,098 by 2026 (Fotenn Planning and Urban Design 2015).

2.16.3 Lac Seul First Nation

LSFN is located in Treaty #3 territory and is affiliated with the Independent First Nations Alliance and Grand Council Treaty #3. The registered population stood at 3,689 members as of May 2022, with a majority (73%) living off-Reserve (Crown-Indigenous Relations and Northern Affairs Canada 2022a; Lac Seul First Nation 2019). The 2021 Census recorded 1,022 residents on the Reserve, a 4.9% increase from 2016 (Statistics Canada 2023a). The median age on-reserve is 25.6 years, with 59% of the population between 15 and 64 years (Statistics Canada 2021). The population gender ratio includes slightly more men than women.

Historically centered around Keesic Bay on Lac Seul's north shore, the community is today situated in the settlements of Frenchman's Head, Kejick Bay and Whitefish Bay. The community has various fishing camps and traplines throughout the regional investigation area from Bear Narrows to Root River on the northeast end of the lake (Lac Seul First Nation 2019). Keesic Bay Island is also recognized as part of the larger traditional area, having once been occupied by a smaller group of community members. Some members still live near Keesic Bay Island and Ningewance Bay (Lac Seul First Nation 2019). LSFN communities, except Canoe River, have access to services including hydro, running water and communications. Canoe River is reachable via air, boat or snowmobile. Lac Seul Police Services is centered in Frenchman's Head, with jurisdiction across the various communities (Lac Seul Police Service 2023).

2.16.4 Wabauskang First Nation

WFN is a member of the Bimose Tribal Council and Grand Council Treaty #3 and is the northernmost community in Treaty #3 territory. As of May 2022, WFN had a total registered population of 366, with 62% living off-Reserve, 37% on-Reserve and 1% registered on other Reserves (CIRNAC 2023a). The on-Reserve population according to the 2021 Census was 57, marking a 18.6% decline from 2016 (Statistics Canada 2023b). The median age on the Reserve was 30 years, with 58% of the population aged between 15 to 64 years (Statistics Canada 2021). The population gender ratio includes slightly more women than men.

The WFN Housing and Infrastructure department addresses housing issues and related requests, as well as ensuring the effective management of housing within the community. Social

services are provided by the Wabauskang Band Office (daycare services), the Wabauskang Youth Centre (serves as a community public library), Anishinaabe Abinoojii Family Services (AAFS) based out of Kenora, and Ontario Works (operates out of the Wabauskang Band Office). Health services are provided by the Wabauskang Health Office or the nearest hospital out of Dryden. There are no schools located within the Wabauskang First Nation; however, the WFN Education Authority provides services and support to students attending schools off the reserve. Fire services are provided by the Wabauskang Volunteer Fire Department, and police services are provided by the Treaty #3 Police Services Kenora East Region based out of Kenora.

2.16.5 Asubpeeschoseewagong Netum Anishinabek

ANA is a First Nation Ojibway community located in Treaty #3 area and is affiliated with the Bimose Tribal Council and Grand Council Treaty #3. The registered population stood at around 1,602 members as of May 2022, with 60% residing on-Reserve, 37% off-Reserve and 3% living on other Reserves (CIRNAC 2023a). According to the 2021 Census, the on-Reserve population was 584, a decrease of 8.5% from 2016 (Statistics Canada 2023b). The median age on Reserve was 27.8 years, with 64% of the population between 15 to 64 years (Statistics Canada 2021). The gender ratio within the First Nation was balanced, with an about equal distribution of men and women.

ANA has its own Housing Department which addresses and responds to the housing issues and related requests of the community. There are several organizations that provide a range of social services and family support services to ANA community members, including Kitapinoonjiiminaanik Family Services, Grassy Narrows Child & Family Advocates, Migizi Wazason Child Care Centre, the Naotkamegwanning Women's Shelter, the Kiwiigiwaminan Supportive Housing program, the Kenora Emergency Shelter, and Ontario Works, among others. It also has one primary community centre that coordinates general health services, visiting specialist clinics, and preventative care programs (Northwest Health Line 2025).

2.16.6 Northwestern Ontario Métis Community

The PA is located within Region 1 of the NWOMC. The NWOMC is a governing member of the Métis National Council and focuses on representing and promoting the interests of Ontario's Métis Peoples. A Consultation Agreement between the NWOMC and the Government of Ontario was signed on July 31, 2015, outlining a consultation framework for members represented by the NWOMC regarding proposed actions affecting Indigenous rights (Métis Nation of Ontario 2024). According to the 2021 Census, 4,075 people self-identified as Métis in the District of Kenora (Statistics Canada 2021). The Municipality of Red Lake had 350 self-identifying Métis individuals in 2021, down 12.5% from 2016, while the Township of Ear Falls saw a 33.3% decrease to 90 self-identifying Métis individuals (Statistics Canada 2023a). The median age of Métis individuals in the Kenora District was 37.6 and the gender ratio was about balanced (Statistics Canada 2023c,d,e).

The NWOMC Housing and Infrastructure Branch offers housing and homelessness services for members of the NWOMC. Social, health, education, and emergency services are provided by the municipal entities in which they live, although the NWOMC also coordinates a number of specialized programs for their members.

2.17 Local and Regional Economy

Detailed methodology and information regarding the local and regional economy near the Property is presented in the Socioeconomic Baseline Report found in Appendix O-1.

In the broader Kenora District, the healthcare and social assistance sector makes up the largest workforce. In the municipalities and communities within the land use investigation area, however, the workforce includes larger numbers involved in the mining, quarrying and oil extraction sector. Other key industries include public administration, retail trade, educational services, construction, accommodation and food services, and transportation and manufacturing (Statistics Canada 2023b).

The MNR manages hunting and fishing activities in Ontario. The PA lies within Wildlife Management Unit 3 which covers over 12,492 km^2. This unit is part of Cervid Ecological Zone B, which focuses on populations of ungulates, particularly Caribou and Moose. Additionally, the site is located within Fisheries Management Zone 4, covering an area of 60,440.8 km^2, home to 27 commercial fisheries, with 19 currently active licenses.

2.17.1 Red Lake

According to 2021 Census data, Red Lake had participation rates of 66.6% and employment rates of 63.2%, higher than provincial average. Men reported higher participation and employment rates, while women had higher unemployment rates. The most substantial employment sectors in Red Lake were mining, quarrying and oil extraction (24.4%), followed by health care and social assistance (13.5%). The labor force in mining and extraction is predominantly male, with 42% of the male workforce being employed in this sector compared to 11% of the female workforce. The health care and social assistance sector employs 29% of the female workforce and 3% of the male workforce. Retail trade, public administration and accommodation and food services see an almost equal split between men and women (Statistics Canada 2023b).

2.17.2 Ear Falls

According to 2021 Census data, Ear Falls had participation rates of 61.5% and employment rates of 54.2%, similar to the provincial average. Participation and employment rates were higher for men than women in Ear Falls, mirroring Ontario's trend. The unemployment rate was the same for both genders in Ear Falls. The most substantial employment sectors in Ear Falls are manufacturing (19%), mining and quarrying (15%), retail trade (13%) and accommodation and food services (11%). Manufacturing and mining sectors are largely male dominated, while retail trade has a higher proportion of female workers. The workforce in accommodation and food services is evenly split between genders (Statistics Canada 2023b). The Ear Falls Strategic Plan highlights growing tourism and cottage development as top priorities for the local economy.

2.17.3 Lac Seul First Nation

According to 2021 Census data, participation rates for LSFN were 50% and employment rates were 44% among the on-Reserve First Nation members, which represents a lower rate than the provincial average. Women reported lower participation and unemployment rates and a higher employment rate than men on the Reserve in Lac Seul First Nation. This contrasts with the trend in Ontario, where men had higher participation and employment rates compared to

women (Statistics Canada 2022). The most substantial employment sectors for LSFN were public administration (35%), health care and social assistance (24%), educational services (13%), and construction (11%). The most common occupations include roles in education, law, and social services (25%), trades and transport (22%), and sales and service (16%), highlighting the community's reliance on both public sector employment and skilled trades (Statistics Canada 2023a).

2.17.4 Wabauskang First Nation

According to 2021 Census data, participation rates for WFN were 77.8% and employment rates were 66.7% for on-Reserve First Nation members, higher than the provincial average. Women in WFN reported higher participation and employment rates compared to men, no unemployment noted amongst women (Statistics Canada 2022). The most substantial employment sectors for those living on the Reserve are manufacturing and public administration, each accounting for 28.6% of the workforce (Statistics Canada 2023b). Data regarding the division of the labor force by gender was not available.

2.17.5 Asubpeeschoseewagong Netum Anishinabek First Nation

According to 2021 Census data, participation rates were 44.6% and employment rates were 34.9% for on-Reserve members of ANA, lower than the provincial average. The unemployment rate stood at 18.9%, higher than Ontario's rate of 12.2%. Women in ANA reported higher participation and employment rates and lower unemployment rates than men (Statistics Canada 2022). The most substantial employment sectors for those living on the Reserve were healthcare and social assistance (32%), public administration (32%), unspecified industries (16%) and educational services (13%).

2.17.6 Northwestern Ontario Métis Community

According to 2021 Census data, the Métis population in Red Lake experienced a workforce participation rate of 70.4% and an unemployment rate of 7.9% (Statistics Canada 2023a). The Métis population in Ear Falls experienced a workforce participation rate of 62.5% (Statistics Canada 2023a). The most substantial employment sectors for the Métis population in Red Lake include mining, quarrying, oil and gas extraction, construction, retail trade, healthcare and social assistance and educational services (Statistics Canada 2023b). The larger employment sectors for the Métis population in Ear Falls include mining, quarrying, and oil and gas extraction as well as agriculture, forestry, fishing and hunting (Statistics Canada 2023a). Métis men in Red Lake reported higher participation and employment rates and lower unemployment rates than Métis women (Statistics Canada 2023a). In Ear Falls, both men and women among the Métis had equal unemployment rates at zero, with higher participation and employment rates for men (Statistics Canada 2023a).

2.18 Archaeology

Terrestrial and marine archaeological assessments have been completed by licensed archaeologists to assess the potential for and presence of physical features and sites that may have historical and / or cultural value or interest for Indigenous and non-Indigenous communities and society within or near the proposed Project site where there may be potential for these features or sites to be disturbed by Project-related activities. Copies of the related reports, including corresponding methodology, are provided in Appendix Q-1 and Appendix Q-2.

2.18.1 Marine Archaeology

An evaluation of underwater archaeological potential was completed using the Criteria for Evaluating Marine Archeological Potential: A Checklist for Non-Marine Archaeologists from the Ministry of Citizenship and Multiculturalism; MCM 2016). This desktop archeological assessment determined that Unnamed Waterbody 1, Unnamed Waterbody 2, Unnamed Waterbody 6, Pakwash Lake, Dixie Lake, Dixie Creek and the Chukuni River meet characteristics for marine archaeological potential. Field programs were completed by licensed archaeologists at Unnamed Waterbody 1 and Chukuni River, where Project facilities will be located.

No archaeological cultural materials or features were observed in the study areas in the Chukuni River or on shore during the visual inspection. The study areas in the Chukuni River have been visually confirmed to have low archaeological potential. Similarly, no archaeological cultural materials or features were observed in Unnamed Waterbody 1 during the visual inspection. No further assessment is required for any of the areas studied. Further detail on the marine archaeological assessment and visual inspection is provided in Appendix Q-2.

2.18.2 Terrestrial Archaeology

An evaluation of terrestrial archaeological potential was conducted at multiple locations throughout the Property to assess the potential for the presence of archaeological and cultural heritage properties, to create an inventory of archaeological resources present, and to evaluate the potential effects to these resources resulting from the proposed mining activities. Archaeological assessments followed the four-stage process outlined in the MCM Standards and Guidelines for Consultant Archaeologists. As appropriate, Stage 1 through Stage 4 archaeology assessments were completed (Appendix Q-1).

Only one location is within the PA:

- EfKj-1: Located near Unnamed Waterbody 1, one test pit produced 12 lithic artifacts, while a second pit produced further stone manufacture debris (debitage).

A Stage 3 site-specific archaeological assessment was completed at this location (and others). A total of 30 test units were excavated by hand. Soil from the excavation was sifted using a mesh screen in order to separate artifacts. A total of 43 ceramic artifacts and 24 lithic artifacts were recovered from the site. This site is determined to be the likely result of one or multiple short-term occupations associated with resource gathering.

Great Bear Resources intends to avoid these resources with proposed Project development and provide a buffer around EfKj-1 to provide additional protection.

2.19 Cultural Heritage

Cultural heritage assessments consider known and potential built heritage resources and cultural heritage landscapes based on screening criteria developed by the Ministry of Citizenship and Multiculturalism (MCM) and professional judgment. Detailed methodology and information regarding the cultural heritage resources on the Property are reported in the Cultural Heritage Report and can be found in Appendix P-1.

There are no properties designated by the Minister according to the MCM. The MCM is also not aware of any provincial heritage properties within the Property or adjacent areas. According to the Ontario Heritage Trust, there are no Trust conservation easements or Trust-owned properties within the Property or adjacent areas. The MNR identified that the closest record was over 1 km away.

The inventory of potential built heritage resources and cultural heritage landscapes within Property and adjacent areas includes the following locations:

- Chukuni River – Potential Cultural Heritage Landscape (CHL): the watercourse may have cultural heritage significance for local Indigenous Nations and was historically used as a transportation route. This watercourse may have heritage significance for historical / associative and contextual reasons.
- Genessee Lake – Potential CHL: The lake may have cultural heritage significance to local Indigenous Nations. This watercourse may have heritage significance for historical / associative and contextual reasons.
- Wild Rice Stands (located 60 m north of the access road between Unnamed Waterbody 1 and 2) – Potential CHL: The Wild Rice stands may have cultural heritage significance to local Indigenous Nations. Indigenous knowledge surveys conducted with LSFN identified Manoomin (Wild Rice) as a traditional plant and food source in the Red Lake and Ear Falls area. Wild Rice has also been identified by WFN as a species of interest. This resource area may have heritage significance for historical, associative and contextual reasons.
- Gullrock Lake Camp – Potential CHL: Based on its proximity to Gullrock Lake and historical fishing and hunting activities of the area, this collection of properties may have heritage significance for historical / associative and / or contextual reasons.
- Wild Rice Stands (located along the western shore of Unnamed Waterbody 6): The Wild Rice stands may have cultural heritage significance to local Indigenous Nations. Indigenous knowledge surveys conducted with LSFN identified Wild Rice as a traditional plant and food source in the Red Lake and Ear Falls area. Wild Rice has also been identified by WFN as a species of interest. This resource area may have heritage significance for historical / associative and contextual reasons.

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